Scientific Papers. Series B, Horticulture. Vol. LXVII, No. 2, 2023
Print ISSN 2285-5653, CD-ROM ISSN 2285-5661, Online ISSN 2286-1580, ISSN-L 2285-5653

GREEN REHABILITATION CONCEPT FOR A POST SOCIALIS MARKETPLACE (PROMOTING THE LOCAL FARMERS AND SUPPORTING THE GREEN INFRASTRUCTURE OF THE CITY OF TÂRGU MUREȘ)

Endre KENTELKY, Gabriella KISS, Ildikó LIHĂT, Róbert Marius TĂSLĂVAN, Martin JAKAB, Zsolt SZEKELY-VARGA

Sapientia Hungarian University of Transylvania, Faculty of Technical and Human Sciences, Department of Horticulture, Calea Sighișoarei 2, 540485 Târgu Mureș, Romania

Corresponding authors emails: ildiko.lihat@gmail.com, zsolt.szekely-varga@ms.sapientia.ro

Abstract

Marketplaces, are integral parts of cities all over the world. In the last decades the rapid urbanization is putting pressure on the cities, this creates numerous problems for locals. Besides over-urbanization syndrome, Târgu Mureș is still struggling with the influence of the post-socialist era, the nature of the communist vision can still be noticed. The present paper tackles the importance of marketplaces from two points of view: the sociological point of view, why it is important for locals and society; and from the point of view of ecology. The rehabilitation and re-naturalization of the marketplaces creates a pleasant meeting point for locals, helps boosting the sale of local products, strengthens the economy and supports the sustainable character of the settlement. The proposed plan can serve as a model for the renovation and development of marketplaces in dense urban areas. The researched marketplace is located close to the city center, to its historical places, and could become a good green space not only for the acquisition of goods, but for recreation space as well.

Key words*: buy local, green infrastructure*, *marketplace rehabilitation, sustainable city.*

INTRODUCTION

Marketplaces play a crucial role in cities all over the world, serving not only as spaces for product sales but also as important socialization venues for local residents. However, rapid and over-urbanization in recent decades has led to increased density and reduced livability in cities. To address this, increasing green space and nature-based solutions can enhance the quality of life (Hunter et al., 2017). According to several previous studies, this can include, public parks, forests, playgrounds, sport fields, private gardens, and other green spaces (Csomós et al., 2020; Sikorska et al., 2020; Viviera et al., 2018).

Harmful human activities have damaged the environment and these effects are mostly irreversible, but they are also now part of our daily lives. Reducing their impact is a major challenge of our time. The industrial revolution led to a wave of urban development, where natural areas were transformed and “cleaned”, swamps drained, rivers regulated, and riverbeds coated in concrete. All this resulted in the removal of nature from cities (Cvejić et al., 2015).

The UN World Commission on Environment and Development defined sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland, 1987). Douglas Farr's (2007) "sustainable urbanism" approach argues that urban density and connection with nature are key components of sustainable urban planning. In agreement among ecologists, economists, social scientists and planners, urban green areas can be considered as public and private spaces within cities primarily covered with vegetation, available for direct (e.g., active or passive recreation) or indirect (e.g., environmental benefits) use by the public (Koohsari et al., 2015; Kardan et al., 2015).

Târgu Mureș still struggles with the remnants of the post-socialist era, as seen even in its marketplaces (Lihăt & Ványolós, 2021; Stanilov, 2007).

Historically, the market was an integral and well-functioning part of the settlement of Târgu

Mureș and numerous fairs were held here. As even the name confirms, “târg” means “market” (in German Neumarkt, in Hungarian Marosvásárhely) (Pál-Antal, 2009).
This research examines the importance of markets from both sociological and ecological perspective. Greening market places can expand the city's urban green infrastructure and create a pleasant meeting place for locals, boost local product sales, strengthen the economy, and enhance the settlement's sustainability. The increase of green space and nature-based solutions can offer the possibility to improve the quality of life (Hunter et al., 2017).
The current study examines the history and current state of Târgu Mureș's fairs and markets and aims to transform them into community spaces that preserve traditions, re-enchant the atmosphere, and meet the needs of modern society. The proposed plan can serve as a model for renovating markets in dense urban areas. The focus of the research and study is a market located near the city center and its historical sites, which can serve as a good green space for both commerce and recreation (Figure 1).

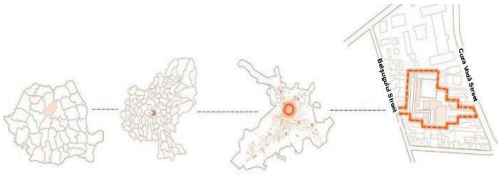

Figure 1. The location of the analyzed market (according to: Târgu Mureș General Urban Plan 2010)

URBAN DEVELOPMENT

The first written reference to Târgu Mureș appears in a 1323 document as "Novum Forum Siculorum," meaning New Szekler Market Hall. It was officially named Târgu Mureș in 1616 and has always included "market" in its name, highlighting the significance of its fairs (Keresztes, 1996; Man, 2006).
The city developed rapidly during the 14th century and became the first Transylvanian settlement to earn the title of free royal city (Pál-Antal, 2009). Târgu Mureș was known as the fair place of Transylvania for many years and received the right to hold three national fairs from King Matthias in 1482 (Sebestyén, 2009).
The city is located in the heart of historical Transylvania, where three geographical units meet. It is a hub for exchanging grain from the Transylvanian plains, vegetables from the Niraj valley, and wooden products from the mountains (Keresztes, 1996). Weekly markets take place on Thursdays, fulfilling the needs of the city's residents and facilitating goods exchange in rural areas. Over time, fairs were added on other dates, and the city was granted the right to host three national fairs: the second Thursday after Pentecost (Lord's Day), November 11 (Saint Martin's Day), and Palm Sunday. The fairs took place in the city center, now known as the main square. As the settlement grew larger, the exchange of goods increased and the market spread to nearby areas, becoming specialized. In the early 19th century, the cattle market, wood and coal market were separated from the food market. In 1937, regulations were established for holding national fairs seven times a year (January, March, May, July, September, November, December) and weekly markets on Monday and Thursday (Sebestyén, 2011).
However, from the mid-1900s, the fairs lost importance and were moved from central squares. Several residential areas were built and smaller permanent markets were created in each neighborhood. In 1953, the main square was reorganized and the market was relocated from the city center. The goal was to have at least one market in each city quarter. The main market moved from the main square to an empty square behind the town hall, and in 1961 the daily market moved to the area between Cuza Vodă and Martinovits Street, now Belșugului Street. The market was fully developed by 1962 and modernized in 1966. (Sebestyén, 2014)

METHODOLOGY

The present research aims to find the best solution for stabilizing and expanding urban green infrastructure under a sustainable urban planning approach. This involves increasing green areas in dense urban fabric, sustaining biodiversity to reduce pollution and bring ecological, economic, and social benefits to the

city and its residents. The pilot project is based on a multi-criteria analysis of the current situation of the existing marketplaces. The research aims to identify areas and methods for expanding green space, creating sustainable green spaces. The study also focuses on the relationship between the city and its inhabitants, their well-being.

ANALYSES

Romanian Regulations for Markets

The Romanian regulations for markets are outlined in the Government Decision No. 384 from 2004. This decision governs the trade of products and services in public areas such as markets, fairs, and public roads. The decision sets general rules and minimum conditions for these activities and defines trade in public areas as the sale of products and services in markets, fairs, public passages, streets, and other public areas. Article 7 of the Decision lists the types of markets that can be held in public areas, including agricultural and food markets, fairs, jigsaw fairs, mixed markets, moving markets, and flea markets.

The Decision No. 384 of 2004 regulates the operation of markets and fairs in Romania, but it does not mention the importance of market places from a sociological or environmental perspective. Although there are references to the safety of the population and rest areas, there is no discussion from a sustainable cities approach, that is so important nowadays (Romanian Government, 2004).

Settlement-level analyses

During the analysis of Târgu Mureș markets, their locations were marked. The agro-food markets are located in central parts of larger residential areas, except for the Cuza Vodă street market, which is situated near the historical city center, not in a specific residential area.

The markets' accessibility was evaluated through the bus network analysis, showing that each market has at least one bus stop within a maximum distance of 400 m and, in some cases, multiple bus stops, making it easy to access the markets by a short walk. A population analysis was also conducted, indicating that each market is located in an area with high population density of over 1,000 inhabitants/km^2 (Târgu Mureș City Hall, 2010)

General analyses of examined markets

During the visits to the city's markets, have been recorded observations of their size, type of roofing, use of greenery, availability of parking places, and accessibility by public transportation. The results are summarized in Table 1 below (Târgu Mureș Administration of markets, 2021).

Table 1. General dates from markets (Târgu Mureș Administration of markets, 2021)

Market name	Area (m^2)	Covered zone (m^2)	Material of the pavement	Parking lot	Nearest bus stop (m)
Cuza Vodă	12429	1100	asphalt, pavement	yes	~ 30
Unirii	790	220	asphalt, pavement	yes	~ 120
1848	4234	2000	asphalt	yes	~ 400
1989 dec. 22	9399	2600	asphalt, pavement	yes	~ 320
Diamant	1124	1087	asphalt	no	~ 240
Dacia	1148	600	asphalt	no	~ 230
Armatei	7461	2640	asphalt, pavement	no	~ 480
Vechituri Market	23000	-	asphalt, pavement, gravel cover	no	~ 440

Typology of the analyzed marketplaces

According to Article 7 of Decision No. 384 from 2004 two types of markets can be distinguished in Târgu Mureș: permanent markets and periodic fairs. Permanent markets are those that operate on a daily or weekly basis, and are established in a specific location for a longer period of time. Periodic fairs, on the other hand, are temporary events that occur periodically, usually for a limited timespan and in a different location each time (Romanian Government, 2004).

1. Permanent markets

There are currently eight permanent markets in the city, six of which sell agro-food and industrial products. These include: the daily market on Cuza Vodă Street, the Unirii quarter market, the “1848 market” in Dâmbu Pietros residential area, the “December 22 1989” market in the 7 Noiembrie district, the “Diamant” and “Dacia” markets in the Tudor Vladimirescu quarter and the market of Mureșeni residential area. In addition to these, the city also has two non-food industrial

markets: the Armatei market ("Russian market") from Armatei square and the "Piața de Vechituri" market, which functions as a flea market and is open only on Sundays (Figure 2).

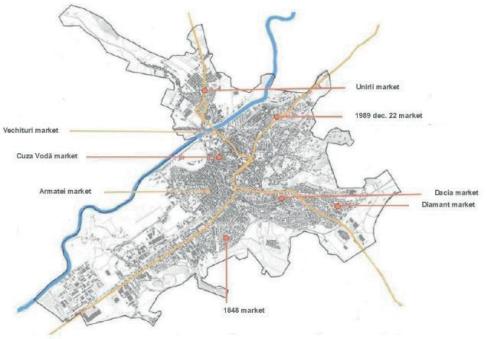

Figure 2. Location of the permanent markets (according to: Târgu Mureș General Urban Plan, 2010)

The markets in Târgu-Mureș trade in various products and services including vegetables and fruits, household goods, food industry products, non-food industry products, flowers, smaller animals (such as lambs), and catering. The market is divided into sectors for agricultural producers, household goods, food industry products, non-food industry products, flowers, live animals (with a mini-slaughterhouse for lambs), and catering (Târgu Mureș Administration of markets, 2021).

2. Periodic fairs

In addition to permanent markets, Târgu Mureș also holds periodic outdoor fairs several times a year, usually during holidays. These fairs can be one-day events or last several days or even a week. Examples include the Christmas fair, the Women's Day flower fair, the newly organized Easter fair, the "Local Farmers Market" organized by Petry, and the craft fair called "Târgul Cetății." These fairs are usually located in the central part of the city and are highly popular, attracting many visitors and adding vibrancy to the city's daily life. (Târgu Mureș Administration of markets, 2021).

CASE STUDY

Landscape analyses

1. Existing situation

The Cuza Vodă Street market in Târgu Mureș is located in the central part of the city and surrounded by Cuza Vodă and Belșugului streets. It opened during the summer of 1961; before operating on Cuza Vodă Street, the market was located in a non-equipped square behind the City Hall, having been moved from the main square (then Stalin square). The present area was completed in 1962 and modernized in 1966 with covered counters. In 1976, a covered market hall was built.

The market on Cuza Vodă Street in Târgu Mureș is the largest of the city's six agri-food markets, covering 12,429 m^2. It is not a residential market but the central, "big market" visited by people from all over the city. The market operates daily and is open seven days a week. It has high turnover, with fewer visitors on Mondays and the most from Thursday to Saturday. According to Google data's, the average visit is 20 minutes per costumer.

2. Accessibility

The market has two entrances, one on Cuza Vodă Street (pedestrian only), this is the main, and one on Belsugului Street (with a 50-car parking lot). Accessible via public transport with a nearby bus stop on Cuza Vodă Street (30 meters from main entrance). Surrounded by a pharmaceutical factory, kindergarten, small grocery store, bakery, and residential buildings.

3. Function analyses

The market area is dominated by its market function, with both outdoor and indoor sales. Additionally, there are buildings with administrative functions, several shops, a small rest area, and a mini-slaughterhouse that operates periodically, specifically during Easter.

4. Built-in, paved, green spaces

The market area is largely paved, images can be seen in Figure 3, to accommodate its market function and high pedestrian traffic, but this has negative impacts on the microclimate due to the limited green space and very few plants.

Figure 3. Existing pavement

The built-up areas occupy 34% of the total area, while paved surfaces make up 65%, split almost equally between asphalt and concrete

sponge. The proportion of green space is low, only 0.21% of the total area. This exacerbates the heat-island effect, a common phenomenon during hot summer days (Figure 4).

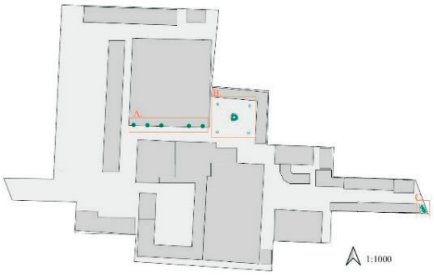

Figure 4. Existing green areas

5. Outdoor furniture

There is a diverse range of outdoor furniture available, some of which are specified in market regulations, such as vegetable washers and blue-painted metal market sales counters. The two drinking fountains in the area are in poor, neglected condition. The resting area includes a few wooden benches and plastic trash cans, but these furnishings are not cohesive in terms of color, material, or design (Figure 5).

Figure 5. Existing furniture

6. Existing vegetation

The market's vegetation is limited, with a small number of plants on its few green areas. On the paved surfaces, there are a few trees in pots and four common ash trees (*Fraxinus excelsior*) at the corners of the resting area, as well as five arborvitaes (*Thuja occidentalis*) on one side of the outdoor covered sales area.

The resting area has a small circular garden with a rose bush (*Rosa* sp.) in the center surrounded by creeping junipers (*Juniperus horizontalis*), three common boxwoods (*Buxus sempervirens*), and wax begonias (*Begonia semperflorens*). At the entrance from Cuza Vodă street, there is another small area with Japanese spindles (*Euonymus japonicus*), creeping junipers (*Juniperus horizontalis*). The green areas are limited in size and have limited vegetation, with most of the plants not being native to the area (Figure 6).

Figure 6. Existing vegetation

7. SWOT analyses

To summarize the analysis, a SWOT analysis was prepared for the planning area. The SWOT analysis shows there are many strengths and opportunities in the area that can support sustainable city development, but also many weaknesses that could create additional problems and threats if not addressed (Figure 7).

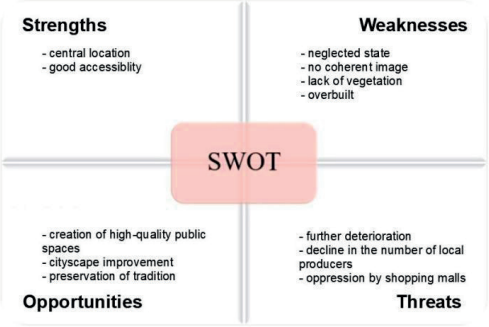

Figure 7. The SWOT analysis

Presentation of the concept

The development of the concept was facilitated through multiple visits on the site, conducting visual tests and analyses, and reviewing relevant case studies. A glaring deficiency observed in the area was the insufficiency of vegetation, which impairs the space both

aesthetically and ecologically. The concept aims to address this issue through a primary focus on greening. However, augmenting the green area presents a considerable challenge as the area is situated in a highly developed central district and features a large paved surface. This led to the proposal of utilizing green roofs and green walls to bring nature back into the urban environment and its associated benefits like supporting the biodiversity, better rain water management, ecological benefits, etc. (Pál., 2008).

In line with the greening theme, the design prioritizes sustainability and environmental responsibility, recognizing the critical role it plays in contemporary open space design. This includes considerations such as the use of eco-friendly materials, transportation, and the management of water and energy.

The concept is visually represented in the accompanying flowchart (Figure 8).

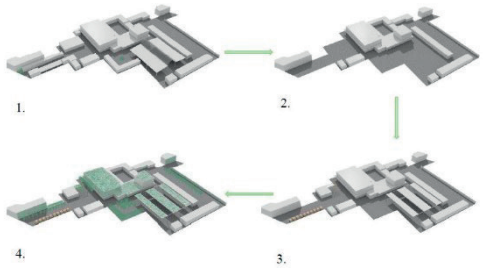

Figure 8. Concept flowchart

The initial illustration represents the existing conditions, characterized by the scarcity of green spaces and a high concentration of built environments. The subsequent figure depicts the scenario after the demolition or reconstruction of specified structures. These buildings were recommended for removal as they obstruct views, serve non-essential functions, and contribute to the prevalence of built-up and paved spaces, leading to a feeling of congestion. In the third illustration, the newly proposed constructions have been introduced. Finally, the fourth figure, depicts the area after the introduction of vegetation, creating a more livable green space for the city.

Extending this concept to the city-level, by applying similar transformations to agricultural-food markets (Figure 9), the city could potentially boast six such livable green spaces located in under-served areas, providing a positive impact on the urban landscape, helping the sustainable urbanism theory (Haq, 2011).

Figure 9. City-level concept (according to: Târgu Mureș General Urban Plan, 2010)

The plan proposes incorporating green roofs and walls in the densely built and fully paved urban market square. The intensive green roof design, recommended for the roof structure above the sales counters, is suggested to replace the current polycarbonate roof due to its poor performance in providing shade and its overheating in summer. It is recommended to utilize a reinforced concrete structure with sufficient load capacity for the establishment of an intensive roof garden covering an area of 1,620 m^2. To provide light and shade, four 6 x 6 m skylight windows will be installed. Access to the roof garden will be facilitated through a staircase, two additional ladders will be placed for emergency purposes. The roof garden will feature perennial plantings, trees, shrubs, lawns, benches, drinking fountains, and other elements to create a relaxing and green environment for visitors (Figure 10).

Figure 10. Aerial perspective of the proposed design

In the proposed design, the indoor market building is equipped with a semi-intensive green roof, given the unknown load-bearing capacity of the existing building. The lighter structure of a semi-intensive green roof allows for the provision of a garden-like experience for visitors. The south-eastern part of the roof

features a paved space, complete with benches and tables, affording views of the main square and its notable landmarks, such as the town hall tower. Safety barriers have been incorporated at accessible areas of the roof. Access to the semi-intensive green roof is possible via a staircase from the indoor market building, as well as through the staircase shared with the intensive green roof. The adjacent building block, which is of a lower elevation, features an extensive green roof, with limited accessibility but important ecological and aesthetic functions. The northernmost portion of the building block features an extensive green roof and the placement of solar panels.

In addition to the implementation of green roofs, the utilization of green walls is also proposed in the plan. The concrete fence along the northern border of the parking lot and the fire wall adjacent to the entrance from Belșugului Street would be covered with vegetation. The upper part of the indoor market building would also receive green wall treatments. A modular green wall with a diverse range of plant species is recommended for the fire wall at the entrance from Cuza Vodă Street, serving as a prominent and visually appealing feature at the square's major point of entry.

Furthermore, the area surrounding the market is proposed to receive tree planting, including the entrance area, where benches, drinking fountains, and a row of narrow-crowned trees would replace the existing shop premises. Additionally, a small space in front of the outdoor market is envisioned to include tree planting, creating a rest area, and the possibility of hosting stalls selling products periodically. A row of trees in the middle of the parking lot is also proposed to provide shade to the area. A parallel bicycle path and bike parking lot would be established at the back entrance. Finally, the upgrade of pavements and street furniture is also recommended. All this are shown in Figure 11.

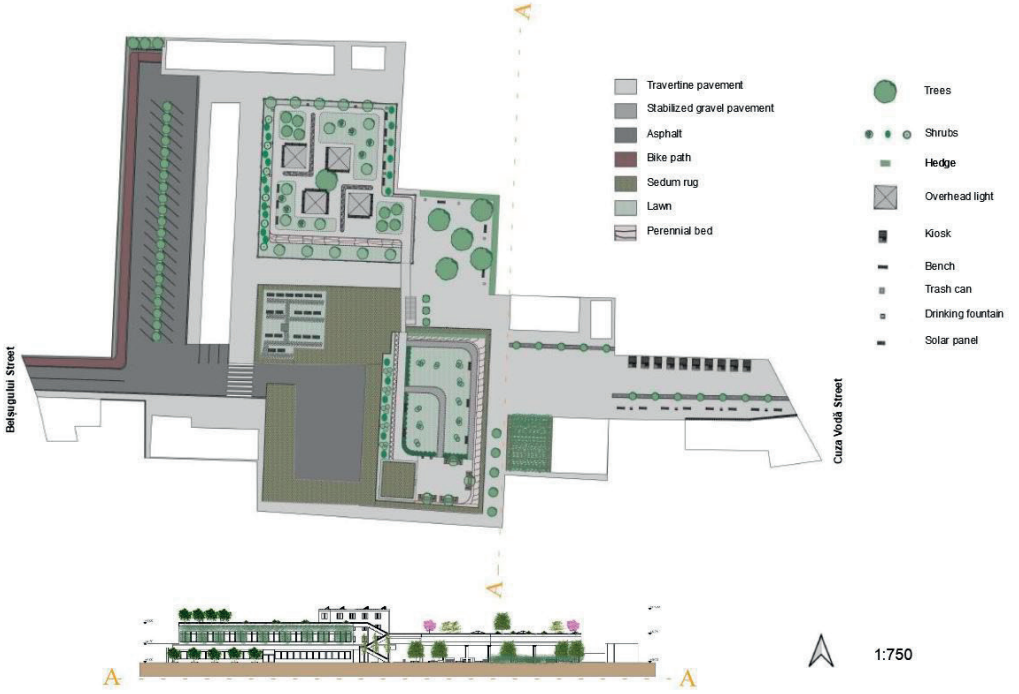

Figure 11. Masterplan and section of the proposed design

1. Proposed pavements

For the pedestrian areas of the market, with the exception of the vehicle access points such as the rear entrance, parking lot, and loading area, the utilization of travertine stone slab surface is proposed. This material is naturally occurring, if it is accordingly treated is resistant to freeze-thaw cycles, and is durable, while its light-

colored appearance adds aesthetic appeal to the area. From the main entrance to the cafe, and extending to the right, the incorporating granite cube stone paving is suggested, in one-meter sections. This design element is important from the point of view of rainwater management intended to facilitate percolation of precipitation to the roots of the planned rows of trees and add a touch of variety to the otherwise uniform travertine cladding.

The surfaces of both the intensive green roof and the sidewalk connecting ramps and paved areas on the semi-intensive green roof would also be covered with travertine tiles for aesthetic consistency. Meanwhile, the less trafficked areas of the semi-intensive green roof would feature a stabilized gravel pavement for its natural appearance.

As for the rear entrance and parking lot, the existing asphalt pavement would be retained due to its good condition, a more resistant pavement is needed for heavy traffic. The rainwater would be directed to the tree row roots area from this surface. Adjacent to the parking lot, a bike path featuring a molded rubber surface is proposed.

2. Proposed vegetation

From the entrance on Cuza Vodă Street, a row of arboreal specimens on the left side of the site is devised, continuing on the right side; it provides an aesthetic experience for those who are passing by outside (Schmidt & Fekete, 2003). In this area, a tree species with a narrow crown is chosen, as the location serves as a thoroughfare and it is desirable to minimize encroachment without sacrificing shading and visual interest. To this end, common aspen (*Populus tremula* 'Erecta') is selected. In proximity to the indoor market building, is incorporated spherical flowering ash (*Fraxinus ornus* 'Mecsek'), as this species offers attractive ornamental qualities and is tolerant to urban environments. For the remaining area, planting the goldenrain tree (*Koelreutreia paniculata*) it is recommended, which is a distinctive ornamental species due to its fruit. For the parking area, a tree species that would not grow to a substantial height is proposed due to overhead power lines, but would still afford a visually appealing row of trees, thus the globular Norway maple (*Acer platanoides* 'Globosum') is chosen grafted onto a tall trunk. English ivy (*Hedera helix*) and Virginia creeper (*Parthenocissus quinquefolia*) would be utilized for the trailing vegetation walls (Figure 12).

Figure 12. Render of the proposed green roofs

On the modular green wall, installing the cultivars is proposed, with the following perennials of the coral bells (*Heuchera), H.* 'Palace Purple'*, H.* 'Lime Marmalade'*, H.* 'Kassandra'*, H.* 'Blondie in Lime', and *H.* 'Cherry Cola'. These species are hardy in winter and even retain their foliage during milder conditions, thus also providing ornamental value.

For the extensive green roof, a carpet of stonecrops (*Sedum*) is proposed, consisting of *Sedum album*, *S. sexangulare*, *S. acre*, *S. hybridum*, and *S. spurium*. As regards the intensive and semi-intensive green roofs, carefully selected plant species are appropriate for roof top cultivation, such as those with non-invasive root systems, low water and nutrient requirements, tolerance to direct sunlight, and frost hardiness. Furthermore, species that would provide year-round ornamental value are chosen, including *Acer ginnala*, *Koelreuteria paniculata*, *Magnolia kobus*, *Malus x purpurea* as trees, *Juniperus squamata*, *Spirea x vanhouttei*, *Weigela florida* 'Variegata' for shrubs, and a perennial layer consisting of *Aster novi-belgii*, *Aster dumosus*, *Centranthus Centranthus ruber*, *Echinacea purpurea*, *Kniphofia Knipophia uvaria*, *Perovskia atriplicifolia*, and *Saponaria officinalis*.

3. Exterior furniture

It is recommended to replace the existing outdoor furnishings in the marketplace, as they are in a deteriorated state. A new outdoor furnishings proposal is to use natural materials such as wood, metal, and stone, and incorporate them into harmonious designs. The vegetable stands, sales counters, drinking fountains, and trash receptacles, which are made of metal for longevity, will be coated with pine wood for a more natural look.

The seating surfaces of benches will be composed of wood, with stone accents. The design of sales counters will remain unchanged, but the materials will be altered to incorporate a combination of wood and metal. The form of the vegetable washers will remain the same, but their construction materials will also be altered to match the sales counters. The drinking fountain, trash receptacle, bench, and plant box will be incorporated into the design to create a unique set of elements, which will be placed in the market area as depicted in Figure 13.

Figure 13. Proposed exterior furniture

CONCLUSIONS

The objective of the study was to examine the marketplaces of Târgu-Mureș, their historical background, and to formulate strategies to enhance the local green infrastructure in order to attain the goal of creating a more livable city through sustainable landscape architectural and urban design approaches.

The findings of the research substantiated the need for a comprehensive approach towards these spaces as they present numerous opportunities for sophisticated planning and design. The research culminated in the conclusion that marketplaces are integral components of urban open spaces, and should be considered not only as places for the acquisition of goods, but also as recreational spaces due to their unique and important function in the densely built urban landscape. The incorporation of green spaces and vegetation can serve as a recreational and aesthetic enhancement to the marketplaces.

The study also identified a lack of green spaces and vegetation as a significant challenge, and presented sustainable urban planning solutions to address this issue. This included the demonstration of various alternatives for increasing green space through description, presentation, and detailing. The addition of green elements to the grey surfaces of urban areas has been shown to significantly improve the microclimate quality, particularly in market areas where the heat island effect can be a concern. Green surfaces help to raise humidity levels through evapotranspiration, while also promoting air cleanliness by binding carbon dioxide and air particles. Such findings highlight the importance of incorporating green infrastructure into urban planning and design to enhance both environmental and human health

outcomes. The objective of the pilot plan is to develop a marketplace that functions as both a shopping destination and a social gathering place while incorporating principles of sustainability and green design to promote its viability as an urban area. This aligns with the perspective of Jan Gehl, as expressed in his book "Cities for People," which posits that a livable city is characterized by its thriving community, ecological health, and aesthetic appeal, all of which contribute to the psychological and aesthetic well-being of its residents (Gehl, 2014).

REFERENCES

Brundtland, G. (1987). Report of the World Commission on Environment and Development: Our Common Future. United Nations General Assembly document A/42/427.

Csomós, G., Farkas, J.Z., & Kovács, Z. (2020). Access to urban green spaces and environmental inequality in post-socialist cities. *Hungarian Geographical Bulletin*, *69*, 191–207.

Cvejić, R., Eler, K., Pintar, M., Železnikar, S., Haase, D., Kabisch, N., & Strohbach, M. (2015). Green surge – A typology of urban green spaces, ecosystem services provisioning services and demands. https://assets.centralparknyc.org/pdfs/institute/p2p-upelp/1.004_Greensurge_A+Typology+of+Urban+Green+Spaces.pdf (accessed on 02 November 2022).

Farr, D. (2007). *Sustainable urbanism: urban design with nature*. Wiley, New York.

Gehl, J. (2014) *Liveable cities (Élhető városok)*; Publisher: Terc, Budapest, Hungary [in Hungarian]

Haq, Shah Md. Atiqul (2011). Urban Green Spaces and an Integrative Approach to Sustainable Environment *Journal of Environmental Protection*, *2*, pp. 601-608 56

Hunter, R., Cleary, A., Cleland, C., & Braubach, M. (2017). Urban green space interventions and health: A review of impacts and effectiveness. *WHO* 2017. https://www.who.int/europe/publications/m/item/urban-green-space-interventions-and-health--a-review-of-impacts-and-effectiveness.-full-report (accessed on 02 November 2022).

Kardan, O., Gozdyra, P., Misic, B., Moola, F., Palmer, L.J., Paus, T., & Berman, M.G. (2015). Neighborhood greenspace and health in a large urban center. *Scientific Reports 5*, 1–14.

Keresztes, Gy. (1996). *A fair is held at Târgu Mures… (Vásárhelyen vásár tartatik…)* Publisher: Kriterion, Bucharest [in Hungarian].

Koohsari, M.J., Mavoa, S., Villanueva, K., Sugiyama, T., Badland, H., Kaczynski, A.T., & Giles-Corti, B. (2015). Public open space, physical activity, urban design and public health: Concepts, methods and research agenda. *Health Place*, *33*, 75–82.

Lihăt, I. & Ványolós, E. (2021). Sustaining biodiversity, sustaining natural heritage; Developing ideas regarding on the introduction of local flora in urban areas within the renaturalization process of railway residual areas, *Marisia, Natural Sciences*, *1*, 13–27.

Man, I.E. (2006). *Târgu-Mureș, Urban History From the Beginnings to the Year 1850 I. (Târgu Mureș, Istorie Urbană De La Începuturi Până În Anul 1850 I.)*; Publisher: Nico, Târgu-Mureș, Romania [in Romanian].

Pál-Antal, S., & Novák, Cs.Z. (2009). *History of Târgu Mures 1 (Marosvásárhely történetéből 1)*; Publisher: Mentor, Târgu Mureș, Romania [in Hungarian].

Pál, J. (2008). *Green roofs and green facades (study) (Zöldtetők és zöldhomlokzatok (tanulmány))*, Lélegzet Alapítvány Levegő Munkacsoport http://www.levego.hu/kiadvanyok/zoldtetok_es_zoldhomlokzatok_tanulmany adm [in Hungarian].

Romanian Government (2004). *Decision nr. 348 from 18 March 2004* (*HOTĂRÂRE nr. 348 din 18 martie 2004)*, Published in MONITORUL OFICIAL nr. 269 din 26 martie 2004 Portal legislative: http://legislatie.just.ro/ [in Romanian]

Schmidt, G. & Fekete, Sz. (2003). *Plants in landscape architecture (Növények a kertépítészetben)*; Publisher: Mezőgazda, Budapest, Hungary [in Hungarian].

Sebestyén, M. (2009). *Timeline I. Historical chronology of Târgu Mures from the beginning to 1848 (Időtár I. Marosvásárhely történeti kronológiája a kezdetektől 1848-ig)*; Publisher: Mentor, Târgu-Mureș, Romania [in Hungarian].

Sebestyén, M. (2010). *Timeline II., Historical chronology of Târgu Mures 1848–1918 (Időtár II. Marosvásárhely történeti 1848–1918)*; Publisher: Mentor, Târgu-Mureș, Romania [in Hungarian].

Sebestyén, M. (2011). *Timeline III., Historical chronology of Târgu Mures 1919–1944 (Időtár III. Marosvásárhely történeti 1919–1944)*; Publisher: Mentor, Târgu-Mureș, Romania [in Hungarian].

Sebestyén, M. (2014). *Timeline IV, Historical chronology of Târgu Mures 1945–1989 (Időtár IV, Marosvásárhely történeti kronológiája 1945–1989)*; Publisher: Mentor, Târgu-Mureș, Romania [in Hungarian].

Sikorska, D., Łaszkiewicz, E., Krauze, K., & Sikorski, P. (2020). The role of informal green spaces in reducing inequalities in urban green space availability to children and seniors. *Environmental science & policy*, *108*, 144–154.

Stanilov, K. (2007). *The post-socialist city: urban form and space transformations in Central and Eastern Europe after socialism*; Publisher: Springer Cham, Switzerland.

Târgu Mureș Administration of markets. (2021) https://piete-tgmures.ro/ (accessed on 21 June 2021) [in Romanian].

Târgu Mureș City Hall. (2010). *Târgu Mureș General Urban Plan 2010 (Primăria Târgu Mureș, Plan Urbanistic General Municipiului Târgu Mureș 2010).*

https://www.tirgumures.ro/index.php?option=com_content&view=article&id=197%3Aplan-urbanistic-general&catid=44&Itemid=168&lang=ro (accessed on 21 June 2021) [in Romanian].

Vieira, J., Matos, P., Mexia, T., Silva, P., Lopes, N., Freitas, C., Correia, O., Santos-Reis, M., Branquinho, C., & Pinho, P. (2018). Green spaces are not all the same for the provision of air purification and climate regulation services: The case of urban parks. *Environmental research*, *160*, 306–313.