

MODULAR HOUSING FOR INTERNALLY DISPLACED PERSONS

FINDING SYNERGIES BETWEEN THE SHORT-TERM AND LONG-TERM DYNAMICS OF SUSTAINABLE URBAN DEVELOPMENT



MASTER THESIS IN SUSTAINABLE URBAN DESIGN

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Recurring natural and man-made disasters are resulting in an increasing number of displaced people who need to be provided with urgent accommodation. Due to insufficient legal regulations and effective construction methods, refugees are often located in conditions defined as 'temporary', offering low quality of living conditions, degrading social environment and destructive impact on the city landscape. However the duration of their accommodation often proves to be much longer than assumed initially.

On the other hand, attracting people's attendance is one of the main objectives of the urban strategies aiming at converting abandoned or degraded places into livable and vibrant city spots. In the process of managing a massive group of internally displaced persons, the presence of people can be regarded as an immense resource in refurbishment of obsolete parts of the city by incorporating their participation in the process of redevelopment of the built environment.

In my thesis, I investigate how the situation of large numbers of displaced people in Ukrainian cities and the implementation of modular solutions can be used as a catalyst to introduce long-term change to improve the living conditions of existing residents and transform their neighbourhoods into livable, sustainable and attended places. In my research, I examine the synergies between a short-term tactical urbanism strategy and a long-term strategy of placemaking principles and the role of public participation in both processes.

Keywords: refugee housing, placemaking, modular system, tactical urbanism, short-term and long-term dynamics



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Polish student, Finnish supervisor, American examiner, Ukrainian topic at the Swedish University. **Master Degree in Sustainable Urban Design.**

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Furthermore I would like to spread my gratitude to Ukraine. It was a great privilege and pride for me to have a chance to speak on behalf of this amazing and strongly experienced country and accommodation possibilities for Internally Displaced Persons. Foremost I am deeply grateful to professor **Yuriy Kryvoruchko** from the Department of Architecture and Urban Planning at the Lviv University of Technology for help in collecting necessary data, maps and starting materials. My special thanks go to the Department of Architecture and Urban Planning at the **City Council of Zaporizhzhia** for presenting your beautiful town and the **IDP Support Centre in Lviv** for enabling me to visit the accommodation premises for Displaced Persons. I strongly believe that the routes of our lives cross again but I hope it will happen in the better world.

Last but not least I want to thank my husband **Michał Gruzlewski** for your faith in me even though common sense sometimes suggests the opposite.

#StandWithUkraine

How can the short-term construction of the rapid housing for Internally Displaced Persons contribute to the long-term development of the existing residential quarter in Dniproviskiy District in Zaporizhzhia, Ukraine?

Case study.

My examination of the topic was most significantly based on case study research, involving visits to Centres for displaced people in Lviv and Zaporizhzhia, observing how they are organized, managed, integrated in the existing urban fabric and how they interact with their surroundings. Those visits also allowed me to understand the efforts invested into the establishment of refugee settlements, especially in the emergency mode, and the evolution of the way the subject has been approached over the last 10 years.

Interview with Internally Displaced Persons and IDP Centre Management.

The opportunity to interview displaced persons gave me the chance to learn more about their situation and life plans, as well as their immediate opinions, shortcomings and needs in relation to their stay at the IDP centre. In turn, the interview with the management of the centre provided me with valuable information about the experience they are acquiring in this completely new field of organizing temporary housing under the auspices of the municipality.

Interview with Representatives of the City Council in Zaporizhzhia.

Thanks to the contact with representatives of the Zaporizhzhia City Council, I was able to utilize official documents: an extract from the local plan and a map with the topography of the area and the current technical infrastructure. An interview with officials in the Department of Architecture and Spatial Planning allowed me to get acquainted with the municipality's investment plans and the question of rapid accommodation for resettlers as seen from their perspective.

Site Visit.

The visit to the site created an opportunity to learn directly about the environment of the Borodinski quarter, its quality in relation to other parts of the city, to participate in the daily life of the residents, their activities, mobility and daily routines. Experiencing the atmosphere of the place became the basis for developing appropriate design tools that I thereafter implemented in the project.

Historical review.

A historical review based on a literature research was used as a tool to gather relevant data on the history of the city, its cultural and architectural development and the associated housing stock of the city. Learning about the historical mechanisms related to housing management allowed me to develop critical thinking related to the housing policies of the past.

Literature Overview.

In exploring the aspects of modular production, the placemaking process and public participation, I discovered much valuable information in the literature outside the fields of architecture and urban planning. An interdisciplinary study incorporating fields such as information technology, politics and social sciences has significantly broadened my perspective on the search for sustainable values for the re-developed environment.

1. INTRODUCTION

That email surprised me a lot. Email from IDP Support Centre in Lviv. An invitation to enter their life, to meet the internally displaced persons who lost their homes but against all odds decided to stay there, though forcibly relocated, to continue living in their homeland and not let it cease to exist. Anxious to be perceived as an intruder, suddenly I have been given a great deal of trust. The existence of displaced people is hidden from the world by emotionally charged news of continuous bomb shellings and often falsified by images created by humanitarian institutions. In fact, however, it is the existence of ordinary people with the same problems, needs and dreams, great potential and the will to improve their lives. In fact, they are distinguished by just one word they often repeat: nezlomny - unbroken, with which they want to explain the current meaning of their lives.

I spent two days in Lviv among the displaced people in their temporary premises and then two in Zaporizhzhya among those who decided not to leave their city. I met many resettled persons who had lost all their properties and started new lives in other places, finding pleasure in small details of everyday life. I met pregnant women and young mothers whose husbands were fighting in the frontline. I also met people who lived where they did before but were strongly involved in arranging new accommodation for numerous newcomers, often struggling with lack of finances, dense official procedures and the need to accommodate people with different social backgrounds in one place. Those two groups merged within each other over time, becoming one community.

Losing home is like shedding skin. Being unrooted and exposed to the strikes of the unknown. Facing the fact that life will never be the same as it used to be. However, this is the only life they have, it is going on and there will not be a different one. It takes time to grow new skin. And acquiring a new skin does not only mean constructing four walls sheltering against rain and snow. First of all it entails building an accepting, safe and welcoming environment for life.

The first wave of refugees emerged after the occupation of Luhansk and Donetsk in 2014. However, the shock of the outbreak of war caused people to get resettled to other cities, mainly in the western part of Ukraine, with the cities of the eastern part serving as resettlement hubs. However, after several months of the situation, many people decided to return to their homeland to protect their belongings. Nevertheless, a large number of people still remained displaced. The involvement of charity and humanitarian institutions has allowed the construction of modular settlements, mostly on sites designated for this purpose in an accelerated mode, without the development of a strategy for the site. The designs of these towns were also developed in a fast-track manner and with only the most necessary procedures to equip them with the necessary technical infrastructure.

Local authorities were faced with the difficult task of providing shelter to huge masses of people. They were often supported by non-governmental institutions, private companies and ordinary citizens, as Ukraine lacks legal procedures and an adequate stock of housing at the disposal of the municipality. As a result, container modular settlements have appeared in many cities, inserting a significant impact on the cityscape, as well as its functioning on the local scale. Over time, factors affecting the degree of integration of newcomers into the community also became apparent. Neighbourhoods with services within their boundaries that encourage the development of their residents (meeting places, children's services, recreational greenery, sports facilities) were more likely to be visited by residents of neighbouring areas. Some of these

settlements were strengthened by the municipality's investment in common recreational or sports areas that are generally accessible. The strategy of placemaking proved to be a successful tool in integrating settlements for displaced persons in the existing urban and social environment of the cities.

Works on the Housing Reconstruction Plan launched by the National Council for the Recovery of Ukraine developed long-term strategies, both legal and urban, for the introduction of social housing to the Ukrainian market. They impose the requirements on the selection of a site which needs to be combined with the diligent development of a strategy for the site taking into account the benefits of the residents as well as increase of the land value. Building houses at an accelerated pace, but with a defined vision for the development of the place is challenging. A strategy that may prove helpful is to introduce citizen involvement in the placemaking process. Creating a place is a dynamic and multi-faceted matter. Therefore, it should combine both urban planning tools and the participation of the local community in the decision-making process.

The answer to these challenges may be the use of a modular system that allows for quick construction of buildings and allows their configuration from compatible components depending on the needs of residents. The possibility of customizing both houses and the space between them according to their needs and wishes will result in enhancing the sense of belonging, alleviate the background differences among the inhabitants and accelerate the process of common integration.

2. JUSTIFICATION OF THE TOPICALITY OF THE PROBLEM

The occupation of the eastern regions of Donetsk and Luhansk and, in particular, the outbreak of full-scale war in Ukraine has entailed a huge number of internally displaced people who have been forced to leave their places of residence and move to more secure locations. Both local authorities and the central government were faced with the difficult task of providing a safe place to live for this huge number of people. This urgency has exposed the lack of a functioning system to offer accessible social housing.

The lack of available housing has a historical background, dating back to Soviet times. Under the Soviet Union, characterized by a collective ownership system, dwellings belonged to housing cooperatives, which decided on their allocation to residents for an indefinite period. In 1992, after the regime change and regaining Ukraine's independence, the country underwent a transition from a centrally controlled economy to a free market system. Cooperative housing has been sold to private parties. Privatization covered 95% of the housing stock and only 5% was left to the municipalities (Mysak et al., 2022).

After the outbreak of war, the number of Internally Displaced Persons reached the number of 7 millions whereas 7.4 million people decided to flee Ukraine (UNHCR, 2024). The difficult situation with housing provision possibilities led to increase of social inequalities and contributed to deepening demographic downturn. The lack of housing has resulted in a sharp rise in the unemployment rate and cut off a sizable group of children and young people from the opportunity to continue their education.

Municipalities in cooperation with humanitarian organizations have developed multiple housing concepts that can be used to construct temporary housing in a short period of time. In the initial phase, these consisted mainly of adapting existing buildings, mainly public edifices or educational establishments, for residential purposes. The next phase was the construction of modular housing estates for temporary residence. A decree has been adopted by the Cabinet of Ministers of Ukraine overriding existing local plans, allowing modular settlements to be built on an accelerated basis on sites not encompassed by natural or historic protection. These approaches provide much needed shelter for vulnerable populations but they are often low-quality, have a short lifespan, and result in negative impacts on surrounding neighbourhoods. At the same time as these measures, a fund for the reconstruction of damaged properties was established, allowing many displaced people to return to their hometowns and recover their lost property.

Once the immediate housing needs had been met and the number of displaced people had decreased, the issue of national reconstruction in general, including the need for social housing, became an issue for public and government discussion. Ministers, in cooperation with non-governmental organizations (i.e. Cedos), began work on adopting a model for the affordable housing system. At the same time, existing settlements for displaced persons were placed under the supervision of the Camp Coordination and Camp Management institution, which resulted in the establishment of a list of

minimum standards required to be met by accommodation sites for resettled people. As a result of this work, 'Resolution 930' setting out guidelines for such settlements was adopted in consultation with the Ukrainian Council of Ministers (CCCM, 2023). The above discussion seeks to question the legitimacy of the construction of temporary settlements, the use of which often extends beyond the initial intended period. In eastern Ukraine, temporary settlements can be found, inhabited for 10 years by people who need more social support to find work and live independently. These settlements, located in the city outskirts or abandoned places, often disrupt spatial order and their conditions deepen social degradation.

The reconstruction process in Ukraine is intended to lead not to a return to the pre-war state, but to an improvement in the living conditions of the inhabitants. Resettlement estates have the potential to be a catalyst for change for long-term placemaking, increasing the level of attractiveness of the site for residents, visitors, as well as future investors.

3. MODULAR HOUSING

3.1. TEMPORARY HOUSING.

Interest in modular housing has grown significantly in recent times due to the increasing need to accommodate large numbers of displaced persons and refugees in a rapid manner. The hastily erected camps and towns are generally made up of housing containers, set up in high-density configurations, often with no planning, sanitary and social procedures. Fig. 1 illustrates the process of construction of a temporary collective site for Internally Displaced persons in Lviv.

Unfortunately, the seemingly axiomatic concept of temporariness has not been clearly defined until now and is often confused or used interchangeably with the concept of urgency.

UNHCR reports show that the average length of stay in temporary housing worldwide is 17 years. This means that there is now a generation of a group of people living in the world who have been raised in temporary conditions (UNHCR, 2020).



Fig. 1. Modular city in Lviv.

3.2. TRADITIONAL HOUSING VERSUS MODULAR HOUSING.

Modular construction can be defined as “the use of offsite construction (including a segregated area onsite) and includes all work that represents substantial offsite construction and assembly of components and areas of the finished project” (Subramanya et al., 2020).

Modular solutions in the building industry were originally started by the modernists in the 20's and 30's last century as a response to demands of the recovery of post-war aftermath and process of rapid urbanization and industrialisation (Buschfeld, 2017). The industrialized construction gained their high popularity in the 60's of the 20th century in the form of mass production of large-scale prefabricated elements assembled on-site (Fig.2 and 4) (Malaia, 2020). However, in the environment of a centrally steered economy and restrictive housing standard regulations all dwelling blocks were highly standardized without any adjustment possibilities.

Throughout the years the modular construction was perceived as a low-cost solution and contrasted against traditional tailored-to-particular-demand on-site construction methods. This difference has resulted in a deepening of perceptions of housing conditions depending on how they were built and the resulting scale (modular construction was intended for big scale of investment whereas buildings constructed in a traditional way gained a unique appearance). As effect, this perception led to an increase of social differences and unfair land contribution visible in land values (Subramanya et al., 2020).

The reason for this disproportion was lying however in the quality of both construction methods. Modular construction requires careful synchronization of the individual components and therefore efficient communication between their manufacturers. Due to previous technical considerations, this has not always been easy to achieve. In addition, modular housing was meant to respond to the needs of mass accom-

modation, so it was most often centrally funded and the amount of resources put into it was severely limited. Large differences in construction quality, housing standards and location led to a move away from modular to traditional housing in the second half of the 20th century in the capitalist economy as the wealth of the citizens increased.

However the experiences showed apparent disadvantages of traditional housing construction, especially when the need for rapid accommodation is concerned. Traditional construction methods require an extended on-site process. They cause less efficient use of materials and increased waste. They also require more manpower, offering dangerous working conditions. As a result, a large number of low-skilled and underpaid laborers are employed to work in health-threatening conditions. Traditional construction has a high rate of accidents resulting in disability or death (Subramanya et al., 2020).

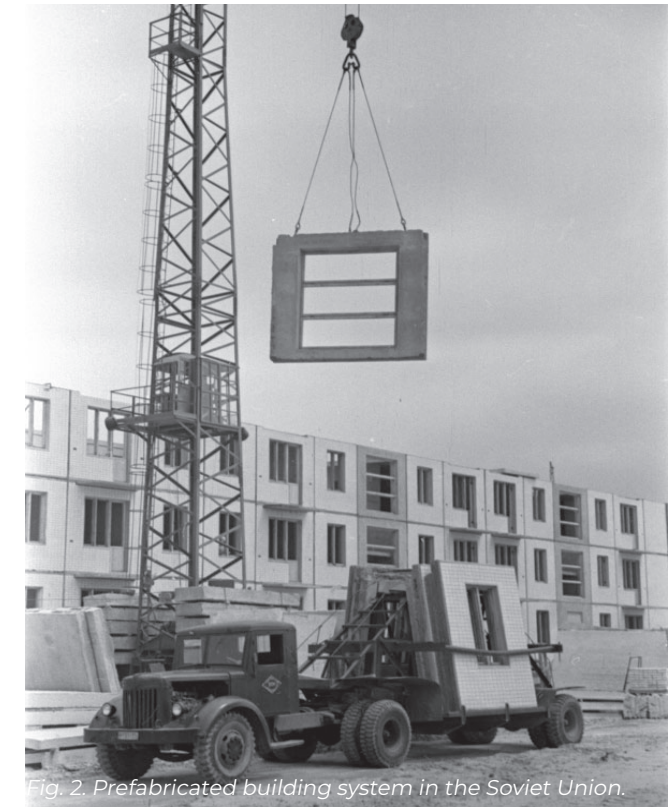









Fig. 2. Prefabricated building system in the Soviet Union.

3. MODULAR HOUSING

ADVANTAGES:

-  Energy efficiency in construction process
-  Cost and time efficiency due to off-site production of components
-  Higher rate of safety on site
-  Easy transportation
-  Easy construction and dismantling process
-  Possibility of reuse of single elements
-  Possibility of implementation of innovative technologies

DISADVANTAGES:




-  Rigid and inflexible arrangement solutions resulting from mass production
-  Limited temporality of use
-  Low technical quality of previously implemented modular systems (i.e. prefabricated systems in countries with centrally steered economy)

Fig. 3. Advantages and disadvantages of a modular system.

3.3. CONTEMPORARY MODULAR SYSTEMS.

Modular construction, considered as an innovative method that allows the rapid building process whose parts are manufactured off-site, has some advantages and disadvantages listed on Fig. 3. This solution is intended to allow for a fast construction process, a higher quality standard by implementing innovative technologies, allowing, on the one hand, optimisation of production and, on the other, ensuring the highest possible living conditions in line with the up-to-time expectations. Modular approach to the construction industry results in high cost, time and energy efficiency.

Implementing modular building systems allows to spare up to 40% of construction time, 10% - 25% of construction costs of projects, independence on weather conditions during the construction process and 80% increase of safe-

ty rate (Subramanya et al., 2020). Modular technology also introduces many utility advantages. Buildings and their parts allow for easier transportation, faster construction and dismantle, flexibility in terms of internal arrangement and - consequently - flexibility of use. Such buildings can be constructed in a variety of locations and urban configurations, increasing their wide applicability. They therefore represent a versatile and utilitarian solution.

Development of innovative engineering methods as well as communication technologies contribute to an improved correlation of components and wider customization of the final product (Salama et al., 2017). Application of modular buildings or their elements in consistent configuration is a guarantee of the visual unity and coherence, compositional legibility and functional continuity.



Fig. 4. Construction process of prefabricated buildings in the Soviet Union.

3. MODULAR HOUSING

3.4. APPROACH TO MODULAR SYSTEMS IN CONDITIONS OF LIBERAL MARKET ECONOMY.

Modular system is a collection of building blocks that can be configured in different ways, adapting for different customer needs (Martin, 2024). The system makes a solution to set off production which combines two allegedly opposite goals: optimization of production cost (cost efficiency) and customizing the final products to the needs of the final customers.

All products included in the production process need to be subdued to an imposed modularization - tool to subdivide the product in a logical way that provides both economies of scale and the ability to create different configurations for increased value for customers (Martin, 2024). Thus, requirements of the highly competitive liberal market imposed a new organizational character to modular production. A term "modules" has been substituted by "modularity" which indicates the possibility of configuration of numerous combinations with a given number of components (Salama et al., 2017). The Modularity of a product is a measurement of how configurable it is, meaning how many combinations you can build with a given number of building blocks (Fig.5) (Martin, 2024).

Developing a successful modular system balances between standardization - mass production of a limited number serial products which ensures profitable production, and customization - possibility to assemble the final products of a wide range of smaller parts that constitute a coherent unity forming the final product. The process of configuration is illustrated on Fig. 6. The final product is a result of configuration of a number of components that need to correlate with each other. However, this solution allows to create a specific product meeting precisely required demands.

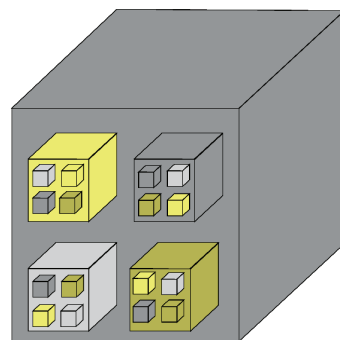


Fig. 5. Diagram of modularity in the modular system.

The final customized product is an effect of a chain of choices. Fig. 6 illustrates a process of configuration by entering the following steps in the decision making process. Therefore modular solutions can bring new values into the production process. Creating a system of independent, reusable, and interchangeable modules make the configuration of the components more efficient and truly agile by improving their efficiency, lifespan and relevance to given conditions (Martin, 2024). Old modules can be replaced with more modern ones, without having to dismantle the entire system.

Contemporary model of modular production sets up some challenges related to the appropriate design of the production network which becomes extended to numerous factories, dispersed over various parts of the country/ continent/ world (Salama et. al, 2017). Nevertheless it offers multiple advantages embracing cover-

ing of the market needs, utilizing local resources, deconcentration of the industrial locations and boosting local employment. Diversification of production sites gives also an opportunity of incorporation of vernacular or traditional techniques into a modern system of elements, extending it of locally available elements or materials. Therefore, a modular approach to the building industry can empower the economy, provide large-scale accommodation and offer an opportunity to customize final dwellings to specific needs.

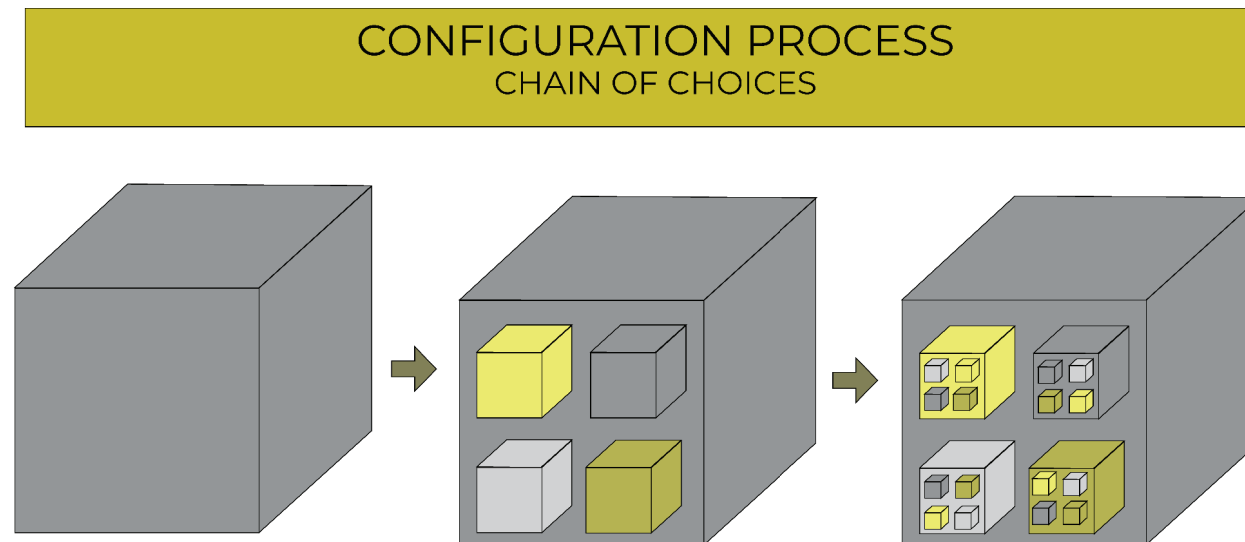


Fig. 6. Diagram of configuration in the modular system.

4. PUBLIC PARTICIPATION

4.1. DESIGNING AND OBJECTIVES OF PUBLIC PARTICIPATION

Following this pattern, an efficient model of citizen participation can be designed as communication relying on the chain of choices between final users and the producers/ deliverers, moderated by the organizing body (municipality) (Fig. 7). The strategy derived from the HCI (Computer Human Interaction) can be used in the form of online or paper surveys with multiple choice regarding equipment of the shared places. The participants will follow a tree-diagram of choices which leads to determining the customized final product.

The starting point in the process of public participation is defining the social actors, their position in the creation process, formulating their problems and demands, and designing the system suggesting a range of achievable solutions. The successful operating system of communication between investors (entrepreneurs) and customers requires responding to the needs of the latter and thus needs establishing efficient connections between properly formulated requirements and proposals of the solutions.

Citizen engagement is crucial in the place-making process since the collaboration can give a multidimensional and participatory vision of the final goals (Menezes et al., 2024). Citizen collaboration builds a foundation for three main objectives creating the place quality:

- “Community attachments” creating or strengthening the sense of connection or belonging, loyalty and satisfaction;
- Clarity in space perception by the specific distinction/ destination of the space;
- Depth of human experience in the place.

4.2. LEVELS OF CITIZEN PARTICIPATION.

The intensity of community involvement was classified on the Arnstein's ladder representing different degrees of perception of the community's influence on the possibility of changing the environment (Ellery et al. 2019). The following rungs are listed on this ladder:

8. Citizen Control
7. Delegated Power
6. Partnership
5. Placation
4. Consultation
3. Informing
2. Therapy
1. Manipulation

The bottom rungs: Manipulation and Therapy perceived as non-participatory levels of engagement regard the community members as spectators displaying passive attitude toward the surrounding. Despite their notified presence, residents do not have any impact on their sur-

roundings. Often, on the contrary, they themselves are subject to being shaped by the environment in which they live in. This process can be positive or negative depending on the qualitative characteristics of the neighborhood.

Informing, Consultation and Placation refer to the customer attitude, a position primarily oriented towards the reception of services. This relationship also requires the establishment of a service provider in the form of a professional decision-maker in terms of environment management. It also creates the risk of strong polarization between the two parties, leading to conflicts of interest, which may or may not prove destructive to the achievement of satisfactory change outcomes. This type of relationship can be seen in the existence of housing cooperatives responsible for maintaining the appropriate technical and aesthetic condition of housing estates and buildings. Residents who are members of these cooperatives pay rent and in return demand an appropriate level of maintenance of their place of residence.

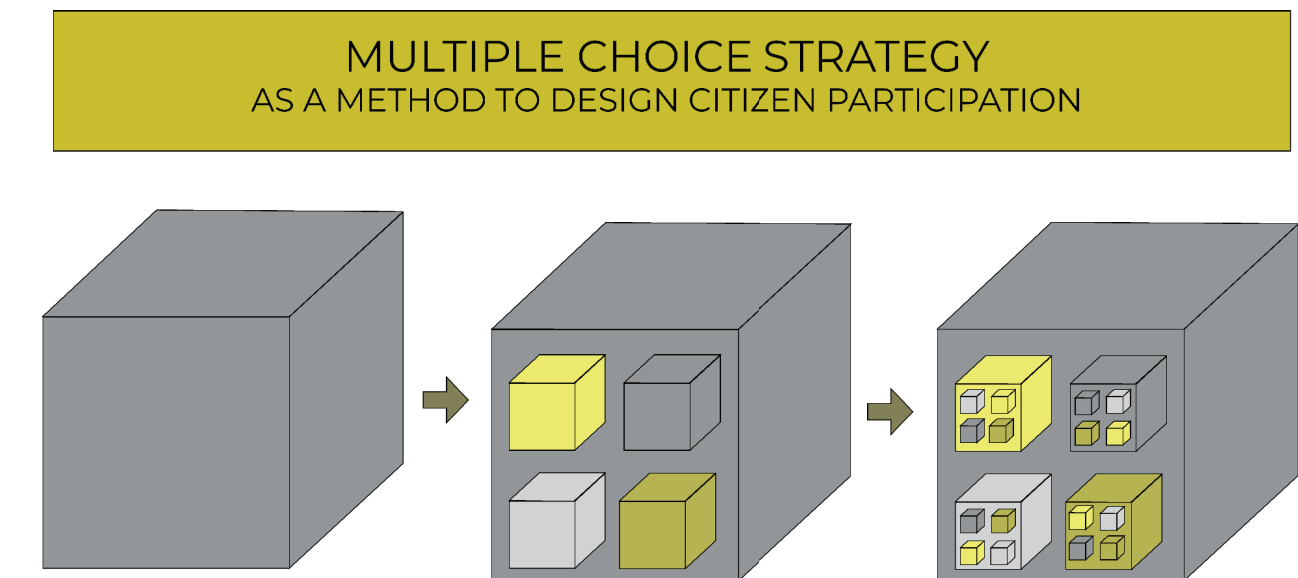


Fig. 7. Diagram of multiple choice strategy.

4. PUBLIC PARTICIPATION

Their involvement is often limited to the exchange of correspondence and there is no manifestation of personal participation in the process of changing the environment. This may be due not only to the residents' lacking willingness to make an effort, but also to the high level of bureaucracy that clearly defines the division of social roles within the neighborhood unit.

Partnership, Delegated Power and Citizen Control are the highest levels of community engagement. In order to be realized, they require the establishment of institutional entities, such as an association or union, and the introduction of certain procedures. This level requires a certain degree of civic awareness, which is most often only demonstrated by a small group of residents' representatives. Unfortunately, a conflictual polarization between the initiator group and the consumer oriented group of other residents can often be observed.

The process of placemaking supported by the community engagement can be divided into three phases: Inspiration, Ideation and Implementation. Launching the entire process inspiration stage can be considered as a kind of community assessment using techniques such as group interviews, surveys, community activities, and immersion within the community (Ellery et al. 2019). "The Inspiration phase is about learning on the fly, opening yourself up to creative possibilities, and trusting that as long as you remain grounded in desires of the communities you're engaging, your ideas will evolve into the right solutions" (Ellery et al. 2019, after: IDEO, 2015).

4.3. PROSPECTS FOR DEVELOPMENT OF CITIZEN PARTICIPATION IN UKRAINE.

The process of encouraging the citizens participation in public issues has been launched by the Non Government Organisation CEDOS under the title "Noone left behind": Civil Participation in Hromadas Recovery Planning " and targets the municipalities with established IDP Councils and being in the process of developing the Complex Program of Supporting IDP (Khelashvili et al., 2023).

Multiple non-governmental organizations cope with the problems of recovery of Ukraine, outlining new housing policies, refurbishment of public places and implementation of sustainable urban strategies. ReStart Ukraine from Kiev deals with post-war waste management and finding solutions for the current housing crisis. Urban Reform from Kharkiv promotes quick interventions in creating public spaces and sport facili-

ties using tactical urbanism tools. Metalab from Ivano-Frankivsk searches for new solutions for accommodation of IDPs by converting existing buildings into premises for them. They also arrange start-ups aiming to maintain and encourage traditional crafts with coexistence with new technologies. Urbanyna from Kiev elaborated on an Urban Recovery Guide for Ukraine. The scope of their interests includes researching neighborhoods, designing public spaces and creating street objects. All those organizations have a big capacity and potential to get engaged into the process of establishing new IDP premises as well as to play a coordinating and mediating role between the authorities, investors, residents and resettled persons.

5. OBJECTIVES AND PRINCIPLES OF PLACEMAKING



Fig. 8. Diagram of placemaking process components.

5.1. PLACEMAKING OBJECTIVES

When we talk about configuration of a building or a public space with involvement of citizen participation, we speak about placemaking. Placemaking is a set of actions intended for making a place better, safer, more attractive, attendable and beneficial for its users, illustrated on Fig. 8 (Ellery et al., 2019). The actions consist in application of a certain design in order to strengthen the visual effect of the site and attract the interest of potential users.

Determining the nature of placemaking comes from a site analysis and requires the involvement of professionals. On the other hand, however, placemaking is an initiative that opens up the opportunity for social involvement of the local community as well as potential users of the place.

The main objective of placemaking lies in enforcing connections between the community and the place. Placemaking can therefore be a grass-root, place - based process which involves the participation of the local community and the sharing of the benefits generated. We can thus assume that it will contribute to the increase of democratic values, socio- environmental awareness and social inclusion within the community. Concept of placemaking is revolutionary since it claims a view at a public space from a different angle and perceives it as a “connective tissue” of communities (Fortuzzi, 2017).

Placemaking is considered as a successful strategy used for urban revitalisation and restoring interactions between humans and their environment. Those interactions are fundamental to establishing decent conditions of living, working as well as a sense of belonging.

The method of placemaking consists in urban design aiming to deploy new elements, building new experiences, purposes, histories, opportunities and contributing to create a new culture of the place. Such as, they should enhance the emotional connection to the place perceived as affordable, legible in the context of the district or the city, satisfactory and bringing

new chances and opportunities (Menezes, 2024).

The fundamental strategy in placemaking consists in providing legible and friendly procedures to the potential stakeholders and users to enable their active participation. It is crucial to create a “friendly, horizontal and qualitative approach to engage people and stakeholders in an immersive process to the territories re-signification” with an aim to “inspire people and involve them in reimagining territory and turning it into a better place” (Menezes, 2024).

According to Henri Lefebvre “The right to the city is far more than the individual liberty to access urban resources; it is a right to change ourselves by changing the city” (Fortuzzi, 2017). It means that a city is not only a system establishing the rules for people to obey. The citizens have a right to the city and shaping the environment they exist in. Public spaces are a “neutral ground”, where people may gather freely, feeling at ease, without playing the role of host (Fortuzzi, 2017).

Creating settlements for Internally Displaced Persons can be used as a factor of placemaking by bringing mutual advantages for both existing residents and the newcomers. In this case, the process of creating a new estate needs to be preceded by investigating the potential of the place, providing knowledge of the site, defining its social, cultural and built resources. The target users of the settlement will be the inhabitants of existing residential buildings, displaced persons and the municipality coordinating the process. Thus, establishing the objectives makes it necessary to respond to the needs and requirements of the new settlers in order to maintain them there and encourage them to discover new opportunities for their family and professional lives.

5. OBJECTIVES AND PRINCIPLES OF PLACEMAKING

According to Tom West, Snyder & Associates Landscape Architects, placemaking needs to obey four principles, illustrated on the Fig. 9 :

1. Image and identity of the place by a leading topic: This objective needs to subdue it to one semantic category in order to define the general destination of the place, leading topic, finding main and supplementary functions which allow to create a wide offer of services within the capacity of the main defined sort activity.

2. Features attracting attention and interest of a wide range of visitors: This objective opens an opportunity to implement mixed-use functions within the existing built environment. This can be achieved by reusing existing elements of the place, redevelopment of existing buildings or their parts (i.e. ground floors), as well as by new investments.

3. Enforcing accessibility of the place by a wide range of transport modes, prioritizing pedestrians: This objective imposes the necessity of creating or enforcing the pedestrian connections by making places to stop, rest or hangout. Improvement of walkable connectivity, inherently limited in terms of the distances covered, requires enhancing the network of streets and creating safe and accessible transportation hubs.

4. Outlining the boundary of the place: This objective can be achieved by distinguishing and differentiation between public, semi-public and private spaces. This can be done in multiple ways. One of them is framing existing courtyards by new buildings which opens new investment opportunities. The other one can be visual labelling of the boundaries by distinguishing the floor finishings or using existing pavements designating the usable area and locating strongly attracting facilities in the middle of the spot.

The objective also includes the possibility of reshaping streetscapes by creating their legible frontages which can be a prospect for new investments and functional diversification.

The boundaries can be outlined also in a non-physical way, by contrasting occupied spaces and voids.

The boundaries need to constitute clear and legible space information for the users. Nonetheless they should be established in a friendly and inviting manner. Thus, the common fences should be replaced by small service buildings playing the same space role but consisting of a more attractive element of the place.

All objectives mentioned above can be complementary to each other. For example, implementing mixed-use functions, entailing constructing new buildings can simultaneously serve as a tool for setting place boundaries.

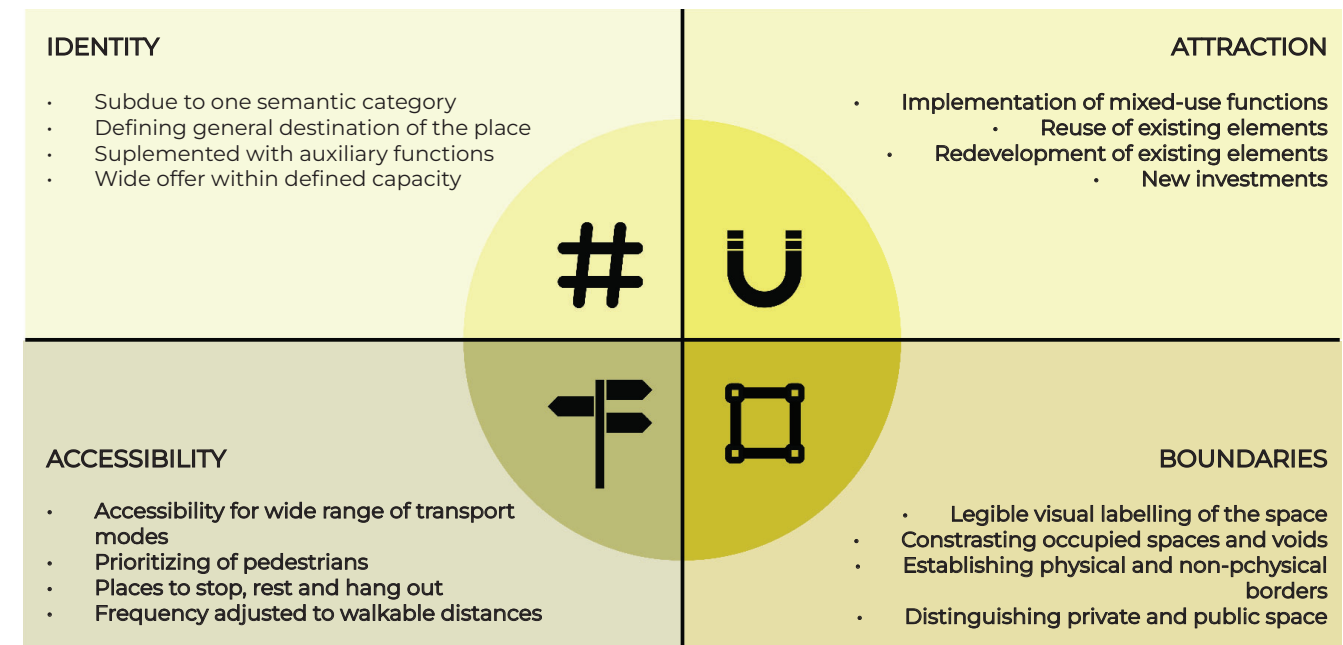


Fig. 9. Diagram of placemaking principles.

5. OBJECTIVES AND PRINCIPLES OF PLACEMAKING

5.2. DYNAMICS OF THE CITY TRANSFORMATION

The city takes time.

It goes through a transformation process made by internal factors, like aging of building substances and civil infrastructure, as well as external, functional, environmental and visual solutions becoming obsolete. This has a strong impact on the population distribution and as effect and economic value. Some of the places undergo degradation, for others the decline can be a triggering point for a new reshaping of the area and make it an innovative place.

However, in the transformation process there are various dynamics of changes. The built structure is subdued to a long time cycle according to the lifespan of the materials. The environment formed by them acquires permanent physical traits of a durability exceeding mostly human life.

The other dynamics is determined by the span of Urban Area Growth. According to the theory of urban dynamics by Louis Edward Alfield, the process of urban growth can be displayed in a form of a S-shape graph, shown on the Fig. 10, where the initial and terminal phases of a city are decelerated whereas the phase of growth is rapid and dramatic in the velocity but short in the time span (Wanga, 2024).

The initial phase requires a profound analysis of the site in terms of its potentials and constraints. The analysis entails investments aiming at increasing the land value and attractiveness. This initial phase is burdened with the risk of inaccuracy of the initial evaluation, which may result in the unprofitability of the investment.

Only the acceleration phase becomes a test of the accuracy of field assessment, resulting in increasing interest and an influx of people. This phase is characterized by some self-stimulation, can be considered self-fuelled and does not require too much external expenses. An important feature is the large share of the newcomers'/ residents' own initiative in regulating the new

environment. They decide on the shape of the new environment, available services and equipment of public spaces.

Over time, however, this collective initiative fades, is not taken up by the younger generation or more stimulating places appear in the environment. Therefore, it is necessary to find new means to keep the place attractive. Again, there is a risk of misguided interventions that could be counterproductive.

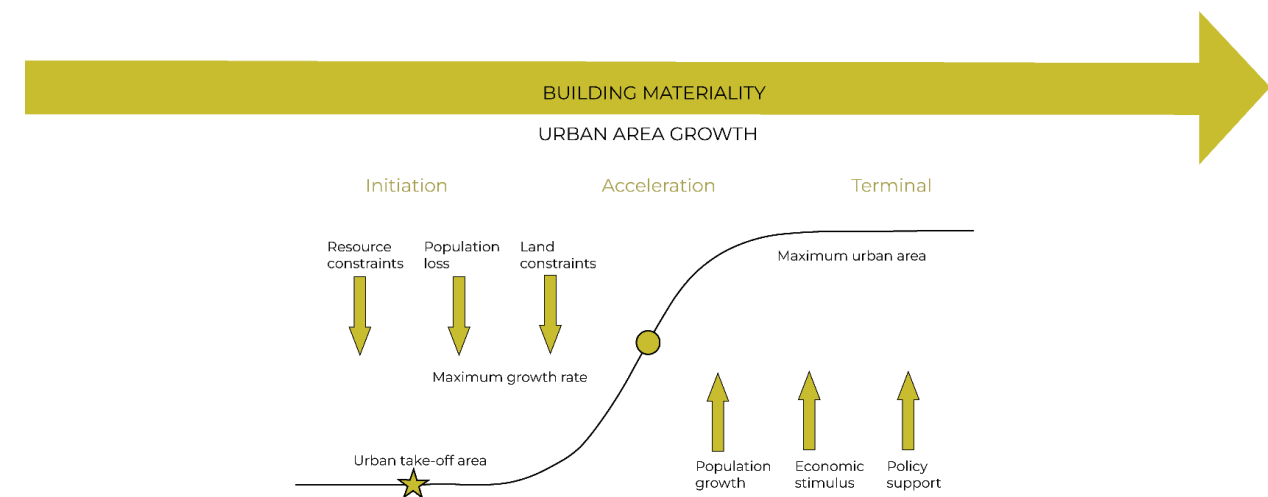


Fig. 10. S-Shape graph of Urban Area Growth.

5. OBJECTIVES AND PRINCIPLES OF PLACEMAKING

5.3. TACTICAL URBANISM

We also can recognize another dynamics of the way the buildings become perceived and utilized by its users and the society. This dynamics appears as volatile, strongly impacted by cycles of economic prosperity and political transitions, cultural trends and disasters. It is responsive to the current deficiencies. Fig. 11 illustrates their impact on the urban environment. Activities forming the dynamics appear as grass-root initiatives which have often a healing impact on the current insufficiencies.

Application of tactical urbanism elements allows introducing changes into an existing environment in a rapid mode and small scale. The interventions, illustrated on Fig. 11, are commonly flexible, inexpensive and not durable in time, serve seasonal goals and often take the form of a grass-root initiative. High frequency of changes can be a factor maintaining high rate of interest and attractiveness of the place. The visual performance of the place can be achieved using single elements or sets of elements that can be arranged using compatible modular elements.

Tactical urbanism can be practiced by a group of actors, like authorities, non-profit organizations, business, citizen groups and individuals. The actions are aimed to be affordable and seize a wide spectrum of participants. Thus, they can be connected with experimentation and testing of the capacity of territory. It can serve as a temporary laboratory for testing effects, financial costs, benefits and risk of collapse of the projects (Anderson, 2023).

Elements of tactical urbanism can be utilized as detectors of human needs and their trials to cover them. They act as a social enzyme in the urban structure since they have a stimulating influence on shaping behavioral patterns of the citizens in a given place and eventually affect the quality of the place.

Strategy of Tactical Urbanism aims at making a place attractive and focuses people's attention for a possibly long time.

"The tactical urbanism approach is defined by five main characteristics: activate the change, put forward answers for local planning, challenges short term tasks and realistic expectations, maximum results with little risk and the development of social capital between citizens and the public private institutions and organizations involved in the process" (Fortuzzi, 2017, after: Lydon, Bartman, Garcia, Preston and Woudstra, 2012). Those actions can be undertaken prior to significant political and financial commitments.

This is a general model of Urban Area Growth illustrating overall development of urban spaces in relation to the existing surroundings, however the situation in Ukraine looks different due to the presence of IDPs. Modification of the graph demonstrating the mechanism possible to be applied in current circumstances will be presented in the chapter 14.2.

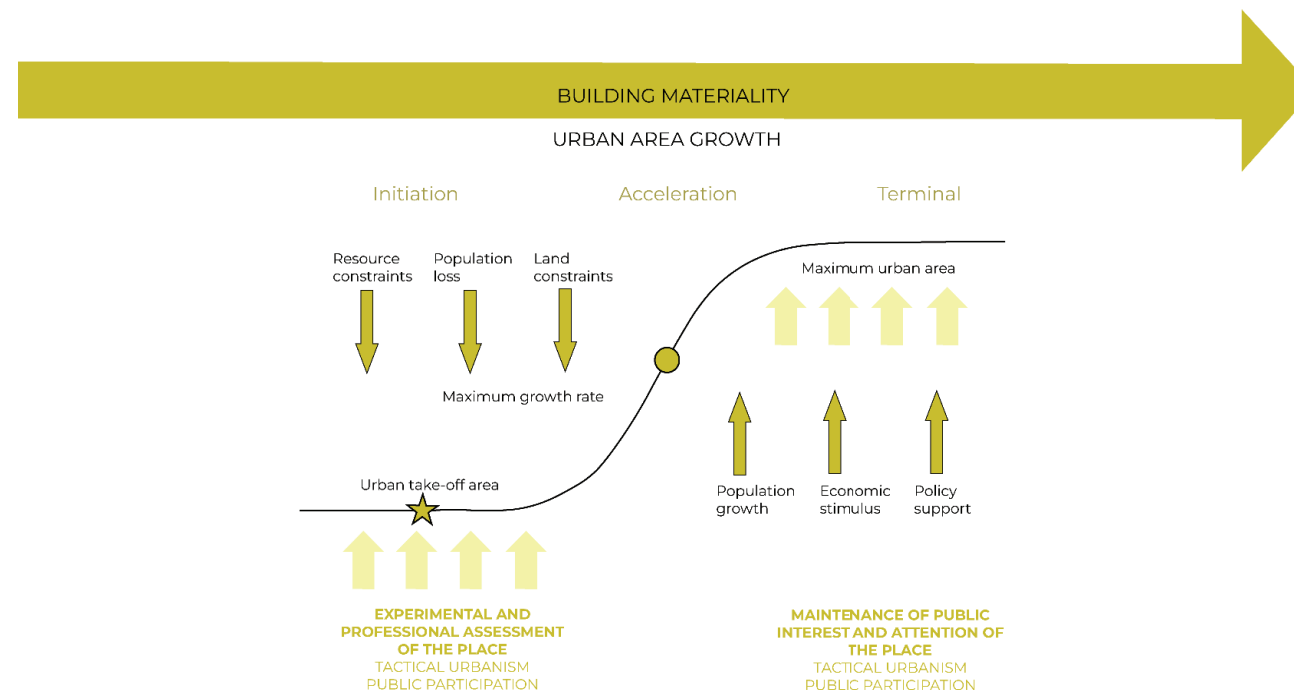


Fig. 11. S-Shape graph of Urban Area Growth and necessary actions.

Ukraine is a country of south - eastern Europe.

The territory of the country
603,626 km²,
20% of the area is being occupied by the
Russian Federation.

Population of Ukraine before the war
42 million citizens.

In 2024 the number of citizens dropped
to 30 million.

Ukraine can be considered as self-suffi-
cient in terms of energy supply and food
production.

The structure of energy consumption is
highly diversified, with no single energy
source taking up more than 20% of total
consumption.

46.6% of the country area is used as ara-
ble area for agricultural purposes.

25% of the world's chernozem (the most
fertile sort of soil) are located in Ukraine.



Fig. 12. Ukraine in Europe.

7. WAR AND FLUCTUATION OF INTERNALLY DISPLACED PERSONS

“Do you still consider us as ‘one nation’?
Do you still think you can scare us, break us, make us give in?
Have you really not understood anything?
Have you not understood who we are? What do we stand for?
What are we about?

Read my lips:
Without gas or without you? Without you.
Without electricity or without you? Without you.
Without water or without you? Without you.
Without food or without you? Without you.

Cold, hunger, darkness and thirst are not as terrible and deadly to
us as your ‘friendship and brotherhood’.
But history will put everything in its place.
And we will have gas, light, water and food... AND WITHOUT you!”



Fig. 13. President Volodymyr Zelensky.

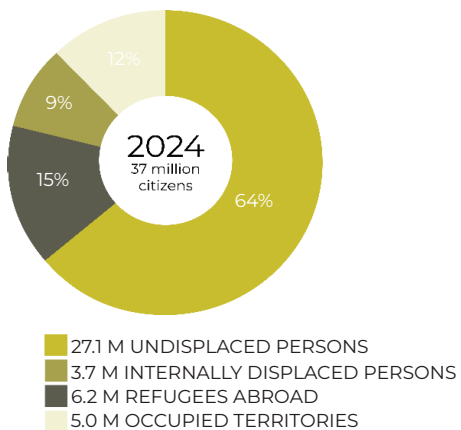
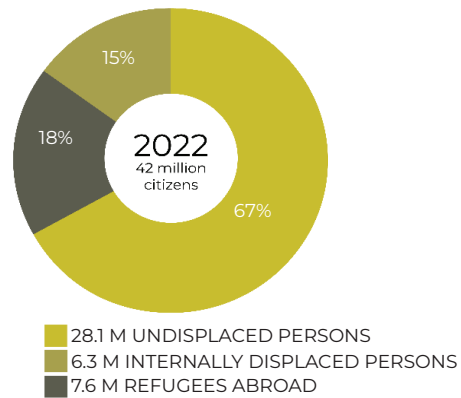
MARCH - APRIL 2014

Illegal annexation of Crimea
Occupation of eastern parts of the Luhansk
and Donetsk Regions

24 FEBRUARY 2022

The unprovoked full-scale invasion in Ukraine
launched by the Russian Federation

7. WAR AND FLUCTUATION OF INTERNALLY DISPLACED PERSONS



The condition of occupation and war entailed massive movements of internally displaced persons which assumed two forms: spontaneous migrations, motivated by war news and information from the front lines, and migrations forced by the administrative decisions of the authorities about evacuation of civilians (Jasinski, 2023).

However, the number of resettled citizens varied according to the stage of war, extent of territorial destruction and availability of humanitarian help in various Ukrainian cities. Diagrams on Fig. 14 show the fluctuation of Internally Displaced Persons changing over time. The map on Fig. 15 displays distribution of refugees in Ukraine.

We can distinguish three stages of war in term of warfares and resulting peoples' displacement.

Fig. 14. Population diagrams.

FIRST STAGE

Siege of two greatest Ukrainian cities: Kyiv and Kharkiv in February and March 2022, as a result significant outflow of 3 million refugees from Ukraine took place and 7 million (16.5% of the pre-war population) became internally displaced.

SECOND STAGE

Destruction of Mariupol, exploding Nova Kakhovka Dam, flooding Kherson area and occupation of the Enerhodar nuclear plant from March to June 2022, as a result an increase of returnees to western Ukraine was recorded and the number of internally displaced persons dropped to 6 million.

THIRD STAGE

Positional war along the front line, accompanied with coordinated, large-scale bombardments of critical civil infrastructure targets across Ukraine, as a result 6.5 million of Ukrainian citizens stay abroad, 3.7 million of internally displaced persons (UNHCR, 2024).

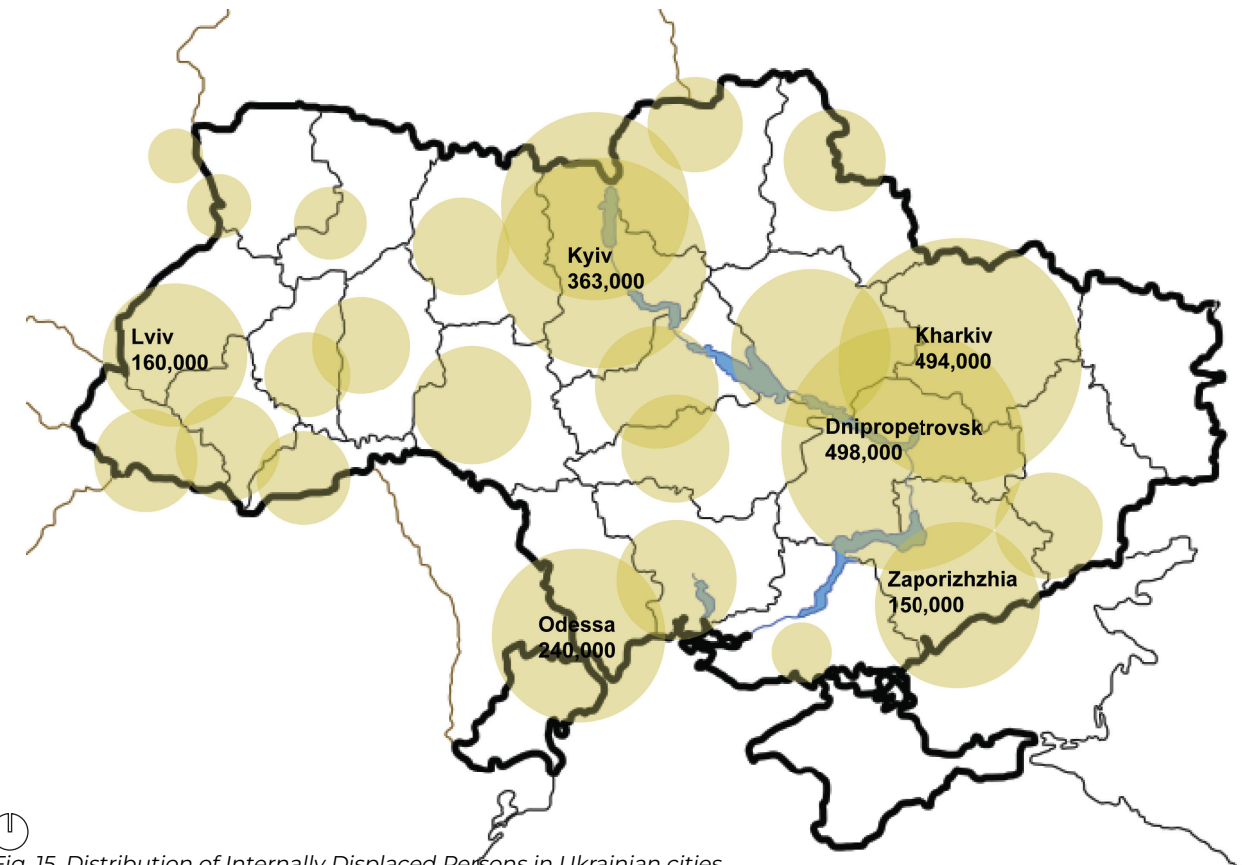


Fig. 15. Distribution of Internally Displaced Persons in Ukrainian cities.



Fig. 16. Dnieper cataracts.

8.1. GENERAL INFORMATION

Zaporizhzhia is the fifth biggest city in Ukraine (Fig. 17), located in its eastern part on the Dnieper river. The name Zaporizhzhia comes from 'poroh' - river cataract, because the city is located behind 30 cataracts at a distance of 70 km (Fig. 16).

The city occupies an area of 334 km². The population of Zaporizhzhya before the war outbreak was 750,000 inhabitants. The situation now estimates 600,000 including 450,000 permanent residents and 150,000 internally displaced persons.

Zaporizhzhia is considered as the fourth most significant industrial center in Ukraine which concentrates 65% of the productive capability and 43% of Zaporizhzhya region population. Due to well-developed sectors of ferrous and non-ferrous metal industries, mechanical engineering, chemical and construction industries the industrial production covers 17% of cast iron, 75% of high voltage equipment, 20% of metal constructions of the total country capacity (Zaporizhzhia Development Strategy 2028).

The city is known mainly from the metallurgist factories and advanced engineering enterprises: metal producer "Zaporizhzhia Iron and Steel Works "Zaporizhstal" PJSC, ferro-alloy manufacturer "Zaporizhzhia Ferro Alloy Plant" PJSC, manufacturer of special iron and alloy steel "Electric Iron and Steel Works "Dneprospetsstal" PJSC; unique Ukrainian manufacturer of metallic spongy titanium, producer of titanium ingots "Zaporizhzhia Titanium and Magnesium Integrated Works".

Motor Sich - the testing premises of aircraft and helicopter engines belongs to the most famous entrepreneurs of this kind in Europe, conducting assessment of motors for both passen-

Zaporizhzh Transformator delivers equipment for high voltage industry and recently has extended its production of wind mills components.

The city also houses production of Carlsberg beer based on Danish license.

Nevertheless, despite the favourable location of many production facilities, the rapid privatisation and transition process from post-Soviet to global economy requiring implementation of quality management and innovative technologies mitigating the environmental effects in all the areas of development, production is not always profitable. The unemployment rate in Zaporozhzhia before the outbreak of war was 14.6 per cent, out of which more than 50 per cent of the unemployed were people with higher education (Zaporizhzhia Development Strategy 2028).

In its quest for development, the city of Zaporizhzhia has challenges to overcome, the most important of which include inefficient location of the manufacturer and residential areas, small proportion of the areas used for environment-oriented, recreational, health-related, and tourist purposes, high level of environmental pollution, low environmental conditions, implementing alternative energy sources, manufacturing emission-free energy equipment. The strategy undertaken by the City Council aims to embark on a path of sustainable development based on harmonious transformation of the economy in the framework of energy-and-resource efficiency, deep differentiation based on services sector development, creative economy, bringing environment to the proper condition, and comprehensive promotion to preserve the city's population (Zaporizhzhia Development Strategy 2028).



Fig. 17. Zaporizhzhia in Ukraine.



Fig. 18. Khortitza Island.



Fig. 20. Dnieper Dam.

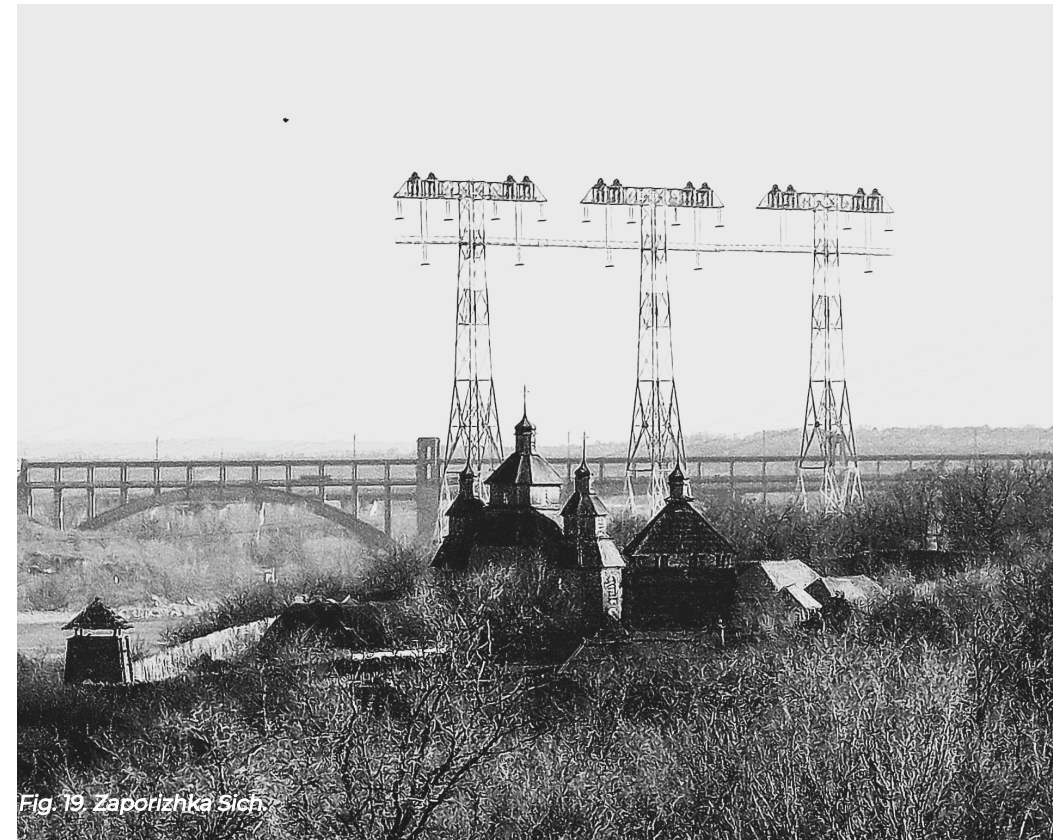


Fig. 19. Zaporizhka Sich.

8.2. CENTRE OF UKRAINIAN IDENTITY

COSSACKS SETTLEMENT ON KHORTITZA ISLAND

The city is perceived as a cradle of Ukrainian identity since the first settlement of Cossacks was located on the Khortitza Island on Dnieper (Fig. 18). Cossacks were a Nomadic nation organized in a military structure, who founded their first hetmanate on the Khortitza Island called Zaporizhka Sich (Fig. 19) in 1751 and took part in military campaigns in the form of paid



Fig. 21. Dnieper Dam.

DNIEPER DAM

Dnieper Dam (Fig. 20 and 21) built in 1927-29 is considered as an architectural and engineering masterpiece in constructivist style. The construction contains two hydro power plants, a shipping canal and serves as a linking part for a highway. Commissioned in 1932 Dnieper HPP-1 is the oldest hydropower plant of the cascade on the Dnieper River. Construction of the second stage (Dnieper HPP-2) was carried out from 1974 to 1978. The installed capacity of both power plants reaches 1,578 MW which covers with surplus the city's energy demand (Popliuiko, 2018).

8.3. CONSTRUCTIVIST ARCHITECTURE

Zaporizhzhia is perceived as a constructivist city with multiple exquisite buildings retained in original unaltered form presented on Fig. 22 - 25. The Constructivist style or Soviet Avant-Garde is often associated with the Stalinist regime, but this cultural stream actually developed earlier, in the 20' of the 20 century and was strongly shaped under intensive exchange of ideas between Soviet architects and the German Bauhaus (Buschfeld,



Fig. 22. Circus Building.



Fig. 24. Round building.

Constructivist art took on a new significance in the emerging workers' state. It embodied the utopia of creating a new society from scratch and a new individual within it. Modern architecture and urban planning provided a new tool for social engineering. The idea of communal living became firmly established in the minds of modernist designers. Leading a backward country towards modernity was one of the most important goals guiding the Constructivists involved in the construction of a new, communist Soviet Union (Ciarkowski, 2019).



Fig. 23. Propylaeum buildings.



Fig. 25. Commune house.

8.4. "SOTS MISTO" - "SOCIAL CITY" HISTORICAL CONTEXT OF INDUSTRIALISED METHODS OF HOUSE PRODUCTION

Rapid industrial development of modern Zaporizhzhya, triggered by founding the metallurgical plant Zaporizhzhstal and construction of the Dnieper Dam with two hydro energy plants, entailed demand for a number of employees and the need to provide them with a proper accommodation.

A response for new requirements and opportunities carried by industrialisation oriented economy, was expected to be brought by the modernist movement appearing after the November Revolution, known as Soviet avant-garde or Constructivism.

The avant-garde, often associated with the Soviet regime, in fact created a space for discussion about decent living conditions for the emerging working class, proclaiming socialist postulates of equality of all citizens, carrying international values and trust in industrial progress. Appearance of this new intellectual stream resulted in establishing Dniprobud, the architectural company lead by the architect Victor Vesnin, assigned with the task of designing a new estate for the Zaporizhzhian labour class, embodying modern ideas.

The result was the design of the Social City in the Sixth Settlement (Fig. 26 - 28). This estate serves as an exquisite example of utilitarian architectural, residential and urban solutions. Struggling with limited funds and high demand of standardisation of structural elements, Vesnin and his design team managed to develop new methods of industrial production, including prefabricated and modular elements from slag concrete for further assembly on the site. Constructed within limited financial possibilities, the housing units show sometimes a low technical quality.



Fig. 26. Social City.

Nevertheless, due to the industrial methods available in 20' of 20th century, they perform a human scale in terms of their height of 3-6 storeys. The notable landmarks include the Tower on the coke-chemical plant building, the Lavrov Houses, the Outpatient Town, the Kozliner Tower, the Round House, the Communal Houses, the Propylaea Houses.

Deficits in housing standards were compensated by the urban solutions considerably increasing the values of the space. In 1930, the Social City was awarded the Grand Prix in the annual Architectural Exhibition in Paris. In recent years, research has been conducted on Social City, which may help to include it on the UNESCO World Heritage List as a complex object (Buschfeld, 2017).



Fig. 27. Social City.

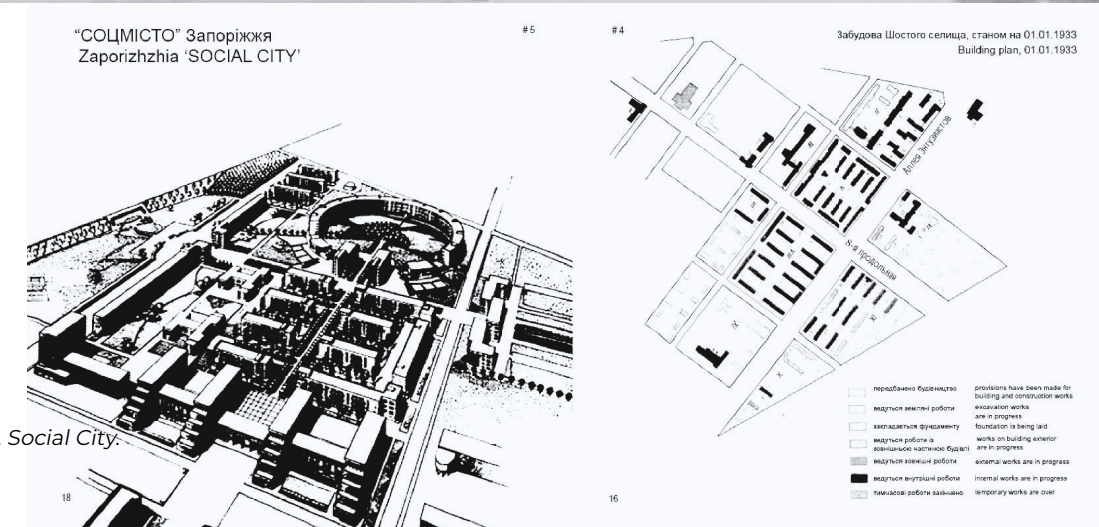


Fig. 28. Social City.

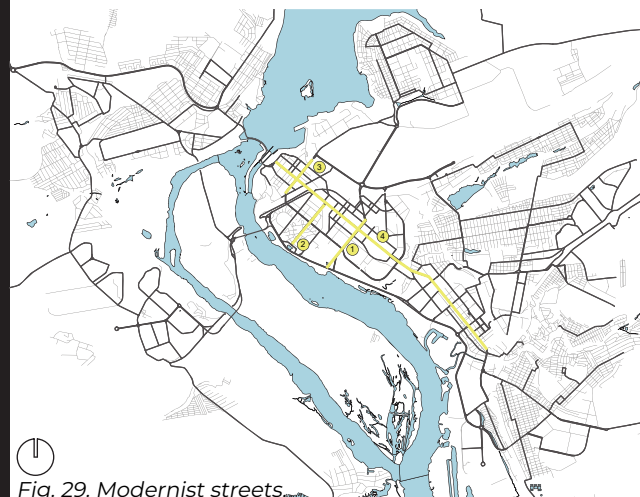


Fig. 29. Modernist streets

8.5. URBAN SOLUTIONS IN “SOCIAL CITY”

The need to optimize the production of residential buildings has often resulted in a lowering of their technical quality as well as their performance standards.

However, the quality of living conditions was visibly compensated by the urban qualities of the new neighbourhoods. Examples of this are the city’s most representative streets: Sobornyi Avenue, Matalurhiv Avenue, Maiakovsky Avenue and Shevchenko Boulevard (Fig. 29 and 30).

Despite being transit arteries designated for intensive motor traffic (two or three lanes in each direction), these streets are designed in a pedestrian-friendly manner. They are characterized by their human scale: the buildings forming the frontages are lower than those in the depths of the quarters. In the case of Matalurhiv Avenue, Maiakovsky Avenue and Shevchenko Boulevard, the vehicular lanes are divided by wide pedestrian walkways, enriched with greenery and small services to encourage their attendance by residents and increase pedestrian safety.

These streets are linked to parks, offices important for the functioning of the city, public facilities and leisure activities, making the city a living organism, accessible to citizens, providing numerous investment opportunities and intensively used by its inhabitants.

The validity of these solutions, introduced a century ago, is confirmed today despite the political and economic changes that have taken place over the past century.

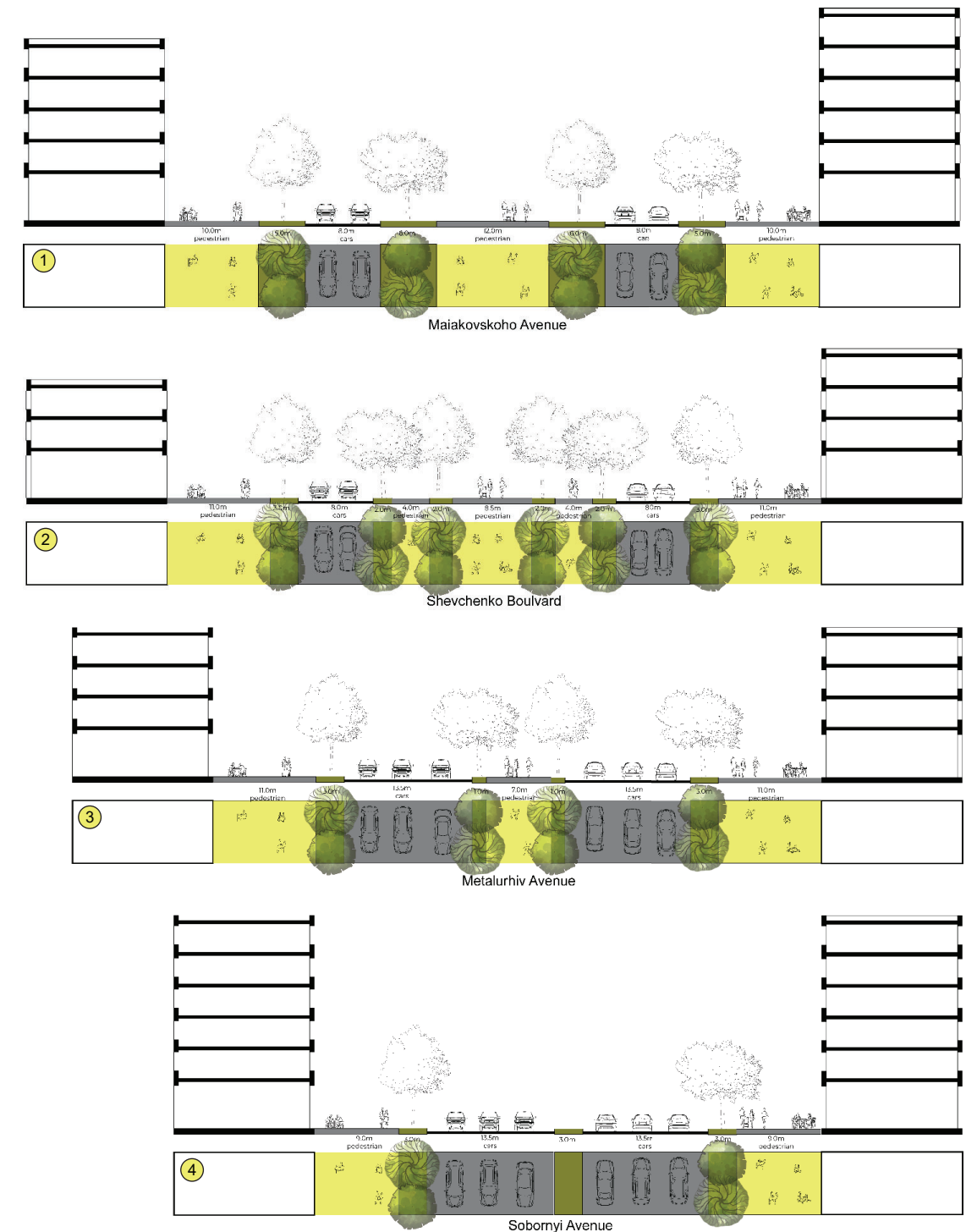


Fig. 30. Sections of modernist streets.

9.1. GENERAL INFORMATION

The Dniprovskiy District (Fig. 31) is inhabited now by approximately 150,000 people. The district is dominantly built with high residential panel buildings performing rather low technical conditions as well as one family houses grouped in quarters. The significant functions in this territory are performed by two factories of strategic significance: Zaporizhzh Transformator producing high voltage equipment and Zaporizhzh Kran producing steel cranes. Both factories offer multiple workplaces for inhabitants..

Rapid industrial development after the II World War in Zaporizhzhya, manifested by the establishment of two leading factories in the area on the right bank of the Dnieper river, combined with the massive relocation of population created new demands of accommodation. Simultaneously, the centrally steered economy of the Soviet Union, enhanced with the top-to-bottom imposed socialist ideology of class struggle and lack of effective tools of social communication resulted in the appearance of a new type of a monofunctional city with factories as an exclusive function forming factors.

That period can be regarded as the second historical phase of incorporating modular systems into the building industry which took place in the 50' and 60' of the last century as a process of recovering WWII aftermath and empowering the process of industrial development. In 1957 Nikita Khrushchev, the first secretary of the Communist Party of the Soviet Union launched a wide program of providing each family with a dwelling. In the Soviet Union, centralized production of modular prefabricated housing was launched in 2500 factories spread around the country. The most widespread system was K-7. The technology, advanced for the time, allowed for large-scale mass production of building components. As a result, large estates of apartment blocks were built, occupying huge areas of land.



Fig. 31. Map of districts in Zaporizhzhia.

New types of residential settlements emerged from this approach, characterised by massive construction of houses made with use of repeatable modular elements. Fig. 32 presents photos of the district built in using this method. High level of standardisation entailed covering the land with uniform-looking buildings and allowed to diversify them only in two types according to the heights of houses: 5 storeys and 10 storeys. Annexation of new territories for residential estates resulted in uncontrolled urban sprawl connected with creating monotonous environments, devoid of orientation nodes and amenities stimulating everyday life of the residents.

It is noteworthy that the estates incorporated the objectives defined by the modernists related to creating healthy living conditions by providing autonomous dwellings including all necessary facilities (kitchens, bathrooms), as well as access to green areas and sunlight. According to those postulates, division into monofunctional clusters (industrial, residential, recreational) reflected the regulation of working conditions and the separation of work and family life.

Nevertheless the areas prove to be prone to social degradation. This is caused not only by the use of obsolete technical infrastructure solutions, changing housing standards, but also by being detached from the main part of the city and the lack of complementary functions meeting the needs of the inhabitants and enhancing their development. Additionally, changes in property ownership and management following the rapid profit-oriented, "predatory" privatization process have left the spaces between buildings without proper management and in disarray.

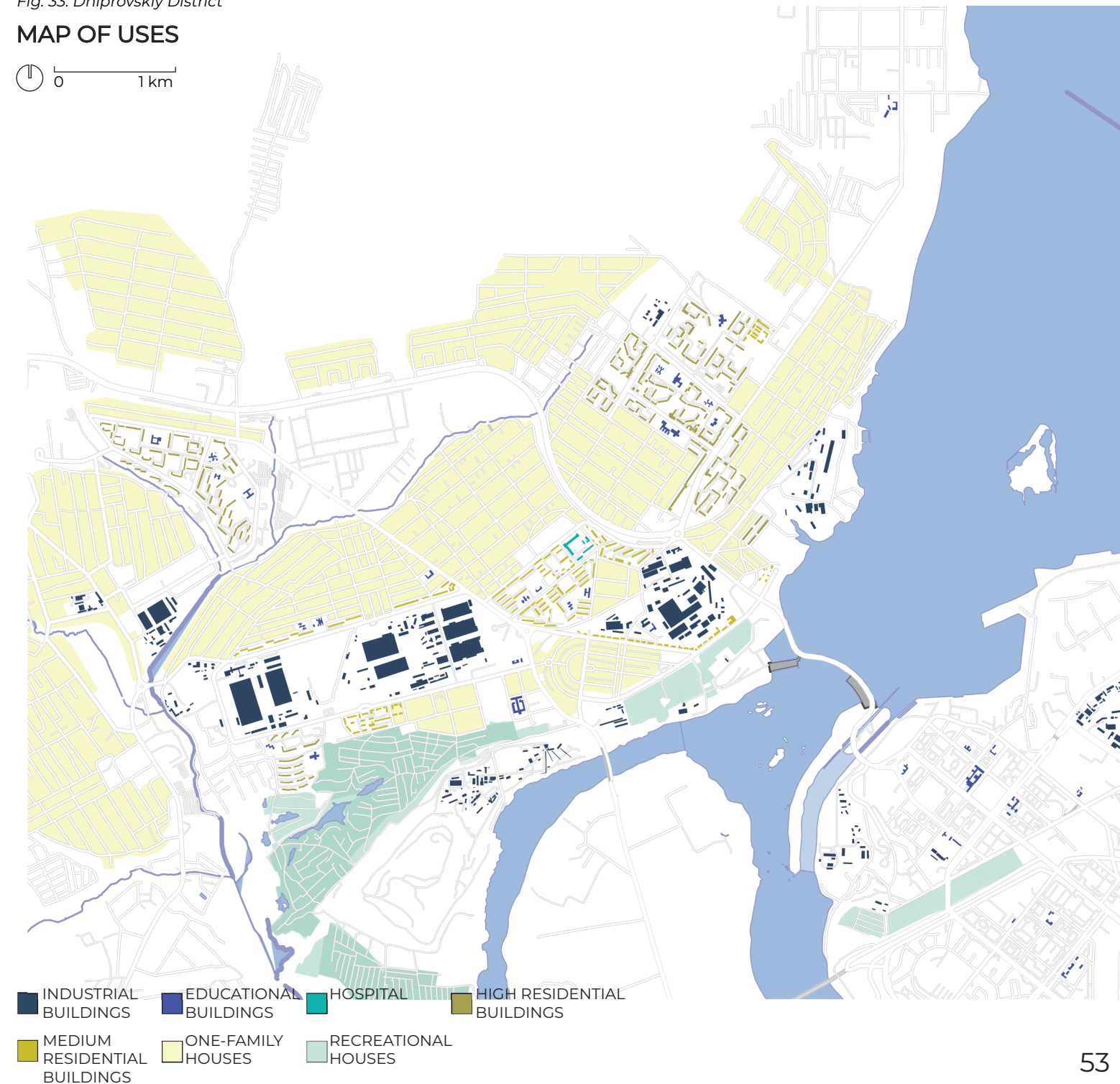


The environment of the district resembles a post-soviet monofunctional town arranged around a city forming an industrial enterprise. Dominance of industry with auxiliary residential function (“dormitory area”) results in monotonous spacial performance, with scarce socio-cultural life. The district misses distinctive public places, differentiated service clusters, walkable and cycling routes. There are no leisure facilities offering ways to hang out and spend free time. Industrial premises, due to their strategic position, are separated with high and solid fences from the surrounding which has a strong impact on the urban quality of the streets. Despite the abundance of greenery and distinctive spots the surrounding seems unconnected, depressive and devoid of human scale. It is also a favorable circumstance for increasing the unemployment rate and deepening social degradation. Fig. 33 shows the distribution of uses in the Dniprovski District.

Nevertheless the location of the city, presence of the natural resources and recreational destinations, location of office and service buildings on the boundaries of the industrial plots, as well as the dense network of public transport create many opportunities to develop.

Fig. 33. Dniprovskiy District

MAP OF USES



9.2. GREENERY ANALYSIS

Zaporizhzhia is a very green city. There are many places in the city with established green spaces for the use of residents, such as parks, tree-lined squares and rows of trees along the streets. A number of natural spots contain naturally preserved resources in Zaporozhzhia. The largest reserve is located on Khortitza Island, consisting of floodplains retaining wildlife with multiple species of animals, birds, plants and oldest trees (Fig. 34). The Verkhnya Khortytsya river valley running in the northern part of the district constitutes the second area sustaining natural ecosystems. Fig. 36 shows the greenery distribution in the district.

Dniproviskiy District was established in 1928 and areas of rural development were incorporated into its territory, which is clearly visible in the district plan in the form of extensive plains covered with single-family housing. Allotment gardens serve as an important part of this development and form an important part of the green areas in this part of the city.

Natural forests in its original forms vegetate the Dnieper river banks.

The parks woven in between the residential developments make a considerable proportion as an important component of the urban fabric. However, the maintenance and adequate provision of these public spaces proves a challenge for local authorities. Fig. 35 shows Enerhetikov park on the Dnieper River.



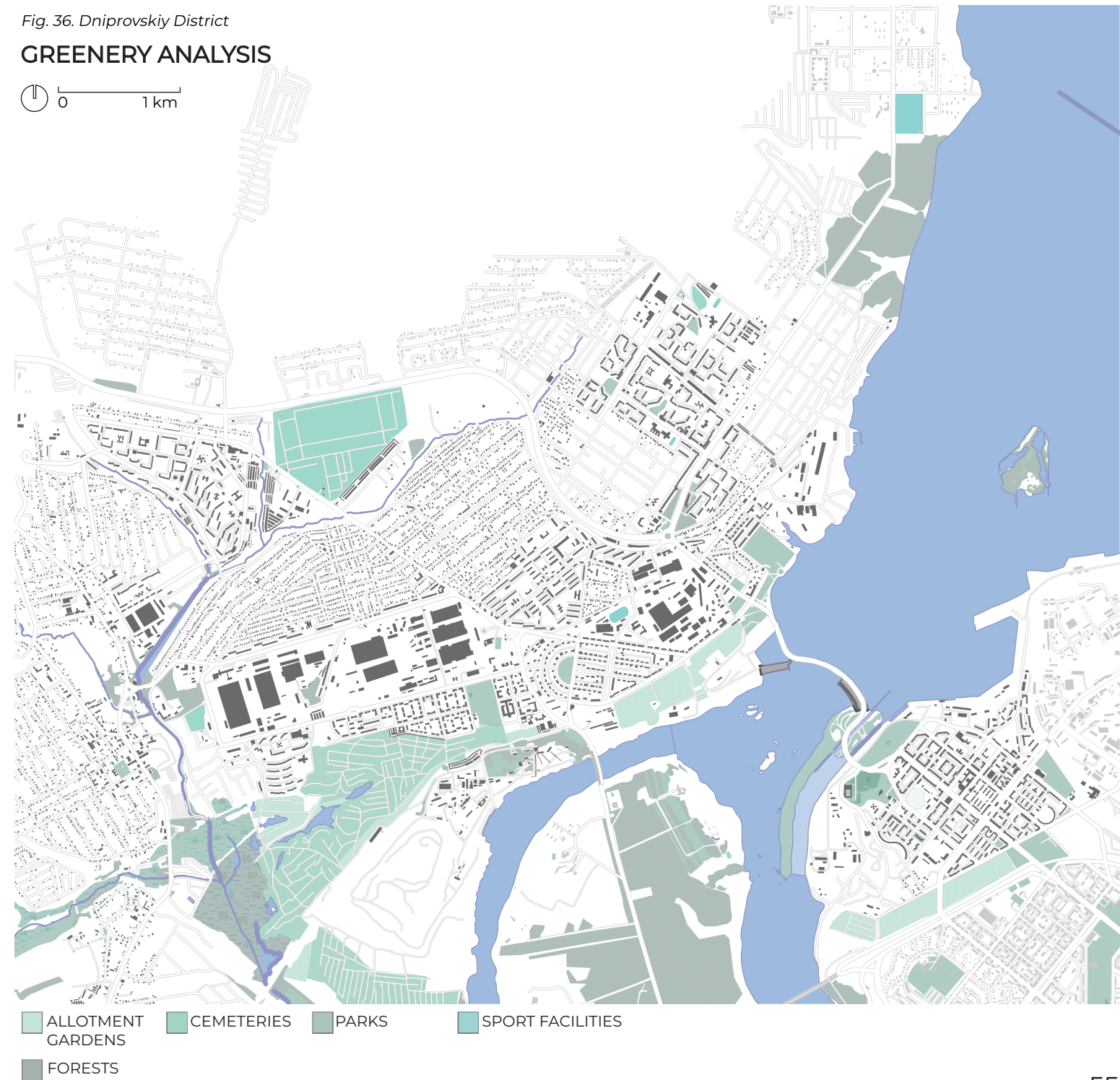
Fig. 34. Khortitza Park.



Fig. 35. Enerhetikov Park.

Fig. 36. Dniproviskiy District

GREENERY ANALYSIS



- ALLOTMENT GARDENS
- CEMETERIES
- PARKS
- SPORT FACILITIES
- FORESTS



Fig. 37. Petra Sahaydachnoho Street.



Fig. 38. Marshala Chuikova Street.

9.3. VEHICULAR CONNECTIONS

There are two distinctive transit roads intersecting at the roundabout that forms the city center in the district plan. One of the roads composed of Hrebelna Street and Kashyrske Hwy makes a prolongation of the route constituted by Soborny Avenue and the Dnipro Dam connection, and leads further in the northern direction (toward Dnipro city). The other road - Borodinska Street connects the district center with the estates located to the north.

City development plans consider extension of the existing street network in future. The soonest plans assume prolongation of Tovaryska Street and enhancing connections to the southern part of the district as well as creating a local network with Borodinska Street and Kakhovska Street (Comprehensive Plan for Dniprovski District). Fig. 39 shows the distribution of the vehicular roads.

The most significant alteration to the district will be brought about by the implementation of the bridge connection between Voznesenivskiy District and Dnieprovskiy District, incorporating the Sahaidachnoho Island, and providing a northern bypass descalating traffic congestions on the Dam (Comprehensive Plan for Dniprovski District). This investment will accelerate and positively influence the development process of the Borodinsky Estate.

Fig. 37 and 38 show the main streets of the district: Petra Sahaydachnoho Street and Marshala Chuikova Street.

Fig. 39. Dniprovskiy District

VEHICULAR CONNECTIONS

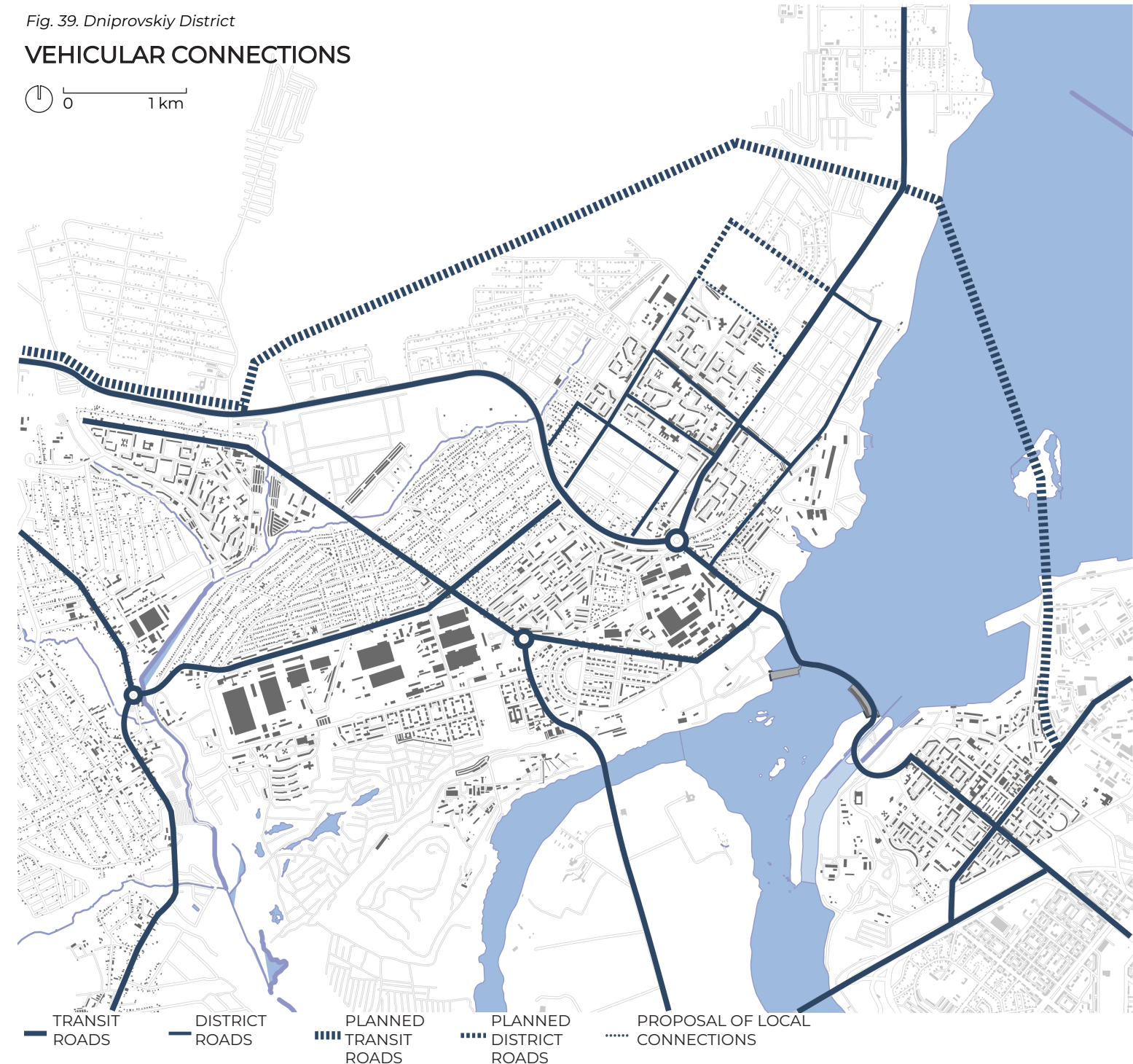
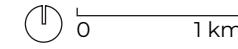




Fig. 40. Trolleybuses in Zaporizhzhia.



Fig. 41. Trams in Zaporizhzhia.

9.4. NETWORK OF PUBLIC TRANSPORT

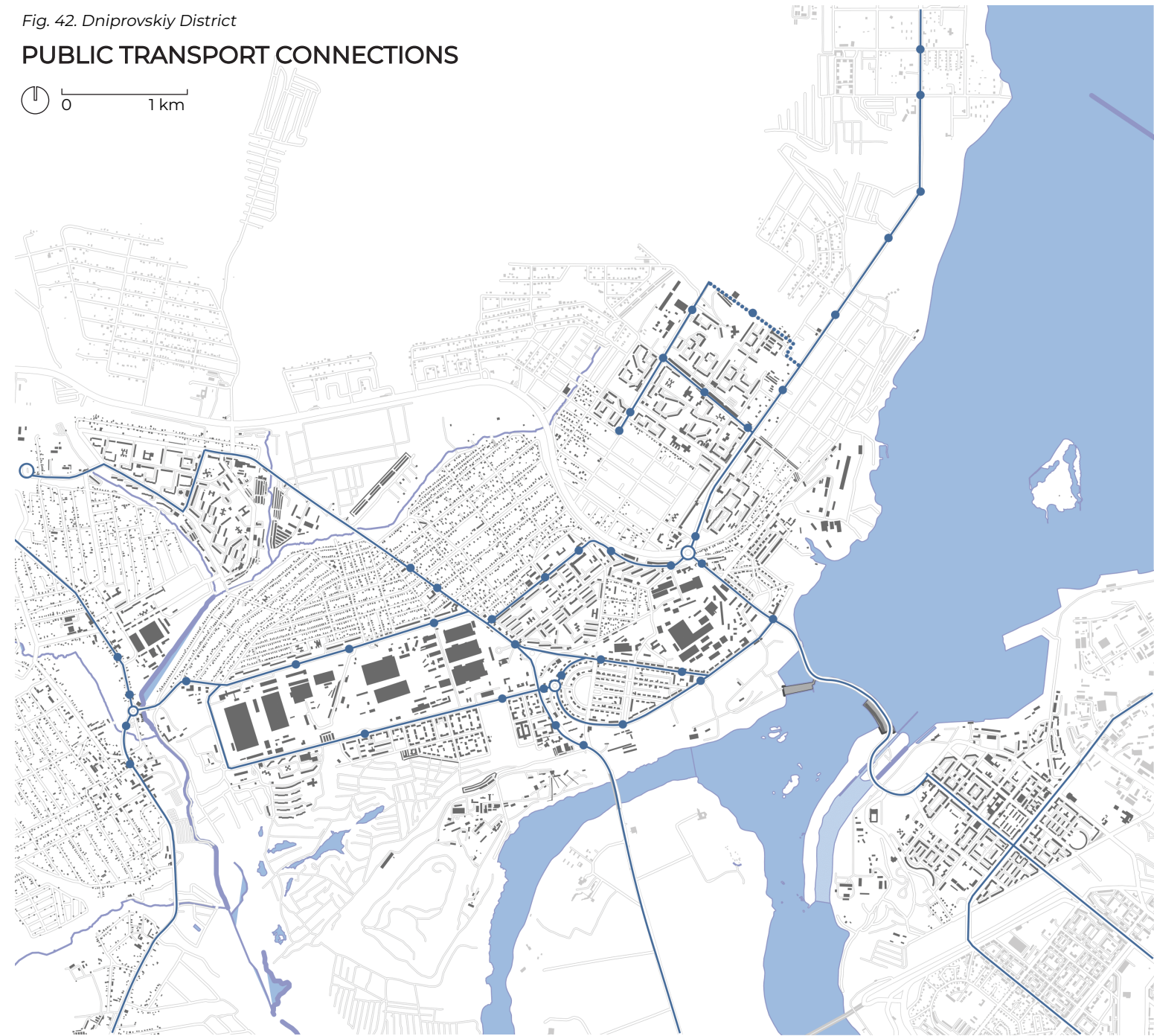
The network of public transport performs a high level of development and area coverage in Zaporizhzhia. It consists of various modes of transport including: buses, trams and trolleybuses. Traveling electric vehicles (trams and trolleybuses) is free of charge (Fig. 40 and 41).

All industrial and multi-family estates show efficient connections while one-family estates seem to be accessible only by using cars. Fig. 42 shows the distribution of the public transport.

It seems probable that extending the road network in future will entail further development of public transport.

Fig. 42. Dniprovskiy District

PUBLIC TRANSPORT CONNECTIONS



- PUBLIC TRANSPORT CONNECTIONS
- PROPOSED PUBLIC TRANSPORT CONNECTIONS
- PUBLIC TRANSPORT STOPS

9.5. PEDESTRIAN AND CYCLING ROUTES

Unfortunately there are no distinctive pedestrian and cycling routes in Dniprovski District. However the district has a potential to develop them by connecting and incorporating specific spots for hanging out and places to be turned into commercial areas.

The visible pedestrian segment can be recognised in Borodinsky Estate (Fig. 43 - 45). The route has been enforced by small catering services (street coffee kiosks) and leads to the open-air market. It also joins educational and daily-care premises (schools and kindergartens). It seems justified to prolong the route both northwards and southwards to arrange the connection of small on-family settlements (now the only connection is made by a car road - Medychna Street and Borodynska Street) as well as establish a walking/ cycling route to the District center. The route could indicate the future location of attendable amenities and increase accessibility of the natural and recreational areas of Khortitza Island.

Although it seems challenging to arrange an attractive walkable route in the one-family estate (along Lohinova Street), this gives an opportunity of joining - using Shchastlyva Street - the Borodinsky Estate with the industrial area of the Zaporizhzh Transformator Factory and associated office buildings, high schools, park and cultural center.

The other connection- incorporating Mykhailova Street and Park Pioneersky - has a potential to be continued to Khortitza Island.

The boundaries of the industrial factory areas locate multiple office, public and educational facilities. Therefore this functional investment creates an advantageous base to develop vibrant multifunctional zones enhancing pedestrian attendance. They also can serve as connectors to recreational areas. Fig. 46 shows the potential of converting streets into pedestrian and cycling routes.



Fig. 46. Dniprovskiy District

PEDESTRIAN CONNECTIONS

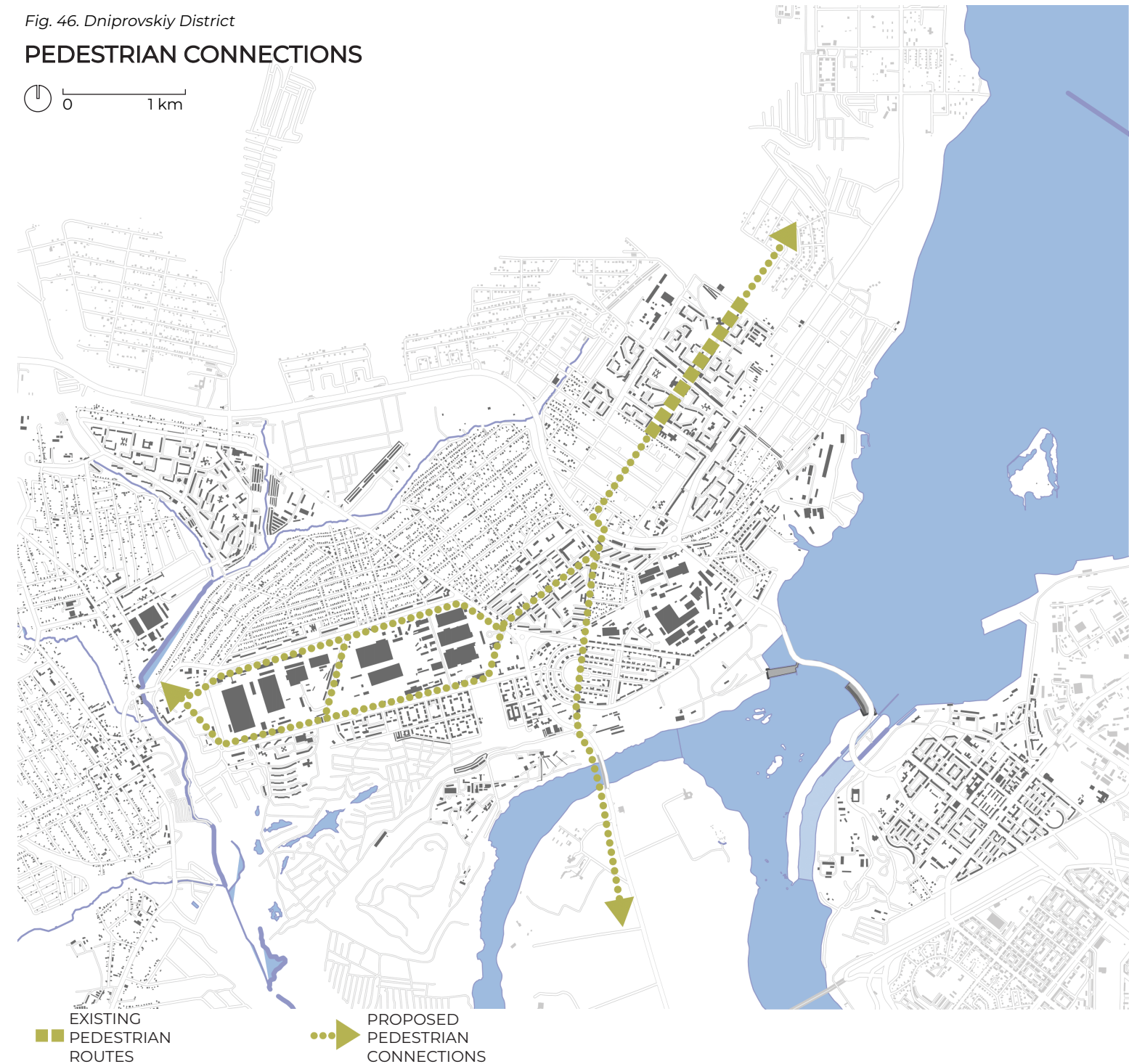




Fig. 47. Yacht Club near Borodinsky Quarter.



Fig. 48. Promenade near Enerhetikov Park.



Fig. 49. Dniپر beach near Enerhetikov Park.

9.6. RECREATIONAL CONNECTIONS

The only existing recreational facilities in Dniprovski District are Park Energetikov (Fig. 48) with the adjacent beach on the Dnieper bank (Fig. 49) and the yacht club near the Borodinsky Estate (Fig. 47). Arrangement of this area creates diverse possibilities for recreational activities and leisure time.

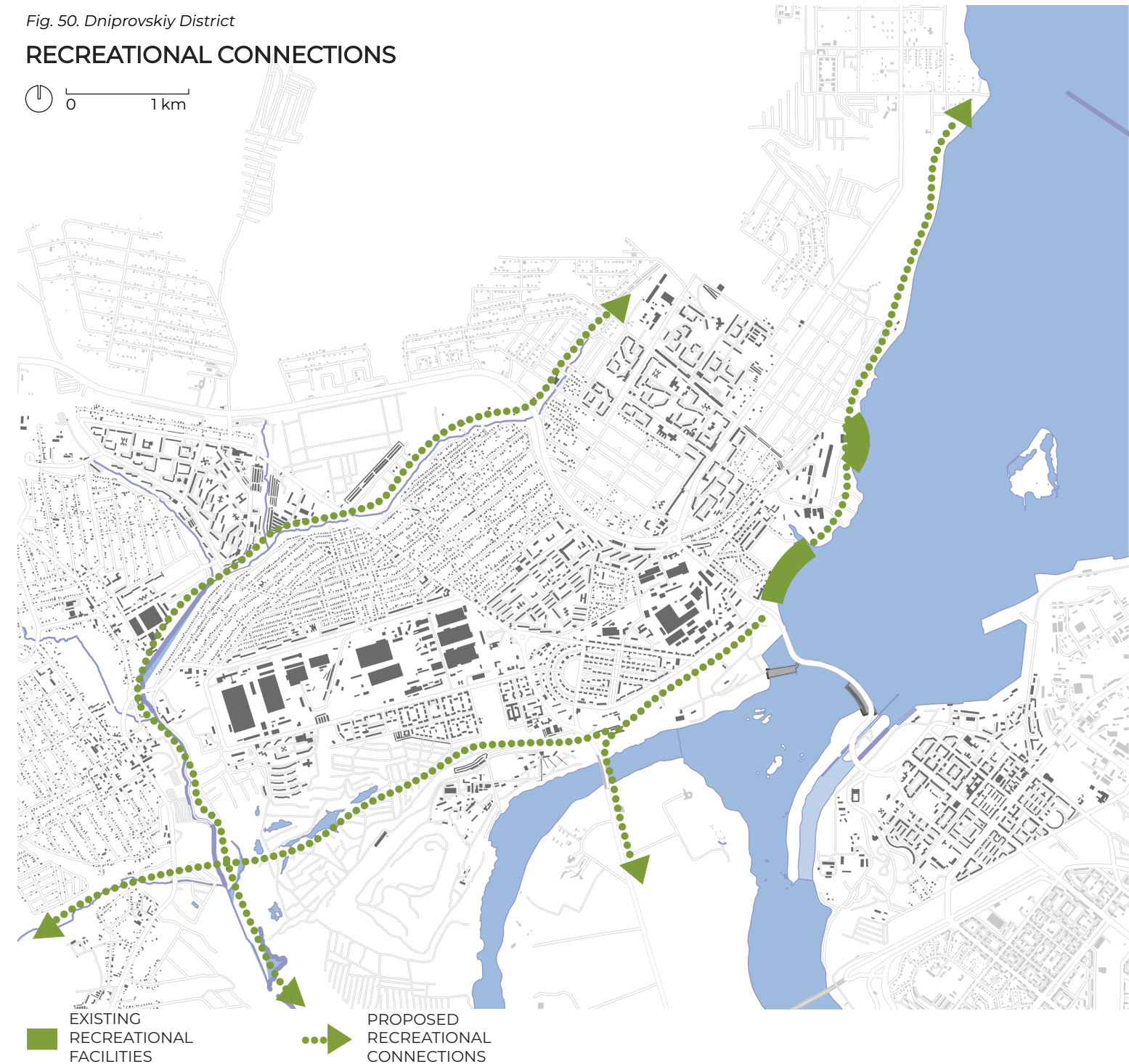
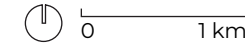
The bank of Dnieper river represents multiple natural and landscape advantages, which can be utilized for development of recreational spots, water sports and tourist development. Small bays sheltered from the main current of the river can be used as marinas for boats.

Allotment gardens and small orchards gathered around two lakes serve as another interesting example of potential area for recreational facilities offering close contact with nature, summer attractions and family picnics.

Verkhnya Khortytsia River is a stream separating urban and rural areas on the district boundary. Its wide and shallow valley may be considered as an advantageous location of various sport facilities, summer houses or small gardens. Fig. 50 shows the potential to develop the recreational connections in Dniprovski District.

Fig. 50. Dniprovskiy District

RECREATIONAL CONNECTIONS



9.7. INTERMODAL CONNECTIONS

Networks of various modes of transport create a parallel pattern of mobility. The routes need to be connected to enable and enhance people's movement. This justifies creating intermodal connections and enhancing them with amenities encouraging walkability.

The intermodal connections lead across the site creating new opportunities for its development. Fig. 51 presents the connection possibility between Borodinsky Quarter and the Dnieper bank.

One of them runs along the Marshala Chuikova Street (along the high voltage lines) and alters the character of the street into a commercial one, utilizing existing shops, cafeterias and open-air markets.

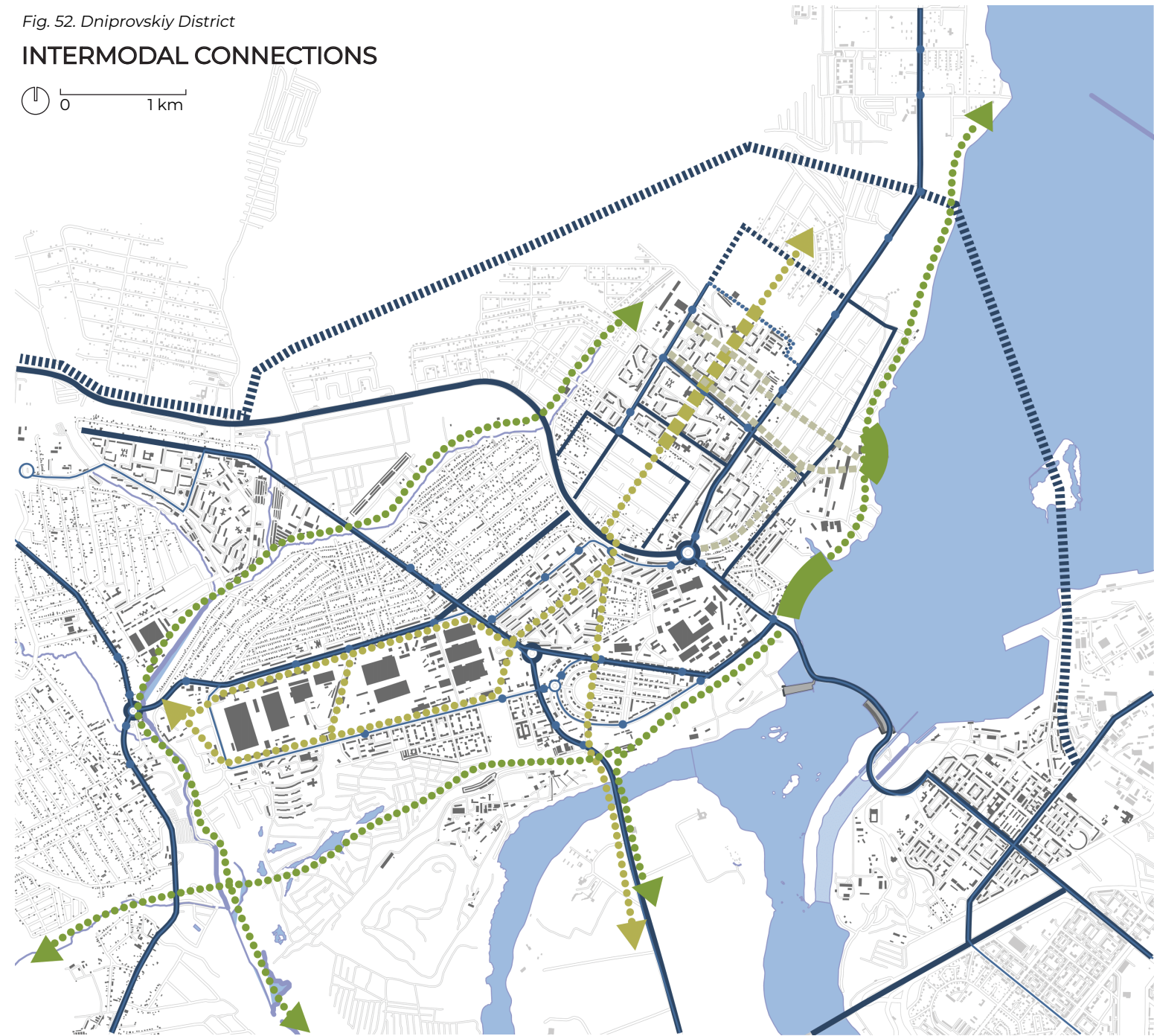
The second intermodal connection cuts the center of the quarter and creates an opportunity to re-direct the walking stream to the planned integration hubs.

Fig. 52 shows the potential to develop intermodal connections.



Fig. 51. Street connecting Borodinsky Quarter to the Dnieper bank.

Fig. 52. Dniprovskiy District
INTERMODAL CONNECTIONS



INTERMODAL CONNECTIONS

10. "MODULAR CITIES" FOR INTERNALLY DISPLACED PERSONS



Fig. 53. Location of the "Modular city" in Zaporizhzhia.

10.1. "MODULAR CITY" IN ZAPORIZHZHIA

The occupation of Donetsk and Luhansk launched a first immense wave of displaced persons. Cities of eastern Ukraine became refugee hubs offering temporary accommodation for people who forcibly left their homes. Municipalities suddenly met a challenge to construct the collective sites despite lacking legal tools, designated sites and sufficient funds.

One of those examples is located in the outskirts of Zaporizhzhya. Arranged in a form of a camp with ready-to-use containers in rows, the example clearly displays the impact of its urban arrangement on the social life and mental health of the inhabitants (Fig. 53).

The modular city was initially intended for a short-term sheltering however it proved to serve as an accommodation for up to ten years.

Apart from apparent inconvenient functional solutions (shared kitchen, bathrooms, toilets and laundries located in separate buildings, hardly accessible in winter), risk of confrontation of people of different origin and social background, lacking transition between private and public space, available services, greenery, places for leisure time and hanging out - resulted in serious social problems affecting the inhabitants. The experience of this case unveiled the degradation process visible in violation of privacy, overcrowding, high unemployment rate, addictions, abuse of psychoactive substances).

Currently, this modular housing estate is a burden on the city due not only to its disfiguring nature, but also to the inability to decommission it and resettle its residents. The residents, who are often the most socially vulnerable individuals, require a great deal of support when it comes to finding work and ensuring a decent and healthy existence for their families. The estate is also exposed to numerous dangers due to its location: consequences of artillery shelling, as well as robbery and theft. Fig. 54 illustrates the conditions within the city 10 years after the commencement.



Fig. 54. Photos of the "Modular city" in Zaporizhzhia.

10. "MODULAR CITIES" FOR INTERNALLY DISPLACED PERSONS

10.2. "MARIJAMPOLIS" IN SYKHIV, DISTRICT OF LVIV

"Marijampolis" is one of the first premises built for the Internally Displaced Persons in Sykhiv - southern district of Lviv (Fig. 55). It was constructed in a rapid mode in cooperation with Polish and British humanitarian institutions following the arrival of a wave of survivors from the destroyed Mariupol. The estate contains 8 houses, each of them built of 44 modules and four persons are designated to administer the estate, each is responsible for two buildings. The whole city can accommodate 1400 persons, grouped in 352 rooms, with shared kitchens, toilets and showers separately for men and women. All the buildings are equipped with electric supply and free wi-fi. Since the number of persons with disabilities increases, the ground floors are being adjusted to be accessible for them. The modular city is arranged in the form of an estate of multi-family houses. Thanks to this solution bathrooms, kitchens and toilets are accessible inside the buildings, eliminating the necessity to go outside.

Arrangement of the buildings creates inner courtyards, sheltered from the street public space and utilized by the inhabitants in a form of herbs and vegetable gardens as well as kidsplay and outdoor gyms. The arrangement of buildings opens new opportunities to differentiate the functions both inside and outside. The estate is equipped with entertainment rooms for kids and teenagers which can be also used as studio cinemas. There is a kindergarten and a chapel (in which all religions as well as non-believers are welcomed) in the area of the settlement. The shared canteen can be adjusted for celebrations. Each building contains shared rooms for children of various ages. In the settlement area there is a kindergarten conducted by two inhabitants of the modular city, skilled in early education.

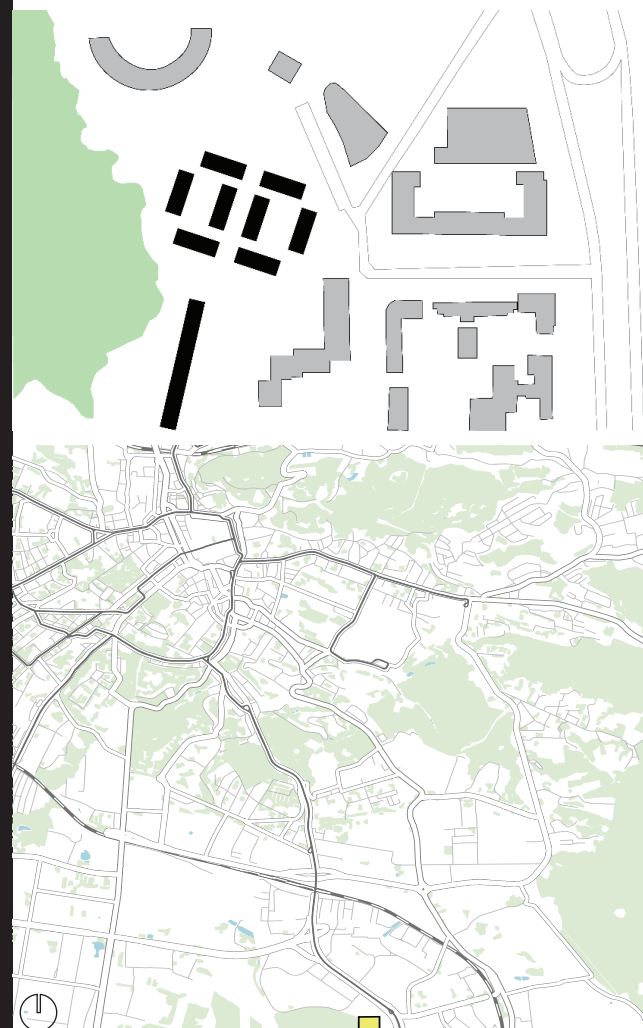


Fig. 55. Location of the "Marijampolis" in Lviv.

"Marijampolis" can be considered as a successful example of placemaking since it integrates fulfilling inhabitants' needs with their personal engagement in creating the place. One of them are strict behavioral rules established for the inhabitants and failure to comply with them can result in eviction.

Since the modular city is equipped with a power generator guaranteeing energy independence, it serves as a point of invincibility. In the event of a power failure, neighbors can visit the site to warm up, charge their phones and enjoy a hot cup of tea. The functional diversification of the modular city attracts residents of the neighboring estates and results in a more successful

integration of the incomers and locals.

The apparent disadvantages are the difficult living conditions. The modular city offers housing conditions to people coming from various parts of Ukraine, who do not always live together harmoniously. Difficult situations arise due to the separation from the relatives, lacking information from the family and significantly altered living conditions. In the rooms designated for four persons there can be strangers accommodated together. The state of permanent anxiousness may cause mental problems in some of the displaced persons. Fig. 56 shows the condition within the modular estate in Lviv.



Fig. 56. Photos of the of the "Marijampolis" in Lviv.

10. "MODULAR CITIES" FOR INTERNALLY DISPLACED PERSONS

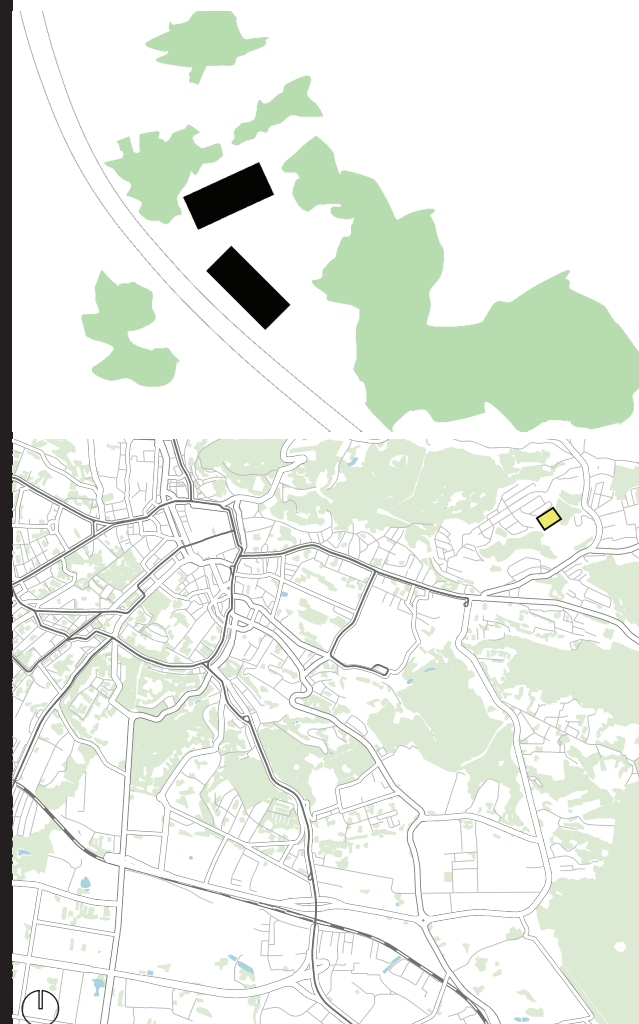


Fig. 57. Location of the "Unbroken Mothers" in Lviv.

10.3. "UNBROKEN MOTHERS" IN LVIV

The "Unbroken Mothers" sheltering center is a premise designated for pregnant women and young mothers who were forced to flee from their houses in eastern regions of Ukraine. The estate has been constructed in a quiet district of Lviv, in proximity to the natural resources (Fig. 57) and consists of two buildings consisting of 17 separate modules combined into one common two-story space. Each building contains 13 rooms, shared kitchens, laundry and bathrooms, as well as remote work space, group classes and big play rooms. One house can accommodate from 30 to 54 people, depending on the layout of the rooms.

By application women sign a contract with the center describing the duration of their accommodation which usually starts with the child delivery and ends with the age of a child of one year. The residing women are provided with medical aid and breastfeeding training by the visiting nurse. The cleaning staff is engaged to keep the premises in tidy conditions. The center is supported by private and public donors.

This collective site is another example of successful placemaking in terms of satisfying needs of the users and public engagement of stakeholders - the charity and humanitarian organizations, and the municipality. The buildings constitute an example of a sustainable approach to the design. They were constructed within the time frame of three months, using mostly local and recycled materials. The construction of the buildings consists of a wooden frame insulated with basalt and mineral wool. The outer volume of the houses was covered with light gray corrugated metal sheets. This exemplary approach to rapid housing development can be considered as an innovative approach contrary to the container settlements.

Shortly after the completion of the premises a new recreational route toward the lake and playground were arranged by the municipality near the buildings. This investment enhances the mutual integration of the residing women with the neighbourhood.

Fig. 58 represents location and conditions within the "Unbroken Mothers" centre.



Fig. 58. Photos of the of the "Unbroken Mothers" in Lviv.

11. DEVELOPMENT OF THE HOUSING SUPPLY IN UKRAINE

11.1. HUMANITARIAN AID AND DEVELOPMENT OF COLLECTIVE SITES.

In 2022 the Government of Ukraine adopted NATIONAL RESILIENCE CONCEPT - a document defining seven primary areas which are significant from the perspective of security (Jasiński, 2023):

- assured continuity of government and critical government services;
- resilient food and water resources, ensuring these supplies are safe from disruption or sabotage;
- resilient energy supplies;
- resilient transport systems, resilient civil communications systems;
- ensuring that telecommunications and cyber networks function even under crisis conditions;
- the ability to deal with mass casualties;
- the ability to deal effectively with the uncontrolled movement of people and to de-conflict these movements from military deployments.

The last point indicates the necessity of providing control and protection of people who forcibly move in search of a secure place to stay.

In the process of providing humanitarian aid we can distinguish following stages of support (UNHCR, 2022):

- NFI (Non Food Items) - Helping war-affected families living close to the frontline meet their basic needs remains a priority, distribution of tarpaulins, plastic sheeting, blankets, solar lamps, sleeping bags and bed linen. Provision of emergency shelter materials to cover damaged homes.

- Protection – provision of psychosocial support, restoring destroyed documents and seeking compensation for damaged property. Border monitoring provides information, legal assistance, protection counseling and social support to people leaving Ukraine to seek international protection, and to those returning to Ukraine. Legal advice on accessing social benefits, pensions, compensation for destroyed and damaged housing, procedures for receiving state aid, death certificates and inheritance documentation

- Cash assistance programme - distribution of multi-purpose cash assistance to war-affected and internally displaced families, returnees, and people with specific vulnerabilities to help cover the costs of basic items like food, medicines, clothes, accommodation and utilities, as well as to cover winter energy needs.

- Shelter/ housing – emergency and shelter support including collective sites

- Collective sites – supported with safe access to multi- sectoral services in collective sites, including winterization support (heaters, clothes, financial support for house renovation).

In 2023, the Cabinet of Ministers of Ukraine in collaboration with the international institution CCCM (Camp Coordination and Camp Management) adopted a document “Resolution 930” establishing and defining basic standard assumptions for Collective Sites in Ukraine (CCCM Cluster, 2023), regarding following aspects:

1. Organizational and legal principles of the functioning of the collective site;
2. Engineering systems;
3. Arrangement and infrastructure of the collective site;
4. Sanitation and hygiene;
5. Equipment of the premises of the collective site.

Areas of interest mentioned in “Resolution

930” refer to the sanitary and technical equipment of the places of collective accommodation and respecting human rights. They do not impose any architectural or urban requirements on the arrangement of the collective sites.

11.2. STAGES OF EMERGENCY HOUSING DEVELOPMENT.

Since the outbreak of war the provision of housing for internally displaced persons has developed into five stages which are dependent on the number of people requiring humanitarian protection and level of emergency. First actions of sheltering were aimed to offer urgent protection against bomb shelling in the underground premises of metro stations and basements of buildings. Collective accommodation sites were prepared by municipalities to house an immense number of people in public and sport facilities. Simultaneously, first modular estates were constructed after the first donors had emerged. Due to absence of legal regulations the rapid housing estates were planned in randomly chosen areas which were not protected historically or naturally. New types of emergency housing have also started to be created in abandoned buildings, and existing collective housing buildings have been converted to accommodate displaced people.

As the number of displaced people declined and the situation regarding their housing provision became relatively stable, the local authorities began to implement more consistent procedures for planning that took into account the location of future social settlements. Municipalities have started working on developing new local comprehensive plans, which are due for public discussion by the end of 2024. The National Council for Recovery of Ukraine from the War elaborated on the draft of the Housing Reconstruction Plan including short-, mid- and long-term strategies of housing provision which should constitute a base to regulate housing policies with publishing deadline in 2032 (Mysak, 2022).

11. DEVELOPMENT OF THE HOUSING SUPPLY IN UKRAINE

Decline of the IDPs number allowed them to undertake measures to implement a permanent social model of housing instead of temporary accommodation (Fig. 59). The model of social housing was basically missing in Ukraine, therefore, studies are currently underway to develop appropriate legal and financial procedures. They aim at creating market - oriented and affordable housing typologies that support not only displaced persons but also contribute to increasing mobility within the country and enable independent life for young people.

Simultaneously with establishing possibilities and standards for collective sites, the comprehensive discussion is conducted toward creating regulations regarding social housing stock (Verbytskyi, et al., 2023).

Two models of social housing are considered:

The universalist model - theoretically makes housing accessible for the broader population. The countries which implement this model (Netherlands, Denmark, Sweden) have a high share of social housing in the housing sector structure. The risks of this approach include dependence on the political tendency and the long-term capacity to maintain the social housing sector.

The targeted model - (also known as the residual model), on the other hand, proposes that social housing can be claimed mostly or exclusively by vulnerable population groups. This approach is typical for countries with a low share of social housing in the general housing sector structure and for countries which are only starting to develop social housing. Nevertheless, even within this approach, certain vulnerable categories (primarily homeless people) remain excluded from the housing provision process (OECD, 2020). In addition, a shortcoming of this model is the risk of ghettoisation of low-income population groups in social housing (United Nations Economic Commission for Europe, 2015).

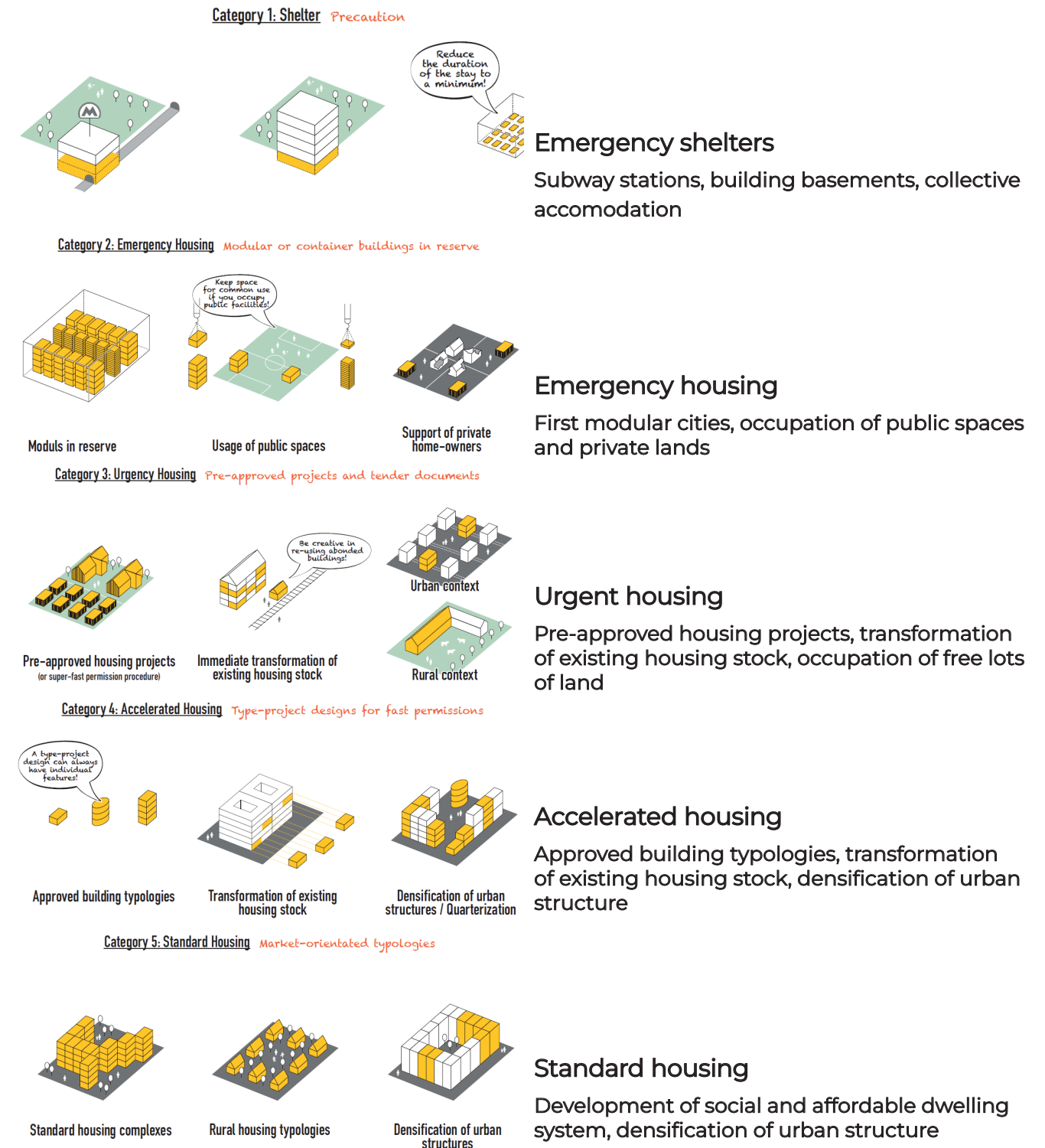


Fig. 59. Stages of developing collective sites in Ukraine.

11. DEVELOPMENT OF THE HOUSING SUPPLY IN UKRAINE

11.3. "PROMODSE" SYSTEM

The document "Key principles of state housing policy: Recommendations for the development of the bill" issued by Cedos imposes a standard level of the housing policy based on the recognition of access to housing as an inalienable human right (Verbytskyi, et al., 2023).

To assess the adequacy of a housing policy according to this approach, a number of characteristics are used which should also be reflected in the law as the key foundations of housing policy:

1. Protected nature of the right to housing, which presupposes legislative protection from eviction and other violations, such as discrimination in the process of obtaining social housing;
2. Financial affordability, which presupposes that housing costs do not limit households in meeting their other basic needs such as food, health care, etc.;
3. Access to services, which presupposes access to running water, power and other utilities, etc.;
4. Adequate location of housing, which presupposes that tenants are not cut off from other social infrastructure and workplaces, and that housing is not located in dangerous or polluted areas. According to the wishes of the municipal authorities a building for Internally Displaced Persons is expected to be located near the school.

The ProModSe system (Fig. 61) was developed by the architects of the Warsaw University of Technology in response to a competition announced by the New European Bauhaus. ProMod Se (Project of Modular Settlement) responds to the demand for the construction of sustainable housing of an appropriate standard on an accelerated mode for displaced people (Baranowski, 2023).

The system is based on a 3m x 9m module and provides for the construction of dwellings with different areas and for families of different sizes: from 2 to 6 people. The modules are made using timber technology. Only the core containing the bathrooms is designed as reinforced concrete.

The bathrooms contain 2 shafts: one for ventilation and the other as an escape shelter. Evacuation is a factor in determining the height of the building up to 3 storeys.

This system can be used for social housing, as each housing unit serves as an independent flat with an integral kitchen and bathroom.

I proposed a building configured in ProModSe system as the first stage of investment, in response to the request of the municipality to locate a collective accommodation building in proximity to the school (Fig. 60 and 62).

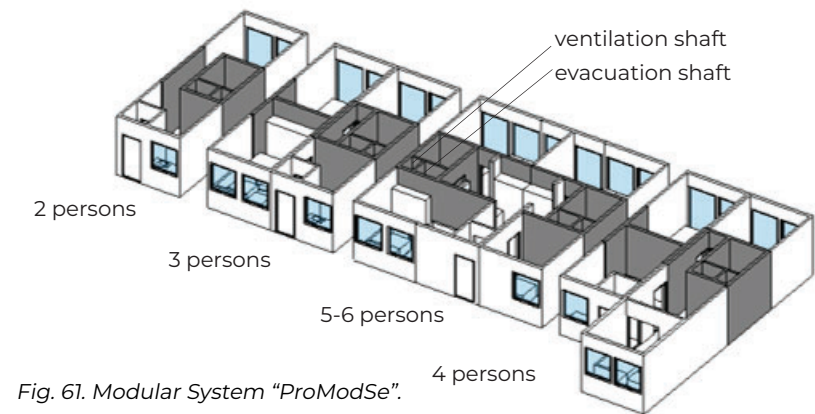


Fig. 61. Modular System "ProModSe".



Fig. 60. Location of the first IDP premise.

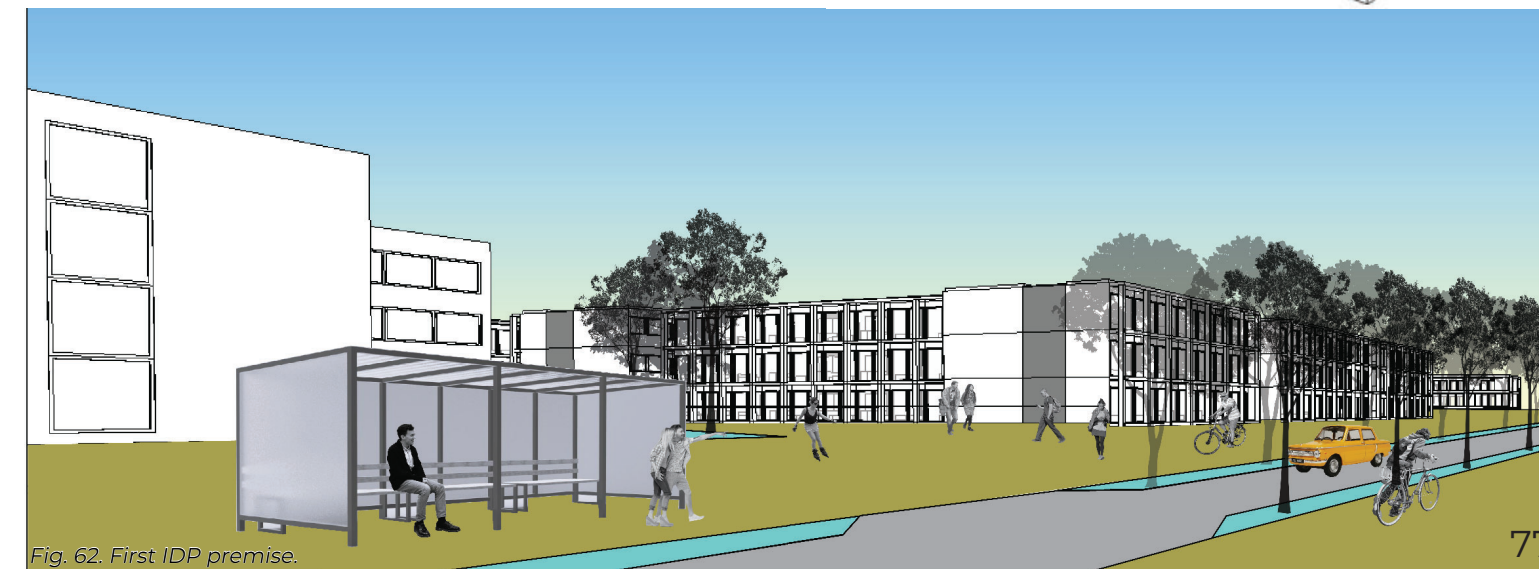


Fig. 62. First IDP premise.

12. SITE SELECTION

The proposal of two investment plots was given in response to my enquiry to the Department of Architecture and Urban Planning of the Zaporozhzhia City Council regarding possibility of premises for Internally Displaced Persons. Both options are shown on the Fig. 63:

1. a location in Zavodsky District among single-family and medium-high multi-family buildings, in a district lying peripherally and cut off by an area of industrial character from the city centre;
2. location in Dniprovsky District, among “panel” buildings, on the road connecting the Dnieper Dam with the northern districts.

My choice of the second option was motivated by multiple opportunities of enforcing connectivity of the place by linking it to the central part of the district and the city centre through the dam. The significant value consists in proximity to a recreationally attractive existing yacht club on the Dnieper at a distance within a pedestrian and cycling route.

The Borodinsky quarter is built up peripherally with “panel” buildings, while its central part, overgrown with greenery and uninvested, offers an opportunity to enrich the site with additional functions.

The representatives from the Department of Architecture and Town Planning initially identified the plot of land adjacent to the school as a suitable site for a refugee building. However, after a discussion, they agreed to my proposal to include the entire development quarter in the project. In accordance with the wishes of the Architecture Department, I considered the site originally indicated as the first - initial phase, providing for the construction of the first building for the IDP and determining the further development of the quarter.



Fig. 63. Two proposals of site locations.



SECOND PROPOSAL - DNIPROVSKIY DISTRICT



FIRST PROPOSAL - ZAVODSKIY DISTRICT

13.1. GENERAL INFORMATION.

The Borodinsky Quarter is located on the city outskirts adjacent to the border. It is covered with 9-10 storeys residential panel buildings in right angle arrangements, located close to the quarter's perimeter. The number of inhabitants is quite big. The surrounding area is built with one family houses within a clearly distinctive grid of streets.

We can easily distinguish the standard of life (income level) of the inhabitants of particular buildings. The residents of the high post-Soviet buildings belong likely to the social group of lower income whereas the owners of the apartments in recently constructed buildings are probably wealthier. The income differences constitute a significant factor in deciding to choose an appropriate neighborhood. Residential areas for wealthier people become often separated by a fence and a lockable entrance gate or barrier.

There is a small orthodox church with an old cemetery, both creating a park complex dedicated to worship and remembrance.

The school and open-air market located on opposite sides of the quarter act as drivers for pedestrian mobility. There is a distinctive walkable route connecting both locations, enhanced by commercial services and objects of small gastronomy. These amenities appear to be a bottom-up initiative, but they are a very valuable sign of social participation to local community development. The services also clearly designate a place where residents like to meet and spend their free time.

The development quarter can also be defined by an east-west link, which runs through the centre of the site. It has a decidedly recreational character and creates a suitable location for sports and outdoor leisure facilities.

This connection can be prolonged in the direction of the Dnieper River bank, establishing a very advantageous walkable route joining diverse zones of the entire development: stops of public transport, pedestrian/ cycling routes, entertainment and sport facilities, and recreational spots on the river bank.

Lush greenery overgrows the space within the quarter, including a large number of trees providing opportunities for small parks. Despite its many attributes and great potential, the space appears to be poorly arranged and under-utilized for the needs of residents.

The buildings arrangement allows distinction between private and public space. Nevertheless, both of those categories make an impression of equally messy and missing clear functional designation.

The residential panel buildings are located on the perimeter of the site forming in the prevailing part a right-angle grid. Nevertheless they do not create street frontages. Massive outdoor parking lots occupy huge proportion of the space adjacent to the streets. Street space appears to a large extent desolated.

Although the streets demarcating the development quarter constituting my project site have width sufficient for walkability, they are

dominated by car traffic and their nature is not conducive to attendance of pedestrians.

The district has a well developed connections of public transport. However, the locations of the bus stops do not fully exploit their potential. They are often placed in an empty, unpopulated part of the street.

One of the biggest obstacles on the site are created by the over-head medium voltage electric lines (150kV) running parallel to the Marshala Chuikova street and marking the strip separating the car lanes from the pedestrian pavement.

Garages built without authorisation of authorities under overhead lines, below ground level can be regarded as another significant obstacle impacting the space. Self-built sheds and garages can be found in various parts of the quarter. Their structure is vulnerable to destruction and they occupy valuable parts of land in a very in an ineffective way.

Marshala Chuikova Street concentrates most of the commercial services of the district. However, the supermarket is located at the Tovaryska Street, in proximity of the church park, in high walking distance from the main trade spots. x

13.2. FUNCTIONAL DISTRIBUTION.

The site of my design is located on the right bank of the Dnieper river and covered by the high-rise modular residential buildings dated from the period after the II world war, arranged in the right-angle grid. The building structure is situated on the perimeter of the quarter, outlined by the pattern of perpendicular streets. The centre of the quarter seems uninvested, however the big advantage is made by the presence of abundant greenery, mainly lawns and trees.

Shed-like looking garages located in random places occupy the significant proportion of the land eligible for further investment. A certain number of those garages are located underground and under the electric lines.

The main Marshala Chuikova and Tovaryska Streets serve mainly as vehicular arteries. However, their width and location of the car lanes aside create a wide pedestrian space with a big walkable potential. Nonetheless the space advantages, the streets seem abandoned due to insufficient availability of services and huge gaps created by massive outdoor parkings adjacent to them.

The functional disposition of the site includes mainly the residential buildings. However, on the north side there is the school building and the small church accompanied with the small old cemetery. The school location designates the pedestrian route leading to the commercial centre and open-air market on the Chuikova Street

Significant part of the Tovaryska Street side is occupied by the fenced premises of the Heat Distribution Plant.

Fig. 64. Borodinsky Quarter -

MAP OF USES



- INDUSTRIAL BUILDINGS
- EDUCATIONAL BUILDINGS
- HIGH RESIDENTIAL BUILDINGS - 10 STOREYS
- MEDIUM RESIDENTIAL BUILDINGS - 4 - 5 STOREYS
- ONE-FAMILY BUILDINGS
- RECREATIONAL BUILDINGS
- SHEDS AND FREE STANDING GARAGES

13. BORODINSKIY QUARTER

Main commercial amenities are concentrated along the streets and include the supermarket by the Tovaryska Street, commercial centre by the Marshala Chiukova Street and the nearby open-air market. Besides, it is possible to detect some grass-root initiatives of establishing service entrepreneurship spots along the route crossing the quarter and connecting its northern and southern sides. These spots are intended mostly for small gastronomy however they apparently contribute to enhancing social life within the community and indicate the place for gatherings.

13.3. EVERYDAY LIFE.

Borodinsky Estate is located on the outskirts, near the city boundaries. The area used to be quite liveable in the times of its origin however now it seems a bit abandoned. The quarter consists more of an 'urban dormitory' where people tend to spend time in their homes and rarely outside of them. In spite of the commercial amenities present there, the streets seem to play a role of spaces that residents have to cross in order to reach service areas, rather than where they can stop. There is also a noticeable amount of unmanaged greenery which, despite its ecological value, is unlikely to invite you to spend time there.

The plot shows a juxtaposition of different types of settlement at different times in the development of the site, and consequently of different lifestyles. Differences in the material status of different groups of inhabitants are also evident.

The area separating the quarter from the bank of the Dnieper River is built up with single-family houses of rural character, subject to numerous alterations and extensions. The plots on which the cottages are located are distributed among a rectangular grid of streets, but this makes orientation difficult for people moving through the area.

The quarter itself, built up with 1960s modular housing blocks demonstrates difficulties with orientation. The blocks stand perpendicular to each other, but the spaces between them strongly miss differentiation to help people move between them.

In the north-east corner of the quarter, a new development of a visibly higher standard has been built, surrounded for security reasons by a fence with an entrance gate for the exclusive use of its residents. In addition, fenced urban villas are being built along the northern boundary of the quarter for higher income owners. Those fences do not belong to the only ones in the area. School, kindergarten, sports and institutional facilities are also surrounded by fences. This type of separation indicates an obvious need for increased security. However, at the same time it enforces the impression of segregation instead of integration. Daily activities seem assigned to specific times of the day and available to specific users, the presence of different user groups do not have a chance to get inclusively intertwined. The division of space into more or less safe spaces by physical boundaries increases this contrast. The residents of the quarter move from one destination to the other, covering the space separating the two destinations rather than using it. Despite the numerous green spaces and playgrounds, it is hard to imagine children staying there without parental supervision, adults spending summer evenings there and teenagers pursuing their passions.

Fortunately, there appear visible signs of a bottom-up initiative to activate the area. The unofficially built detached garages perform a negative effect of those initiatives and show that the cars are regarded as a means of transport for residents, a sign of social prestige and a tool for increasing security. On the other hand, examples of local services, such as cafés, catering, service facilities in the extended ground floors of buildings and an open-air market, serving as a meeting point for residents, show undoubtedly positive examples.

13.4. CONNECTIVITY

Borodinsky estate displays a well developed connectivity with the central part of Zaporizhzhya in terms of car accessibility and public transport network. The Petra Sahaydachnoho Street constitutes an efficient connector with the transit road running over the dam. The vehicular traffic has a chance to be considerably enforced by construction of the bridge on the northern part of the district over the Sahaidachnoho Island.

The public traffic network creates a wide range of traveling opportunities due to multiple stops around the quarter attended by a number of buses and trolleybuses.

The deficits of connectivity concern missing cycling and walkable routes linking fast destinations. The pedestrian route connecting schools, kindergartens, commercial services and open-air market has nowadays become a connection of local significance. Nonetheless it can be considered as a founding factor for further development toward Khortytza Island.

13.5. RECREATIONAL AND LEISURE OPPORTUNITIES.

Despite the fact that recreational and leisure facilities have not been exploited in Borodinsky Estate, there can be distinguished opportunities to be created or enforced within and around the site.

The most noteworthy place is definitely the yacht club located on the Dnieper bank, separated from the site by the area of one-family houses and territory of industrial premises. Although it seems challenging to provide a liveable connection in this environment, more efficient linking of the yachtclub and the Borodinsky estate can be mutually beneficial.

Abundance of greenery in the central part of the quarter offers an opportunity for sport and leisure activities.

14. SITE ANALYSIS

14.1. EXPLANATION OF SITE INTERVENTIONS



Fig. 65. Location of the first IDP premise.

STEP 1

LOCATION OF THE FIRST BUILDING FOR INTERNALLY DISPLACED PERSONS

Location of the housing premises on the site designated by the Department of Architecture and Urban Planning at the City Council serves as an initial action of the place transformation. The building creates a new place for people to stay and meet. It can be utilised as a triggering factor for further development of the quarter since it establishes new interactions within the area (Fig. 65).



Fig. 66. Street and pedestrian route.

STEP 2

ENHANCING STREET AND PEDESTRIAN ROUTE

The new building enhances the existing pedestrian connection leading to the commercial hub at Marshala Chuikova Street. It imposes the necessity of upgrading of the street accessing the one-family houses which is now covered with gravel (Fig. 66).



Fig. 67. Streets network.

STEP 3

ESTABLISHING OF NETWORK OF CAR AND PEDESTRIAN CONNECTIONS

Process of enhancing existing connections extended by creating an efficient network of streets and walkable routes, incorporating existing site infrastructure. The vehicular roads are located on the perimeter or the quarter whereas pedestrian routes cross in its interior (Fig. 67).

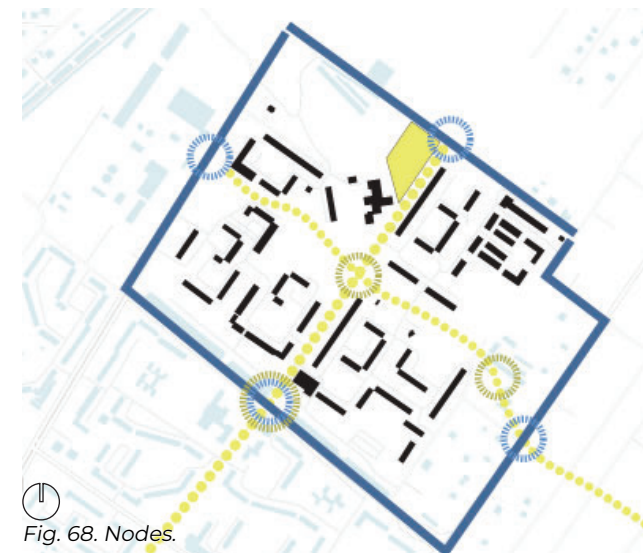


Fig. 68. Nodes.

STEP 4

RECOGNIZING PLACES OF POTENTIAL EXTENDED ATTENDANCE OF INHABITANTS

Establishing a mobility network as a base to define the nodes characterized by higher attendance of inhabitants and local users (Fig. 68).

14. SITE ANALYSIS



Fig. 69. Roles of nodes.

STEP 5 DEFINING ROLES OF THE RECOGNIZED NODES

Determination of the nodes needs to be followed by designating their destination. The nodes located on the streets are designated as transportation hubs whereas intersections of pedestrian routes serve to create facilities to gather and hang out (Fig. 69).



Fig. 70. Densification around the nodes.

STEP 6 DENSIFICATION AROUND THE DEFINED NODES

Establishing a mobility network makes a base to define the nodes characterized by higher attendance of inhabitants and local users. Nodes with designated destinations open opportunities for further development including introduction of appropriate functions. This entails possibility of new investments resulting in densification of the places by new architectural attributes (Fig. 70).



Fig. 71. Introduction of new buildings.

STEP 7 INTRODUCTION OF NEW BUILDINGS

Extracting places of higher attendance gives a perspective for further development of the quarter by locating new buildings on its territory (Fig. 71).

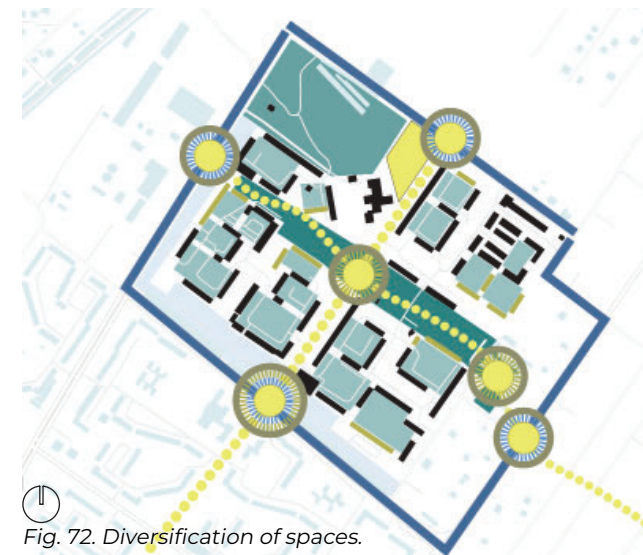


Fig. 72. Diversification of spaces.

STEP 8 DIVERSIFICATION OF PRIVATE, SEMI-PUBLIC AND PUBLIC SPACES

New investments bring a new quality of the urban structure by diversification of the land use into private, semi-public and public space. This diversification is a basic factor for improving the orientation of the area and developing the sense of belonging in the inhabitants (Fig. 72).

14. SITE ANALYSIS

14.2. OPPORTUNITIES TO USE IDP HOUSING AS A CATALYST FOR PLACEMAKING

In the placemaking process several urban dynamics are considered. According to the graph of Urban Area Growth, the initiation stage aiming at attracting a significant number of people requires a certain effort including expenses as well as creative and organizational power. People are the most valuable resource in the placemaking process. In case of an IDP city this phase can be omitted since a significantly big group of potential inhabitants is designated by the municipal authorities to settle in Borodinsky Quarter by administrative decisions. Thus, the entire efforts need to be concentrated on focusing their interests as well as smooth integration with the residents of the area.

However, as we can see on the S-shape graph (Fig. 73), the rapid urban development is the result of a large influx of people who decide to stay in the area for a long time. The acceleration phase is characterized by a high degree of self-regulation since a massive group of space users possesses a big ability of decision-making and taking up some initiatives.

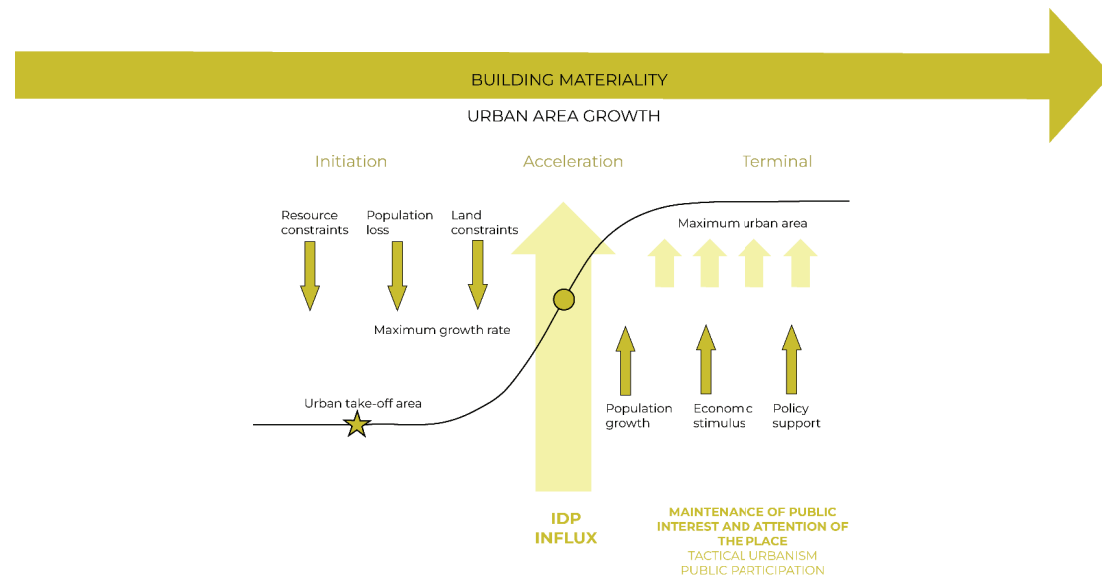


Fig. 73. S-Shape graph of Urban Area Growth and IDP influx.

The influx of population can be observed while introducing a wide group of Internally Displaced Persons in the city. It is crucial to establish the objectives necessary to respond to their needs and requirements of the new settlers in order to maintain them there and encourage them to discover new opportunities for their family and professional lives. Maintaining the group by using inclusive strategies of public participation can effectively increase the investment success and considerably improve the quality of the quarter.

Process of creating settlements for Internally Displaced Persons can be used as a tool for placemaking by bringing mutual advantages for both existing residents and the newcomers.

14.3. TOOLS FOR PLACEMAKING

On the base of the placemaking objectives mentioned in chapter 5, we can define the appropriate tools tailored to specific spaces and expectations. In the Borodinsky quarter we can distinguish three types of spaces according to their role in the neighborhood development and time perspectives: IDP premises, streets and residential clusters. Each of those types is characterized by different objectives and thus requires application of diverse tools and strategies.

The tools are listed in the table below (Fig. 74).

	# IDENTITY	U ATTRACTION	F ACCESSIBILITY	□ BOUNDARIES
IDP PREMISES	📄 LEADING TOPIC	🏠 FACILITIES FOR RESIDENTS	🚶 WALKABLE ROUTES	🏠 RHYTHM OF SPACES AND VOIDS
STREETSCAPES	⚙️ LEADING FUNCTION	↕️ BOTTOM-UP INITIATIVES	🚌 PUBLIC TRANSPORT HUBS	🏢 BUILDING FLOOR EXTENSIONS
RESIDENTIAL CLUSTERS	📄 DISTINGUISHING PRIVATE AND PUBLIC SPACE	📍 SENSE OF SAFETY AND BELONGING	🧭 SENSE OF ORIENTATION	📐 FRAMING

74) and illustrate the design approach aimed at creating legible, liveable and safe spaces attended by the public.

14.4. SECURITY GUIDELINES FOR THE RE-DEVELOPMENT PROCESS

The condition of war and resulting security measures constitute an important aspect in creating design guidelines for the quarter redevelopment. Threat of artillery shelling imposes special requirements on building structure and their arrangement.

According to the investigation of Nastroj LLC, an engineering firm from Zaporizhzhya,, residential buildings constructed of large-scale prefabricated panels are exposed to destruction since strong strikes, blows and earth shocks make them collapse. Vulnerable structures made of steel elements do not resist the hits of artillery missiles. Monolith reinforced concrete structures are perceived as most resistant.

Following conclusions coming from those observations, it seems highly justified to substitute the commercial premises with steel structure with more robust concrete construction. Commonly used open-air parking lots are to be changed in the park houses including bomb shelters for the inhabitants of the area (Jasinski, 2023).

Fig. 74. Tools for placemaking.

14. SITE ANALYSIS

ENHANCING EXISTING INITIATIVES



Fig. 75. Pedestrian routes in Borodinsky Quarter.

ENHANCING EXISTING WALKABLE ROUTES

Pedestrian routes recognized in the Borodinsky Quarter, shown on Fig. 75, are visibly enhanced with existing small businesses such as food outlets, small shops, cafes. These thoroughfares should be complemented by a wider range of services, meeting places, spaces to allow for holidays and celebrations, and greenery to provide shade and a suitable microclimate. Walkable and cycling connections improve mobility between close neighbourhoods.



Fig. 76. Open-air market and small gastronomy in Borodinsky Quarter.



Fig. 77. Ground floor extensions for commercial premises.

ENHANCING EXISTING COMMERCIAL INITIATIVES

Open air market and small shopping premises by the Marshala Chui-kova Street, shown on Fig. 76 make an origin and base to make a liveable commercial centre.

Open-air market deserves new premises to operate year-round, not just seasonally. Extensions of ground floors of existing high rise residential buildings (Fig. 77) introduce a new potential to the place by shaping street-scapes and activate ground floors. Existing shopping centre can be developed and supplemented by greenery to maintain the customers on the street.

14. SITE ANALYSIS

ENHANCING EXISTING INITIATIVES

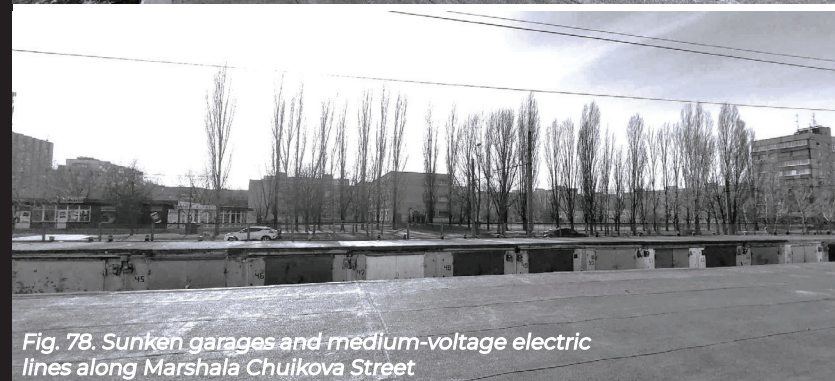


Fig. 78. Sunken garages and medium-voltage electric lines along Marshala Chuikova Street

COVERING GARAGES WITH CONCRETE SLABS

Sheds utilised as garages located underground and along the overhead electric lines, shown on Fig. 78, will be covered with concrete slabs. The covering will increase the security and contribute to integration of the street space. The space below the electric lines cannot be utilised for working places. However the regained area can be used for city farms in the form of greenhouses, providing a supplementary function for the street market.

The northern side of the Marshala Chuikova street is thus designed as a market street supplemented with farming facilities.



Fig. 79. Orthodox Church and old cemetery.

PARK SURROUNDING EXISTING ORTHODOX CHURCH

The small beautiful orthodox church with the old cemetery, shown on Fig. 79, constitutes a place for worship and remembrance. It is located in a quiet place on the periphery of the quarter.

As such, the area will be developed as a park ending the walkable promenade along the Tovaryska Street. The promenade will be arranged in the form of a park street with abundant greenery.



CREATING A CONNECTION TO THE YACHT CLUB

Although separated by the industrial area from the residential neighbourhood, the Yachtclub on the Dnieper River (Fig. 80) constitutes a very attractive facility for the visitors.

However, as a significant recreational spot it deserves a stronger connection with the Borodinsky Quarter as well as enforcement of the Dnieper waterfront with new investments.



Fig. 80. Yacht Club on the Dnieper bank.

15. DESIGN PROPOSAL



15.1. MASTERPLAN

The Masterplan represented on Fig. 81 illustrates target solutions aimed at combining two objectives: to provide rapid accommodation for internally displaced people and to revitalise the residential quarter by introducing inclusive services for residents.

The main components of the solution are the social dwellings located in the central part of the quarter, however their introduction is a pretext for enriching the area with elements and services that enliven and enhance the central part of the quarter.

Investment aimed for displaced people will enforce the importance of local pedestrian connections, which in turn will have an impact on more efficient connecting the area to the street space. The creation of a new service centre will justify its connection to the riverside recreational area. The increase in the value of the area will attract the attention of investors interested in building new residential and commercial facilities to complement the existing urban fabric.

All of the above-mentioned investments are spread over a long and very different time perspective. For this reason, the masterplan does not present a specific date for the development, but concentrates multiple time layers into a single graphic representation.

The sequence of development, taking into account their priority and the logic of cost-effectiveness, has been presented in the form of 5 investment phases.

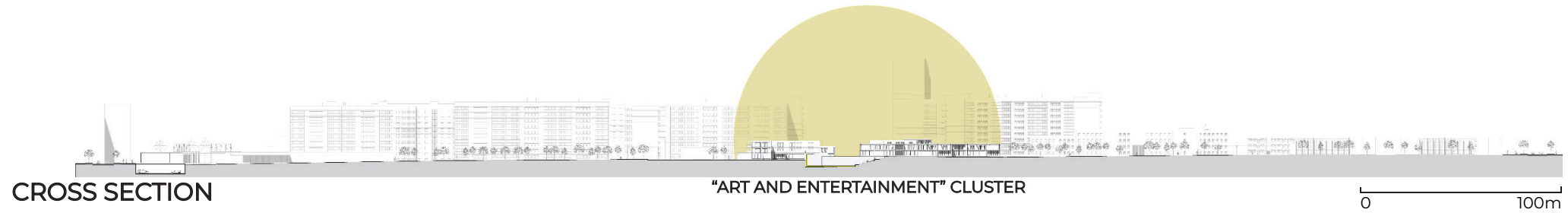


Fig. 82.

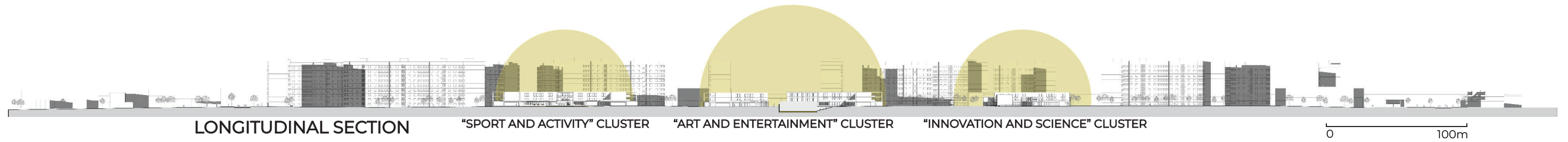


Fig. 83.

15. DESIGN PROPOSAL

15.2. PHASING



Fig. 84.

PHASE 1

Following the request of the Department of Architecture and Urban Planning at the City Council of Zaporizhzhia, the first residential building for Internally Displaced Persons is located in the proximity of the existing school and associated sport facilities.

The IDP premises incorporates the 'ProModSe' modular system, developed at the Warsaw University of Technology as a response for the competition announced by New European Bauhaus searching for new solutions for collective accommodation of refugees.

New IDP premises is located by the street which is now covered with gravel. Construction of the building entails upgrading a new street with a solid surface. Due to a significant increase of disabled persons, the premises require the implementation of a bus stop in its direct proximity.

The new IDP premises can house 630 persons or up to 186 families.



Fig. 85.

PHASE 2

The urgent need to accommodate the huge number of displaced people entails the construction of further housing of a social nature, managed by the municipality or its designated institutions. These buildings will be constructed in a second phase in the central part of the quarter and will not only fulfill the accommodation function, but also serve the residents by providing them with additional services as well.

The location of the buildings in areas suitable for recreation and social integration aims to activate the local community. It therefore serves to enforce and make more attractive the pedestrian routes crossing the quarter and connecting educational facilities and local retail centres.

The estate is divided into three clusters, each with one leading use: 'Innovation and Science', 'Art and Entertainment' and 'Sport and Activity'.

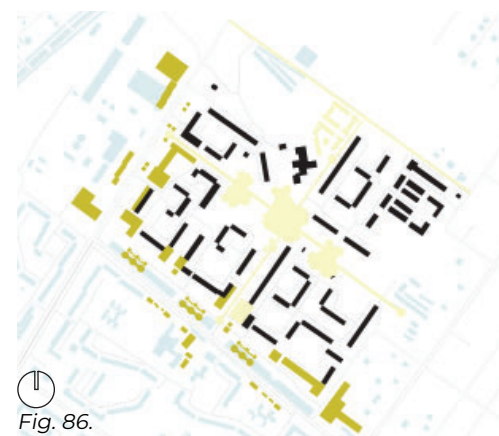


Fig. 86.

PHASE 3

The next step leading to revitalizing the whole quarter is transformation of the streetscapes into rich in services and meeting the needs of the residents, are safe and inviting to stay there. This phase requires two major investments to remove large open-air parking lots and replace them with park houses with ground floor retail units.

Marshala Chuikova Street is divided by the overhead medium-voltage lines running along it and garages located below these lines beneath the ground level. An open-air market for residents is located along it as well. The transformation of this street aims to help develop small-scale trade in the area.

Tovaryska Street leads from the crossroads towards the small church and the old cemetery placed among the greenery. The transforming this street will give it a coherent character in line with the church surrounding by introducing pocket parks interspersed with small food services.

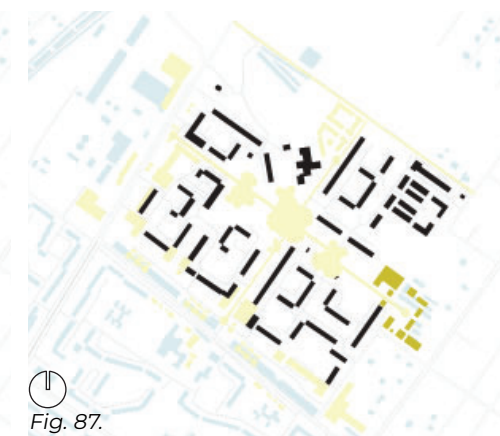


Fig. 87.

PHASE 4

A sizable plot of land developed with self-contained tin garages is located at the eastern boundary of the quarter. This plot is immediately adjacent to plots designated for single-family housing. Since intentionally cars will be parked in the much safer park houses, this site will be regained and developed for smaller scale residential development (town houses).

In addition, the site plays a considerable role in connecting the quarter to the waterfront of the Dnieper River and the yacht club located on its bank. A service square connecting to the roadrunning through the single-family housing up to the river bank, provides an efficient pedestrian linkage to the river.



Fig. 88.

PHASE 5

The final and furthest in future stage is the refurbishment of the residential development inside the quarter. The densification of the development allows not only for the acquisition of new residential space, but also for a significant improvement in the quality of the space between buildings, increased security, improved orientation and the division of space into private, semi-public and public. The transformation of this space will contribute to improving its perception by residents (perceiving where they live on a more intimate scale) and developing a sense of belonging.

This phase requires a major investment effort in terms of financial expenses. Therefore the division of the quarter area into investment clusters has been proposed. Each cluster can, in the scope of work, include high-income investments (commercial premises), new residential buildings and the refurbishment of existing buildings.

15. DESIGN PROPOSAL

15.3. PHASE 1

- ① EXISTING SCHOOL
- ② EXISTING RESIDENTIAL BUILDINGS
- ③ EXISTING CEMETERY
- ④ EXISTING SPORT FACILITIES
- ⑤ PREMISES FOR INTERNALLY DISPLACED PERSONS
- ⑥ IDP CENTRE ADMINISTRATION AND INTEGRATION SPACE
- ⑦ ART AND ENTERTAINMENT CENTRE
- ⑧ HUMANITARIAN AID PREMISES
- ⑨ SPORT CLUB ADMINISTRATION
- ⑩ COMMERCIAL SERVICES
- ⑪ MEMORY CLUSTER
- ⑫ BUS STOP
- ⑬ SCHOOL GARDEN
- ⑭ PRIVATE GARDEN
- ⑮ PLAYGROUND



Fig. 84. Phase 1.

FIRST PREMISES FOR INTERNALLY DISPLACED PERSONS

According to the request of the Department of Architecture and Urban Planning at the Zaporizhzhya City Council, the first housing premises for IDP should be located near the school.

In my design proposal, the house is constructed in the “ProModSe” modular system elaborated by the architects at Warsaw University of Technology as a response for the competition announced by the New European Bauhaus for modular refugee premises. The system consists of a number of various dwelling blocks based on a repetitive grid 3m x 9m. The core of every unit is made of reinforced concrete, contains an independent bathroom and kitchen and includes a bomb shelter whereas the outermost structure consists of timber.

The IDP house can host up to 186 families or 630 inhabitants.

The building fills the gap between the school building, sport facilities, the gravel road and the existing residential building. It can constitute an integrating object for school, sport and green facilities, incorporate the Memory Cluster in this public space, creating a multifunctional vibrant space. It can also be considered as a triggering investment for establishing a pedestrian and street network.

Opening the IDP building to the pedestrian route can enforce its significance in the local environment and invite the original residents to participate in life of displaced persons. The function of the buildings requires a robust street accessible for delivery and emergency vehicles. In my design, due to the considerable increase of disabled people among the IDPs, I propose the location of the bus stop near the planned building. The bus can also serve the school, the church and inhabitants of the neighbouring residential blocks.



Fig. 89. DETAILED PLAN

15. DESIGN PROPOSAL

15.4. PHASE 2

ACTIVITY CLUSTERS

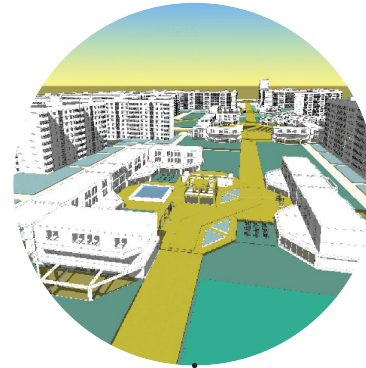
The decision to locate the main center for displaced people was based on previous analysis and the recognition of the central part of the quarter as suitable for social integration. For this reason, the buildings with housing for displaced people will be developed as multifunctional, allowing existing residents to use them as well.

The main axes of the establishment act as the recognised pedestrian routes intersecting in the center of the estate. The community buildings with accompanying services will enhance their attractiveness to users and the intensity of walkable footpaths.

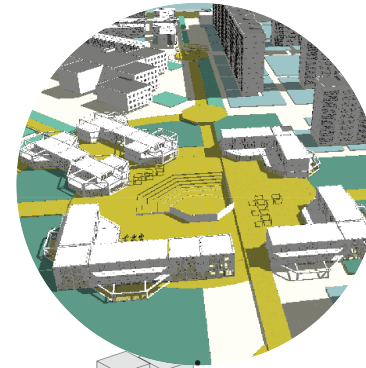
Due to the wish to preserve the existing woodland in the center of the quarter, the development for the displaced people has been divided into three groups (clusters) with a distinct leading theme (Fig. 90).

The total accommodation capacity of the "modular city" is planned for 626 people or 244 families.

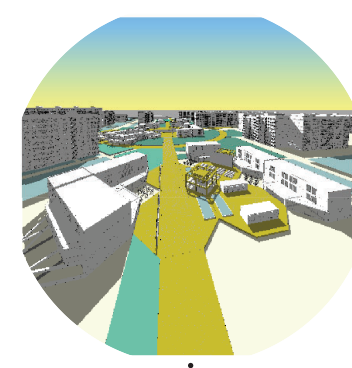
SPORT AND ACTIVITY CLUSTER



ART AND ENTERTAINMENT CLUSTER



INNOVATION AND SCIENCE CLUSTER



MEMORY CLUSTER

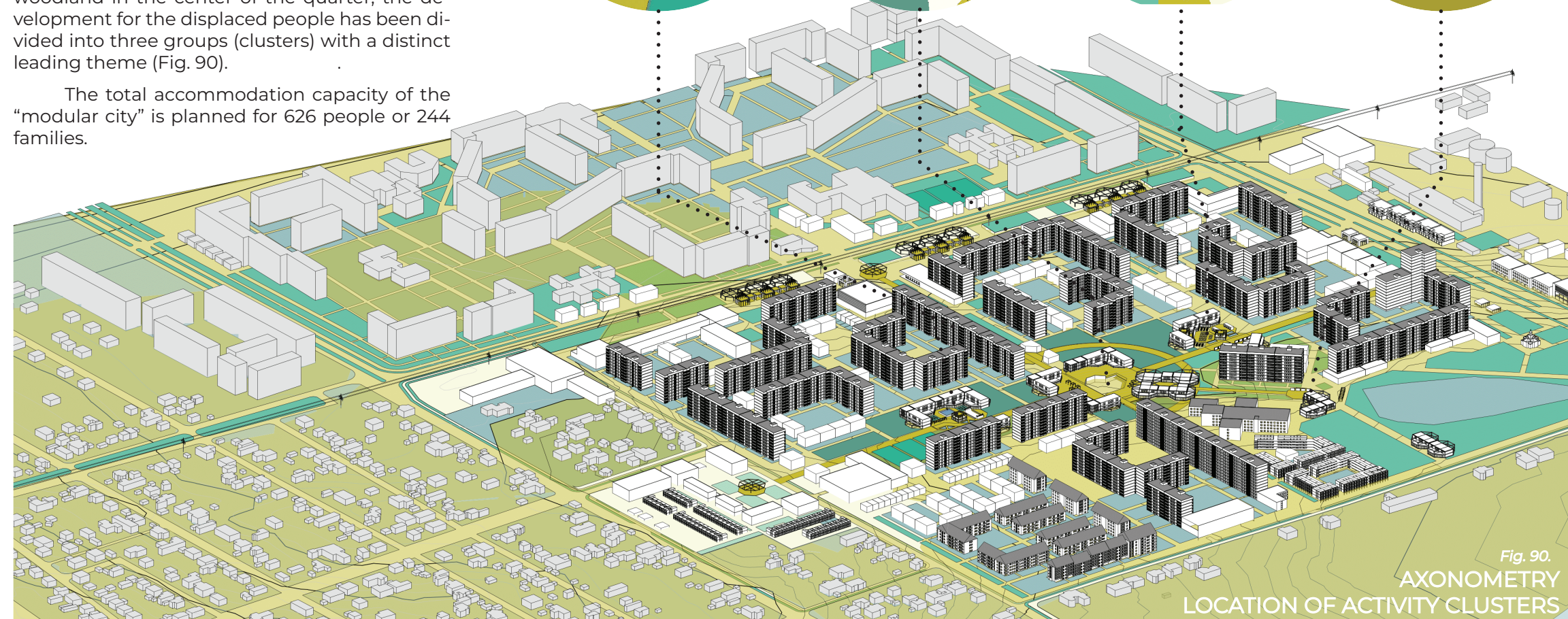
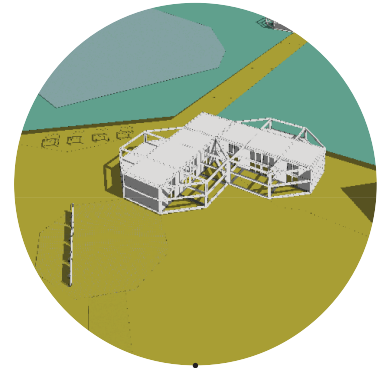


Fig. 85. Phase 2.

Fig. 90.

AXONOMETRY
LOCATION OF ACTIVITY CLUSTERS

15. DESIGN PROPOSAL

15.4. PHASE 2



Fig. 85. Phase 2.

“INNOVATION AND SCIENCE” CLUSTER

First of those clusters called “Innovation and Science” is intended for encouragement of professional activity and careers as well as exchange of experiences (Fig. 91). It contains, apart from the dwellings, a common part intended for professional activation and small start-ups. The ground floors are open for amenities or services possibly conducted by incomers (i.e. tailor services, computer repairs and IT services, small gastronomy), as well as an open-air cinema for open presentations, workshops or film projections, working cabins, public kitchen and advertisement boards.

The cluster can house 170 persons or up to 64 families.

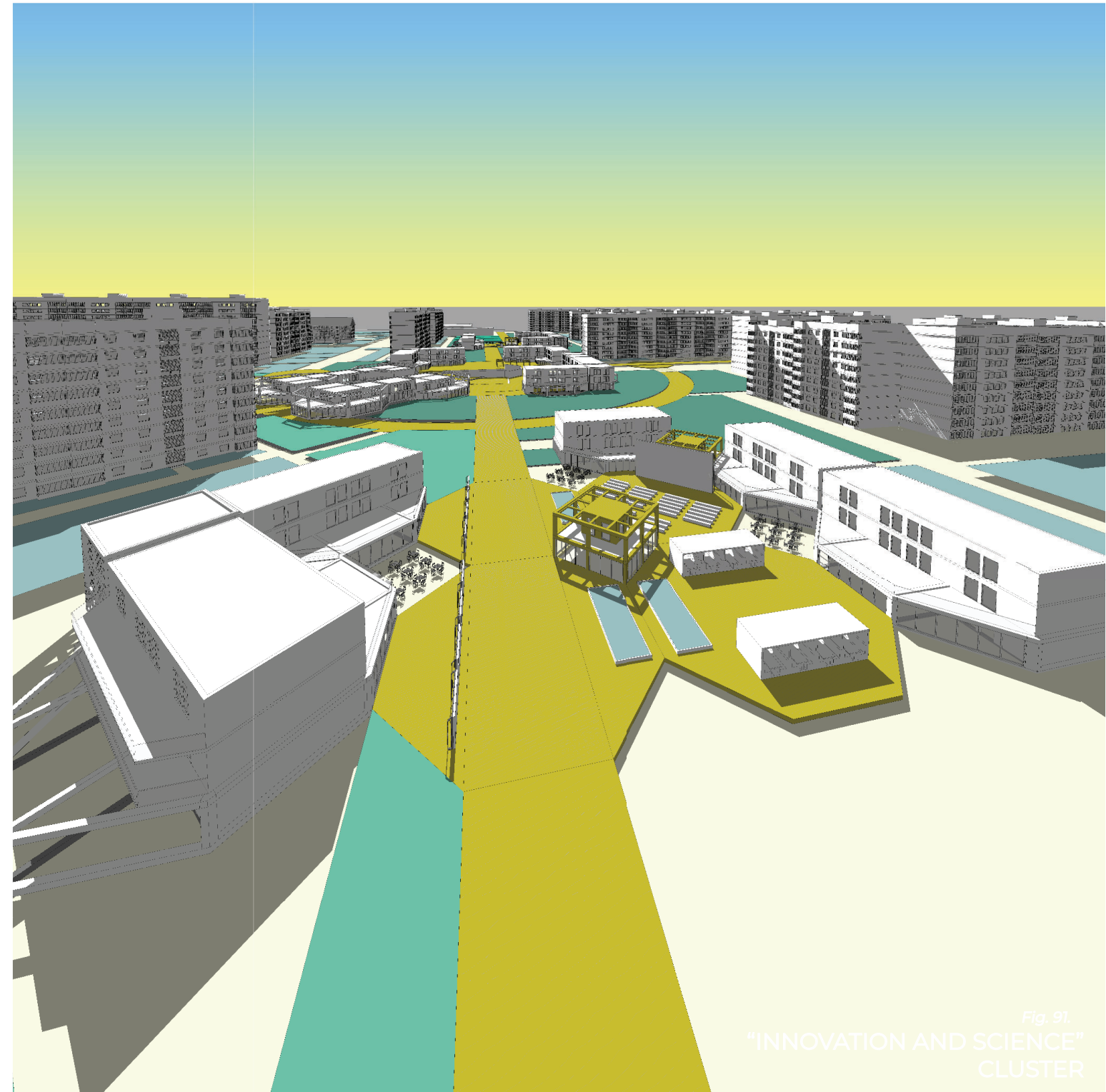


Fig. 91.
“INNOVATION AND SCIENCE” CLUSTER

15. DESIGN PROPOSAL

15.4. PHASE 2



Fig. 85. Phase 2.

“ART AND ENTERTAINMENT” CLUSTER

The central cluster called “Art and Entertainment” serves as a celebration and gathering place with an amphitheatre located in the middle (Fig. 92). The ground floors are active and adjusted for associating services. The amphitheater can encourage some performances, theatre plays and concerts. The wall forming the backdrop of the stage can be used for local art, such as graffiti. Significant elements of the cluster are the so-called Memory cubes, cube-shaped substructures set up in prominent positions for placing information related to history or current information.

The building located in proximity to the school serves as a cultural facility. The building is accessible from two opposite sides, the northern exit leads to the “Memory Cluster” located near the old cemetery, serving as a contemplation place to maintain the remembrance and can be associated with the premises of the humanitarian institution.

The “Art and Entertainment” cluster can house 232 families and up to 92 families.

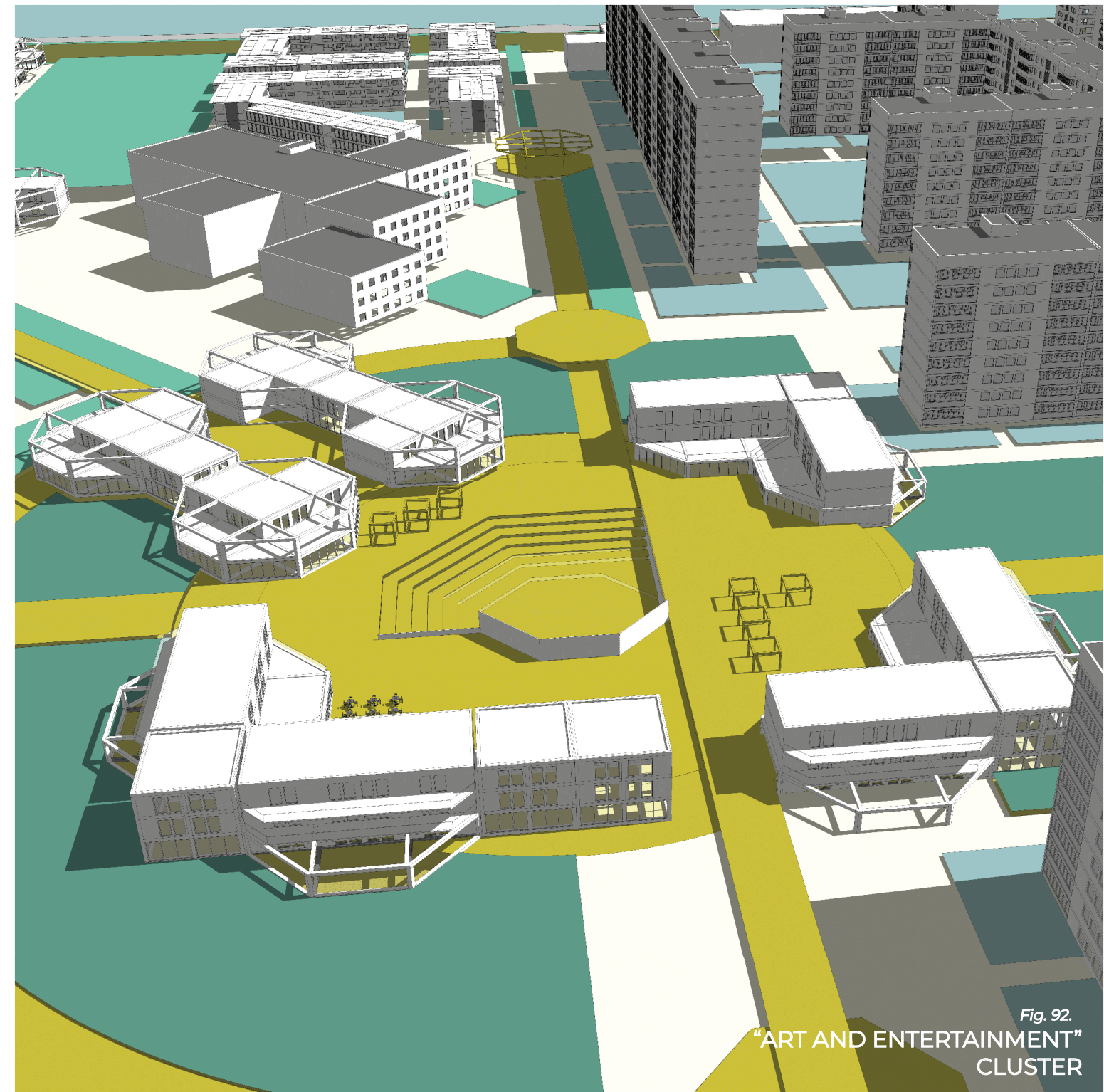


Fig. 92.
“ART AND ENTERTAINMENT” CLUSTER

“SPORT AND ACTIVITY” CLUSTER

The third cluster called “Sport and Activity” is planned to serve as a proposal for leisure time (Fig. 93). It is also equipped with active ground floors. The public spaces offer facilities to spend time actively: small swimming pool, skate park, open-air gym, playground for children and public sauna. The number of sports facilities is increased by three additional pitches serving all residents. The cluster is surrounded by greenery, which promotes outdoor recreation.

This part can give accommodation to 224 people or up to 88 families.

The modular solution for the estate resembles the “ProModSe” system however it is extended by adding urban modules helping to arrange the common spaces in a rapid mode. Each of those modules, both buildings and urban modules, has an octagonal shape (10m length of a side. 24m length of a diagonal). Octagonal shape gives a wide and flexible possibility of arrangement at various angles (45 degree, 90 degree or 135 degree), serves a significant and recognizable identity mark for placemaking, guarantees the compatibility of the configuration elements and the visual unification of the entire arrangement.



Fig. 85. Phase 2.

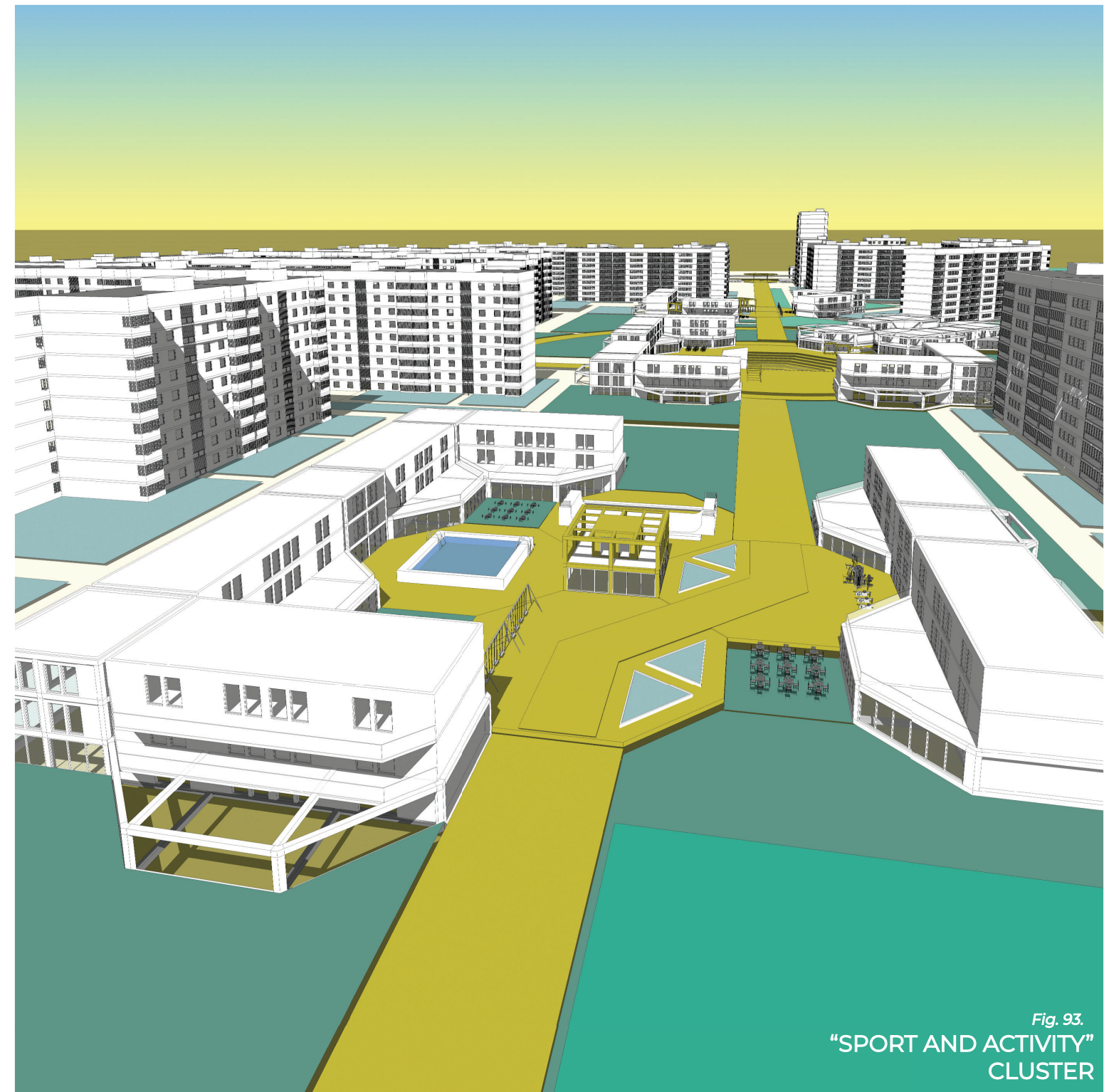


Fig. 93.
“SPORT AND ACTIVITY”
CLUSTER

URBAN MODULES

The priority for investment within the quarter is the construction of social housing with accompanying service infrastructure. In order to make this investment process faster and to achieve a coherent end result, I have proposed the introduction of building and urban modules, presented on Fig. 94. One part of these will be buildings containing housing units and commercial premises. The other parts are urban modules shaping the public space between the buildings.

The exemplary set of modular buildings and urban modules sets up a proposal for encouraging citizen participation in creating a final shape of the closest environment of their living place by choosing appropriate elements that will meet their needs and expectations.

Buildings are a permanent feature of the development. In the current situation, they will serve to accommodate displaced persons, in the post-war period they may be used as social housing or intended as transitional easily accessible housing for groups of young users at the start of their working careers. depending on the adopted housing policy.

An important feature of the modules is customization possibility, illustrated on Fig. 95, making their use more versatile. For example, residential buildings made in reinforced concrete frame construction have the possibility of receiving external curtain walls made of locally available materials or made in traditional technology typical of the location of the project.

Urban modules, which serve to complement the public space according to the current demand of the inhabitants, belong to the tactical urban planning approach, as they can be easily exchanged or modified. Flexibility of use can therefore be a guarantee for the sustainability and long-term use of the site as a whole.

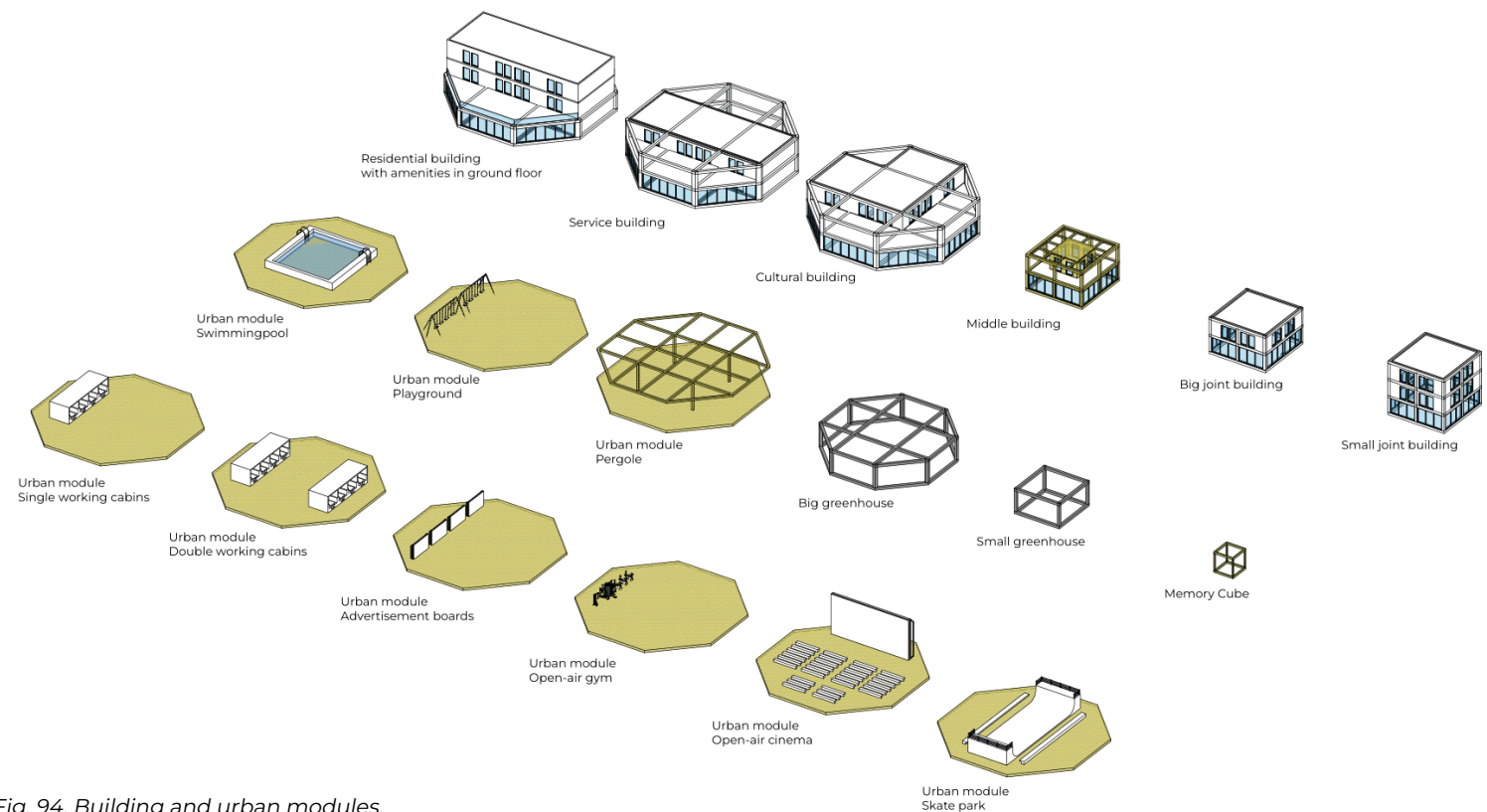


Fig. 94. Building and urban modules.

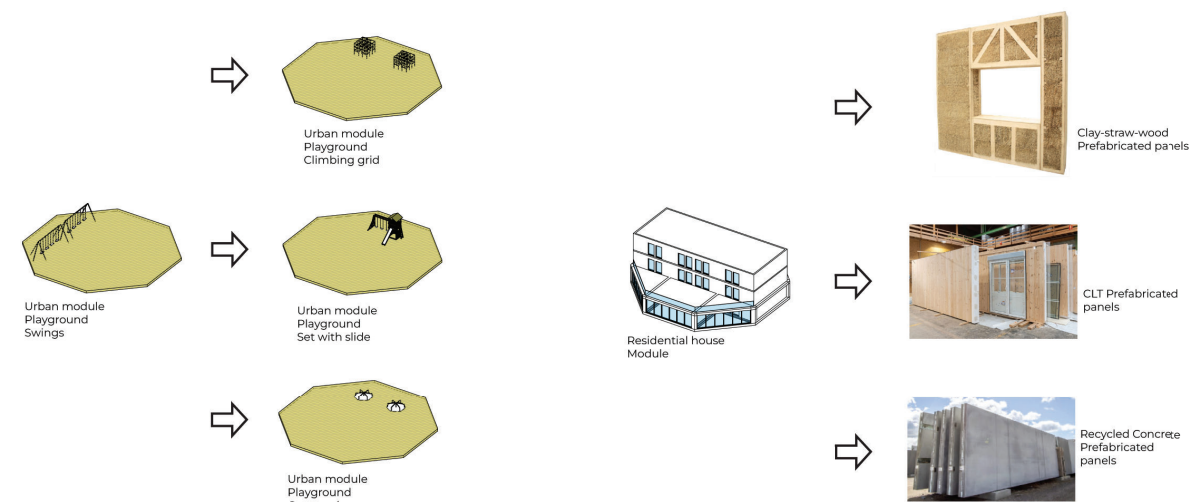


Fig. 95. Examples of customization of building- and urban modules.



Fig. 85. Phase 2.



Fig. 85. Phase 2.

JUSTIFICATION OF USE OF THE OCTAGONAL SHAPE

The layout of the buildings in the Borodinsky quarter is largely based on a rectangular grid and the buildings are situated perpendicular to each other. Although they do not form a regular layout, their arrangement makes it difficult to orientate oneself in space when moving between them. I therefore took the decision to introduce a shape that would break the existing pattern and establish landmarks. The school building and one of the residential buildings stand at a 45-degree angle to the others. I considerably the introduction of octagonal elements would allow this angle to integrate with the dominating right angles.

Each of those modules, both buildings and urban modules, have an octagonal shape (10m length of a side, 24m length of a diagonal). As mentioned above, octagon shape gives a wide and flexible possibility of arrangement at various angles (45-degree, 90-degree or 135-degree). Fig. 96 illustrates the octagon layouts derived from the project.

Using the same shape for buildings and urban modules makes them compatible with each other and enables quick configurations within given boundaries. The modules serve as significant and recognizable identity marks for placemaking, guaranteeing high recognizability and identification while maintaining visual unification of the entire arrangement.

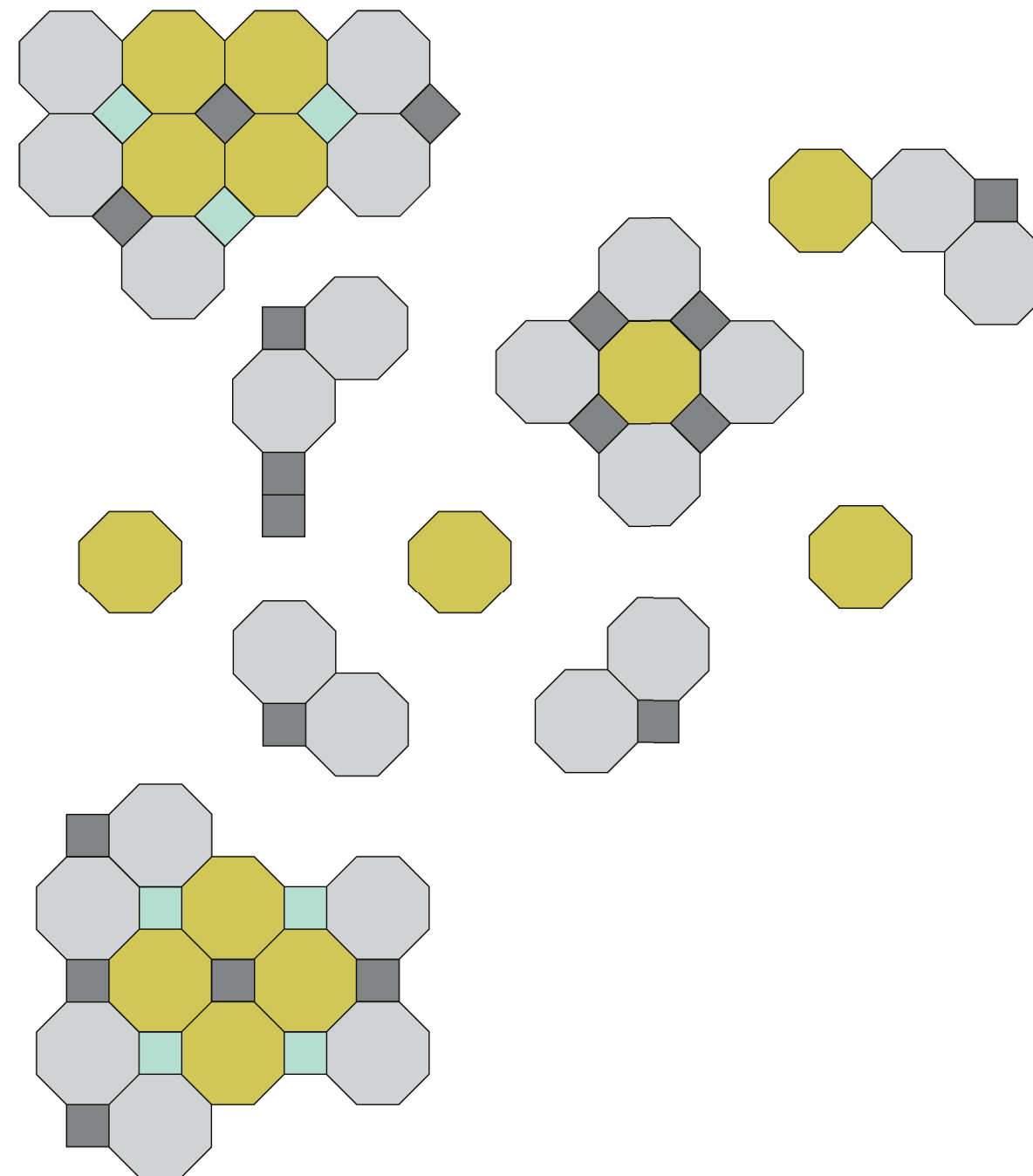


Fig. 96. Octagon layouts.

15. DESIGN PROPOSAL

15.5. PHASE 3

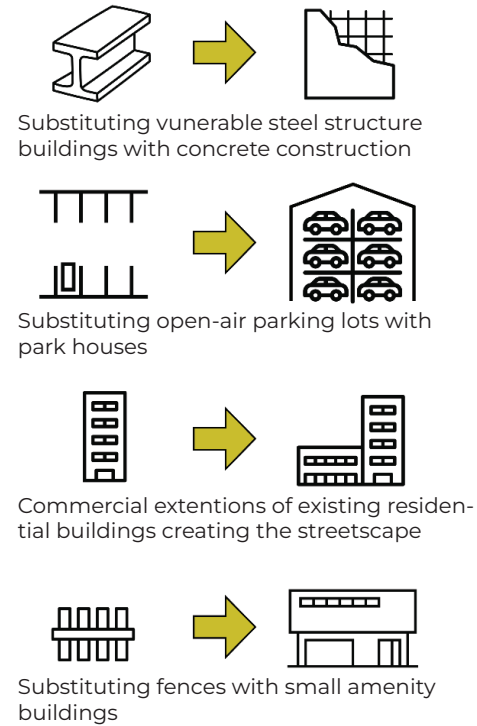


Fig. 97. Building transforming tools.

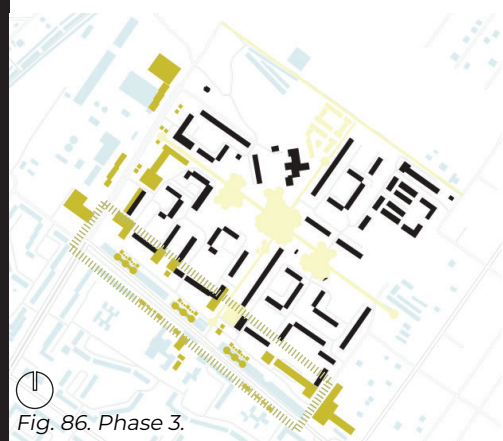


Fig. 86. Phase 3.

MARKET STREET REDEVELOPMENT OF MARSHALA CHUIKOVA STREET

Development of streetscapes is a natural consequence of establishing a modular estate for Internally Displaced Persons which empowers the activity of the whole neighbourhood. The main objective of street revitalisation is to make them more liveable, accessible and inclusive. The process can be already noticed by bottom-up initiatives, location of some commercial services in the communication nodes and extensions of ground floors of existing residential buildings.

Marshala Chuikova Street appears as a place with huge potential for active attendance due to the multiple commercial and gastronomic facilities, including the open-air market. Great advantage is achieved by the possibility to create a wide pedestrian pavement since the car lanes are moved aside. However, the main obstacle of this place consists in the presence of overhead high voltage lines (150V) running along the street and garages placed underneath, creating an impassable barrier (Fig. 99).

In my design I plan to convert the northern side of the street into pedestrian market street by supplementing it with enclosed wooden stalls (Fig. 98). Covering the garages allows to regain the area under the electric lines and allocate space for decorative greenery and greenhouses integrated into stalls.

The residential buildings adjacent to the street with exits directly onto the public space require sheltering from the public space by rows of trees.

I will introduce elements of visual connection in the form of wooden pergolas based on octagonal shape, located in the intersections of pedestrian routes and the street pavements.

Fig. 97 illustrates sets of tools for transformation of buildings located along the street.

Fig. 98.
PERSPECTIVE VIEW OF MARSHALA CHUIKOVA STREET



Fig. 99. SECTION THROUGH MARSHALA CHUIKOVA STREET

15. DESIGN PROPOSAL

15.5. PHASE 3

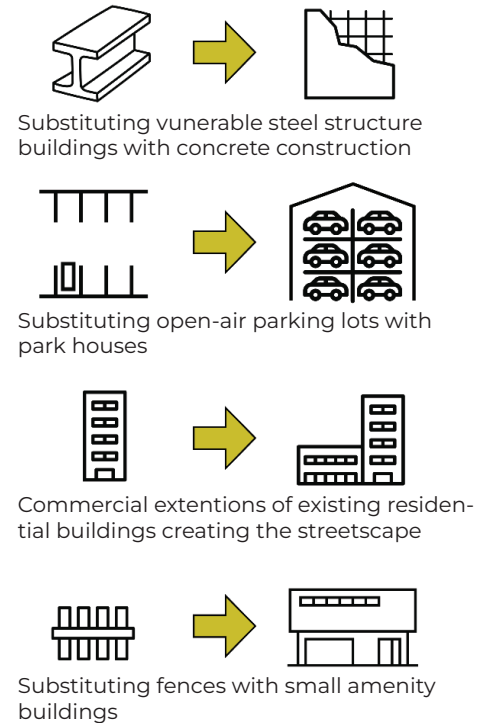


Fig. 97. Building transforming tools.

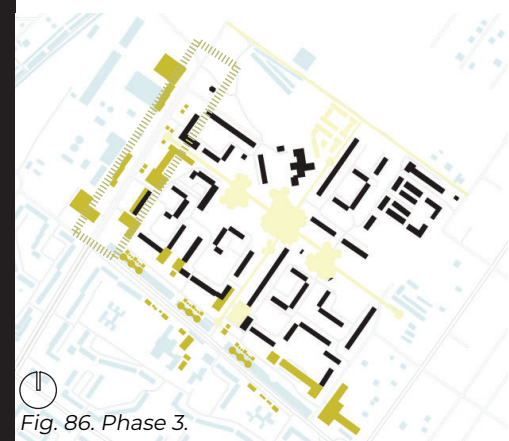


Fig. 86. Phase 3.

PARK STREET REDEVELOPMENT OF TOVARYSKA STREET

Tovaryska Street is located in the north-western part of the quarter and despite presence of the bus stop and supermarket seems abandoned due to undefined shape and fences. The street leads to the small orthodox church and surrounding park.

The premises of the Heat Distribution Plant are separated by the fence from the public street space. In my proposal, I intend to substitute fences with service buildings which play the sheltering role but simultaneously increase the inclusiveness and degree of attendance for the street users (Fig. 101).

In the process of reshaping the streets some safety precautions need to be incorporated aiming at better maintaining and preservation of the buildings with vulnerable structure or places directly exposed to artillery shelling. Buildings with fragile steel structure should be substituted by robust concrete construction. Fig. 97 illustrates sets of tools for transformation of buildings located along the street. I intend to relocate the local supermarket Borodinskiy Rynok in proximity to the crossroad and place it in a concrete structure combined with the park house. Open-air parking lots are intended to be changed into protective park houses with active ground floors containing amenities.

My design idea aims at forming a park street encompassing some assisting services. Introduction of a large amount of greenery will establish a continuity with the park and create a walkable place accessible for the inhabitants of the district (Fig. 100).

I will introduce elements of visual connection in the form of wooden pergolas based on octagonal shape, located in the intersections of pedestrian routes and the street pavements.

Fig. 100.
PERSPECTIVE VIEW OF TOVARYSKA STREET



Fig. 101. SECTION THROUGH TOVARYSKA STREET

15. DESIGN PROPOSAL

15.6. PHASE 4

CONNECTION TO THE DNIEPER BANK

The site, located on the eastern side of the quarter and within an area of single-family development, is currently built with detached garage sheds. The site creates an important transition zone between single-family and high-rise residential areas. Such as, the development of this site should mitigate this contrast.

For this reason, my design envisages the introduction of small-scale service facilities here to act as a sheltering for the terraced houses, correlating in scale with the existing single-family development.

The square created between the service buildings serves as a starting point directing pedestrian traffic towards the riverbank, over which a footpath leads (Fig. 102).

The pedestrian route intersects the industrial area and ends up with a new investment in proximity to the existing yacht club.

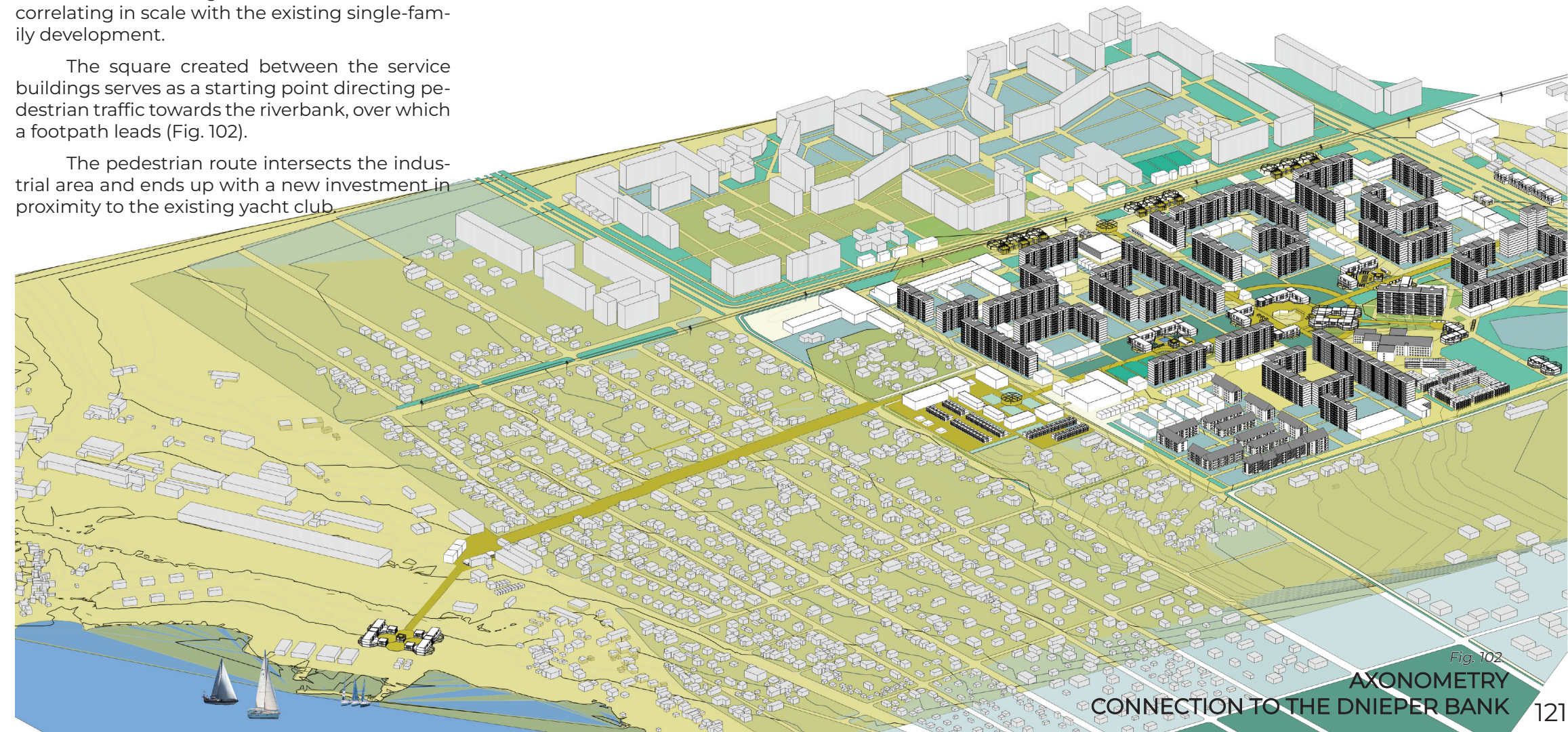


Fig. 87. Phase 4.

Fig. 102
AXONOMETRY
CONNECTION TO THE DNIEPER BANK





-  I Investment Cluster
-  II Investment Cluster
-  III Investment Cluster
-  IV Investment Cluster
-  V Investment Cluster
-  VI Investment Cluster
-  VII Investment Cluster
-  VIII Investment Cluster
-  IX Investment Cluster



 Fig. 88. Phase 5.

INVESTMENT CLUSTERS

DENSIFICATION OF THE HIGH RISE RESIDENTIAL AREAS

Furthermost phase of investments consists in densification of existing residential development and supply of new affordable dwellings. Investment in densification of the existing building fabric can be planned as a consequence of streetscape reshaping and saturation with available services attracting visitors and users. The value of the area will get raised by an increase of the rate of interest and attractiveness, and in result bring attention of potential investors.

Densification by constructing new buildings will considerably improve living quality by differentiation of public and private spaces, increase the security of inhabitants and enhance the sense of belonging.

The entire quarter can be divided into several investment clusters represented on Fig. 103, each of them including most beneficial commercial premises, as well as new residential buildings and refurbishment of existing dwelling blocks.



 Fig. 103.
INVESTMENT CLUSTERS

15. DESIGN PROPOSAL

15.8. SCALE DIFFERENCE

The newly introduced buildings are 3 storeys high in the centre of the quarter and 4 storeys high on the street frontages. The main reason for adopting this height comes from safety precautions and evacuation possibilities in case of bomb attacks. The quarter needs to be equipped with bomb shelters within both the public and private buildings, guaranteeing security for the residents and users. Each dwelling is provided by a shelter in form of a built-in concrete chamber connected to a vertical reinforced concrete evacuation shaft equipped with a ladder (Fig. 104). The evacuation is carried out internally through the shafts, therefore the height of which must not exceed about 10 metres.

However, the introduction of a building scale that contrasts with existing buildings also has a major impact on the perception of the streets and improved orientation. At present, the area is built up with blocks of uniform 10 m in height, made of identical modules and arranged perpendicularly, which gives an impression of monotony and disorientation. The lower scale is more adapted to the human perception and results in a better embracing of the space in multiple depths.

Lower buildings allow for shorter distances between them. Therefore, they can be placed directly adjacent to pedestrian routes and the stairwell entrances of existing tall buildings can be separated from attended footpaths by tree rows what can be seen on Fig. 105. This location will increase the visual identity of the street and improve orientation. Lower buildings increase the sense of safety for people attending these streets, which in turn affects the ability of children and young people to walk independently. Possibility of seeing several building plans: new lower buildings in the foreground and existing blocks in the background, will improve the orientation in the space of the quarter. Buildings of varying heights provide better wind protection

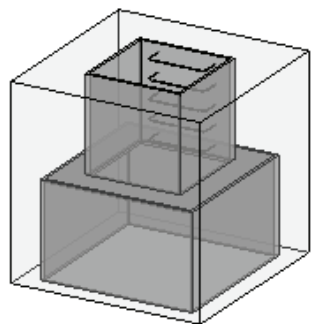


Fig. 104. Evacuation shaft connected with a bomb shelter.



Fig. 105.

PERSPECTIVE VIEW OF THE INNER STREET

16. DISCUSSIONS ON THE TEMPORAL DYNAMICS AND LEARNING OUTCOMES

Embedding new urban structure into existing fabric constitutes a complex process that can be considered in many aspects. Technical aspects regarding provision of efficient appropriate infrastructure as well as preservation of green resources are crucial for planning new investments, however we can assume that existing capacity is able to suffice new demands. A real challenge appears in the case of compilation of variously aged structures with different frequencies of the inhabitants' daily activities and routines. These frequencies relate to different time spans and can be considered on a daily, seasonal, annual or life span basis.

Residential development has a relatively slow daily rhythm inherent in its character associated with fixed times of being in or out of the house. It can also be assumed that this rhythm is even slower in the case of older buildings inhabited by elderly people. Service facilities, on the other hand, are characterized by a faster rhythm associated with a high frequency of attendance by customers and with this frequency increasing with a higher variety of services. However, these seemingly contradictory rhythms interfere and complement each other. The places frequented by the people are considered safer and guarantee the supply of essential products for the inhabitants. Services cannot be profitable without the presence of permanently residing customers.

These frequencies demonstrate variability depending on the seasons and external factors such as the economic or political situation. However, they can be considered on the temporal scale of human life. In an environment dominated by private ownership, residents occupy their premises for most or all of their lives. The accompanying services are also characterized by a certain inertia due to the lack of variability in the needs and interests of the residents. Service providers lack the motivation to make any changes.

When temporary housing is introduced into the existing housing fabric, the pattern of rhythms changes again. The people who are the recipients of this housing (in the current situation internally displaced persons) are most often newcomers to the area and their presence, marked by an adaptation process, demonstrates a higher rhythm than the life of permanent residents. Life for new inhabitants includes exploring the local job market, childcare, organizing a circle of friends and a more intense cultural life. This contributes to a higher dynamic, but also to a higher demand for the use of different types of services and a susceptibility to more frequent change. The neighbourhood begins to pulsate with changing facilities, gaining uniqueness and attracting others.

These changes may stand in conflict with the habits of existing residents, who are accustomed to live in silence, stability or even monotony. It is therefore very important to separate zones with different degrees of privacy and accessibility from the outside. Providing intimacy for different groups of residents will increase the feeling of security and simultaneously contribute to mutual integration and easier reconciliation of different interests.

Viewed through the prism of different overlapping rhythms and dynamics, the notion of temporary accommodation acquires a different meaning. Temporal accommodation becomes one of several frequencies present in an area, reinforcing or weakening other rhythms. It enforces the speed of changes, while it weakens the sense of constancy and permanence of certain features or elements of the environment. The colloquially used term 'temporary' has an outlined, albeit unspecified in time and form, end. Temporality conceived as a rhythm can be equated with interchangeability and flexibility.

A given flat or building may be used by a sequence of different users. As modular buildings, they are quickly constructed but, thanks to their customisation capability, can be adapted to the current needs of the current users. This ap-

proach offers the possibility of maintaining continuity in the use of a space, while giving it the opportunity to adapt to changing conditions. The adaptability of a space can be seasonal or occur over several years. In either case, it aims to meet the needs of users on the one hand, and to attract and sustain the attention of visitors on the other. The result is a higher attractiveness, liveability and vibrancy of the place.

Public participation is an important factor in shaping a residential area. According to Arnstein's ladder, it can vary in intensity. Partnership, Delegated Power and Citizen Control constitute the levels at which residents have a real influence on their living conditions. Under economic conditions dominated by private property, however, the consumer model, performed as an attitude of Informing, Consultation and Placation, dominates. Despite the unequal distribution of responsibility, the consumer model can be managed by involving participants in a sequence (chain) of choices to decide on the final shape of the living space.

The occupation of eastern regions of Ukraine and outbreak of war in 2022 entailed a huge wave of internally displaced persons. Necessity to provide them with accommodation unveiled a huge problem due to missing decent premises as a result of social housing shortage and limited capacity of house production in a short time.

First attempts to tackle this problem resulted in temporary solutions of makeshift shelters, often in public premises converted into housing in urgent mode. Meeting the most urgent housing needs did not bring the permanent solutions of the problem. Nonetheless, municipalities in cooperation with charity and humanitarian institutions took the burden of arranging houses within the residential areas of many Ukrainian cities since it became apparent that they would not be able to come back to places of their origin.

Struggling with financial deficits, the municipal organizations managed to build modular cities, initially made of ready-to-use containers, simultaneously with designers and industries coping with developing new technologies with modular house production.

Existing modular cities in Zaporizhzhia and Lviv displayed the dependence of the quality of residents' living places on the possibility to shape their immediate living environment from below by themselves. Dependence on donors and charitable institutions often does not offer much choice when it comes to the construction of the housing facilities themselves. However, it is possible to create an urban arrangement that stimulates residents' bottom-up activities, strengthens their sense of belonging and creates a welcoming place.

Introducing new functions into the resulting settlement for displaced people, making the place vibrant, will contribute to faster integration into the community. Residents of existing settlements will discover that the new development will change the quality of their existing place of living. Thus, building a modular city for internally displaced persons can be perceived as a tool for enriching the existing built environment by providing new opportunities and activities into it. Improving the quality of place is particularly important for residential neighbourhoods with visible or imminent social and technological degradation due to outdated housing standards and a lack of a wider range of services and places that sustain social connections. Following this, it seems justified to utilize the necessity of creating new premises in districts which need functional and social upgrading.

The need to build houses for displaced people has also drawn attention to the approach and method of construction of such houses. Clearly, the most justifiable approach is to use modular construction, which allows buildings to be erected on an accelerated basis.

The requirements imposed by the modern economy reject the full unification with which modular construction has been associated in the past. Efficient production must be linked to the customizability of the final product. With this in mind, the modular system now relies on a combination of compatible parts, each of which is produced in a standardized system. The configuration of the final product involves a chain of choices made by the end user.

The model of chain of choices can also be applied to the design of the public participation, valuable and crucial in the process of placemaking. Cooperation between investors, local authorities and local residents, coordinated and moderated by professionals (e.g. NGOs) can contribute to increasing the potential of a place.

Experience has shown that even small interventions (tactical urbanism) in the existing environment can contribute to a change in the

attitude and activity of the inhabitants, thereby increasing its quality and value. Thus, interventions connected with implementation of IDPs housing can prove to be an excellent procedure for assessing the potential of a development site, help determine its direction of change and provide valuable guidance for further long-term investment planning and financial commitments.

It is also worth noting the opportunities opened up by modular production with customization possibilities and the integration of diverse technologies in the production of component parts. This fact opens a market for manufacturing components from locally available and indigenous materials, as well as a return to vernacular and traditional techniques. This approach can contribute to growth and a sense of identity, connection with place and a sense of belonging.

Joanna Kopacz- Gruzlewska

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