

Jernej Červek: TRAJNOSTNI PRISTOPI V URBANISTIČNEM NAČRTOVANJU: RECIKLAŽNI URBANIZEM

SUSTAINABILITY APPROACHES TO URBAN PLANNING: RE-CYCLING URBANISM

DOI: <https://dx.doi.org/10.15292/IU-CG.2019.07.012-019> ■ UDK: 711.4: 502.131.1 ■ SUBMITTED: September 2020 / REVISED: October 2020 / PUBLISHED: November 2020



1.02. Pregledni znanstveni članek / Review Article

POVZETEK

Sodobna mesta po svetu se širijo predvsem pod pritiskom rasti prebivalstva, v Sloveniji pa stagnirajo predvsem pod vplivom suburbanizacije. Mesta se niso pravočasno odzvala na nove oblike bivanja, na podnebne razmere in na preveliko porabo energije ter so zato postala utesnjena, nezdrava in potratna. To sproža kritiko dosedanjih paradigem razvoja in operativne neodzivnosti trajnostnih politik. Na podlagi pregledane literature o fenomenu trajnosti – urbanih politik, konceptov in oblik mest – prispevek ugotavlja, da se načrtovalski procesi v slovenskih mestih še vedno prednostno ukvarjajo z reševanjem nujnih investicij, celostno reševanje mesta na podlagi dolgoročnih vizij pa še vedno ostaja odprto vprašanje. Medtem pa sodobni globalni pristopi v urbanističnem načrtovanju mest na trajnostnih načelih težijo k intervencijam v obstoječi mestni prostor. Eden od takih pristopov je reciklaža mesta, ki poseže v mesto z namenom, da ga prilagodi sodobnim zahtevam na osnovi celostnega pristopa, ki vključuje zbiranje in analizo podatkov o obstoječem stanju in ugotovitve povezuje s prakso.

KLJUČNE BESEDE

kulturna dediščina, sledenje pogleda, raziskave, vizualna pozornost

ABSTRACT

While the growth of global urban centres is primarily attributable to population growth, Slovenian towns are stagnating due to suburbanization. The urban centres have failed to timely adapt to new forms of living, climate change and excessive energy consumption; in consequence they are becoming cramped, unhealthy and wasteful. This has led to criticisms of existing development paradigms and operative lack of responsiveness on the part of sustainable policies. Based on relevant literature on sustainability – urban policies, concepts, and urban forms –, the paper shows that town planning approaches in Slovenia still primarily deal with solving problems of necessary investments, leaving comprehensive urban solutions based on long-term visions on hold. Meanwhile, the global contemporary town planning approaches based on sustainability principles tend towards interventions into existing urban space. One such approach is urban recycling; a form of urban intervention aimed at adaptation of the urban environments to contemporary needs on the basis of comprehensive approach which includes collecting and analysing data on the existing situation and integrates observations with practice.

KEY-WORDS

re-cycling, urbanism, sustainable cities, town planning, urban design

UVODNIK
EDITORIAL
ČLANEK
ARTICLE

RAZPRAVA
DISCUSSION
RECENZIJA
REVIEW
PROJEKT
PROJECT
DELAVNICA
WORKSHOP
NATEČAJ
COMPETITION
PREDSTAVITEV
PRESENTATION
DIPLOMA
MASTER THESIS

1. SUSTAINABLE APPROACHES IN TOWN PLANNING

Global urban population is rapidly growing. More than half of the world population lives in urban areas while projections of population growth suggest that the proportion of world population living in urban areas will reach 60% by 2030 (United Nations, 2014). Meanwhile, in "Europe already 76% of the population lives in cities" (Ležnicki, Lewandowska, 2014: 91). "However, the situation in Slovenia is slightly different: unlike the states in which fast urbanization is underway, Slovenia is characterized by suburbanization and comparatively low proportion of urban dwelling population. Since the 1980s, the proportion of urban population has not exceeded 50%, while UN projections anticipate its increase to just 61% by 2050" (Ministrstvo za okolje in prostor, 2019).

Due to dynamic suburbanization, cities spread faster than they concentrate, and they primarily spread to raw agricultural and wooded areas. Uncontrolled city growth may adversely affect both environment and inhabitants (Buckley et al., 2008). Urbanization in Slovenian towns and cities is reflected mainly in construction on urban edges, concentrated construction of residential neighbourhoods, and industrial and shopping zones. According to Gantar (2016: 53), "the contemporary situation in Slovenian context might well be described as one in which the development of new spatial structures and forms, including 'aesthetic practices', is in some ways outpacing spatial planning, thus forcing the latter to retroactively adapt itself to new spatial realities, such as shopping centres on urban edges, various transformations of former industrial areas, residential changes brought about by the construction of highway networks – to enumerate just the most obvious and also the most important ones."

One response to uncontrolled urban growth is to be found in the increasingly common concept of sustainable development and the subsequent policies, concepts, and urban forms which increasingly influence contemporary lifestyle.

The present article discusses the concept of sustainable development and its influence on urban planning which has led to a number of urban policies, concepts, and different urban forms. It emphasizes research on one of the new approaches to urban planning, i.e. re-cycling urbanism. This is followed by a presentation of the Spanish and the Italian school, the concept of re-cycling urbanism, and the content of re-cycling urban design. The article concludes with an assessment of contemporary urban planning in Slovenia, primarily characterized by a relative lack of comprehensive approaches.

2. METHOD

The review of the primary and secondary literature was made to reveal the main aspects of sustainable development and town planning issues in relation to re-cycling urbanism. The review has focused on three main themes: 1) sustainable policies, 2) urban development concepts and urban forms and 3) new approaches in town planning with special attention to re-cyclical urbanism. We have systematically applied the quantitative method of textual analysis to the content of the literature by using the following criteria: frequency of selected words, presence/absence of key concepts, and collocation (trends towards interconnection of selected words and concepts). By doing so, we have identified the main requirements of re-cyclical urbanism that can be incorporated into classical urban development plans.

2.1. Concepts of sustainable development and urban design

Our starting premise is a need for modernizing urban design (town planning), with sustainable development and urban design interpreted as follows.

Sustainable development is a well-established concept used in all areas of human activities. The most commonly cited definition of sustainable development, according to Gro Harlem Brundtland, reads as follows: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (as cited in Medved, 2018). Another basic principle, underlined by the Brundtland Commission, requires that local and global development should be planned in such a way as to balance three basic components: a) environmental protection, b) economic growth, and c) social equality (Kos, 2004).

Due to perspectives of different scientific disciplines, various derivatives, guidelines, instructions, strategies, principles, etc. are to be found in literature. Thus Berdavs (2010) points out that "one notable characteristic of the concept of sustainable development is its ubiquity; it is not limited to certain areas of social life", and proceeds that "it is also a subject of intensive research, present in very different research areas of both natural and social sciences".

Urban design plan (urban plan, town plan) is the only planning act of the Slovenian national law with a comprehensive approach to cities (or other larger urban areas). As a planning act, it is a product of "a process of development and division of municipal (i.e. urban) structures which need to be complexly and comparatively interpreted, and above all comprehensively designed and formed: not merely in a technically sound but also in an aesthetically ambitious manner" (Košir, 1993). The goal of urban design is to plan and shape city development, its growth (both spread and concentration) and renovation, and to allocate its activities (plan for area uses), including its traffic and communal infrastructure. Pogačnik (1999) describes the urban plan (town plan, Ger. *Stadtplan*) as a "long-term vision of urban development of the city". Proceeding from such visions, urban design directs spatial development on a long-term basis, and is consequently realized in official planning acts. Therefore, urban design "cannot solve all urban planning problems", writes Šašek Divjak (1999), underlining the need for its sufficient adaptability and flexibility in order to allow for necessary changes. As pointed out by Dimitrovska Andrews and Nikšič (2005), the role of urban design is "primarily to direct development and regulation of the city as a whole, protect and develop the image of the city, direct organization of spatial activities and uses, direct regulation of particular characteristic parts of the city, and above all provide for a healthy environment and quality of living".

In their article on flexible urban planning, Vidmar and Koželj (2015: 46) present basic principles of contemporary urban design and planning. According to them, urban designers "have to develop their spatial idea in compliance with all the requirements given in the land use plan" and "other spatial planning documents, laws, standards, and norms. These quantitative requirements set out the boundary conditions that define solution space within which the urban designers need to establish high quality relationships between multitude of buildings to form a whole development".

3. SUSTAINABILITY AND URBAN PLANNING – URBAN POLICIES, CONCEPTS, AND FORMS

Sustainable urban policies

International sustainable urban policies are increasingly important in the top-down approach to urban planning. Political documents on international and national levels are constantly being supplemented and upgraded. For our present purposes, the relevant documents on the international level under the auspices of the Organization of United Nations directing urban development are the *2030 Agenda for Sustainable Development (Agenda za trajnostni razvoj, 2015)* – with Goal 11 stating “Make cities and human settlements inclusive, safe, resilient and sustainable” – and the *New Urban Agenda – Habitat III (Nova urbana agenda, 2016)* – emphasizing “a vision of cities for all” in order to “produce just, safe, healthy, accessible, affordable, resilient and sustainable cities and human settlements” on the global level. The relevant document on the European Union level is the *Urban Agenda for the EU – Pact of Amsterdam (Urbana agenda EU, 2016)*.

Common goals of all these three policies are comprehensive approaches, public participation, urban renovation/city regeneration through adequate density planning, sustainable construction, housing policy with emphasis on quality affordable housing, renewable energies, open built and green spaces, accessible water, quality air, and waste management.

Concept of sustainable city

Political endeavours towards more sustainable development have also motivated town and spatial planners to develop new approaches and concepts of “sustainable cities” in urban planning. As stated by Hesse and Schmitz (1998: 435), “growth of welfare mass motorization created conditions for leaving the city with its cramped living conditions”. Consequentially, according to Hassan and Lee (2014: 1268), the “major concern is the unsustainable nature of cities and the problems resulting from urban sprawl. These issues have motivated planners, geographers and governments to seek appropriate solutions to the environmental, economic, and social problems through sustainable developments”. Building on principles and goals of sustainable development, several different concepts of a sustainable city have appeared, such as “green cities”; digital cities; smart cities; resilient cities; eco-cities; low carbon cities; and combinations thereof (de Jong et al., 2015). Williams (2010: 128) in his discourse on sustainable cities points out the existence of different “competing ‘visions’ of sustainable urbanism” and suggests a “multiplicity of socially-constructed potential futures” should be preferable to the “one model fits all” approach, which might provide a good starting point for future development. After all, all cities are different, and their sustainable development is further influenced by their location, broader urban area, available resources and policies, which is why it is important for each city to find its own workable sustainable concept.

Forms of sustainable cities

Recent scholarly discussion on the forms of sustainable cities primarily highlights the concept of the compact city, according to Williams’ influential review article (2010: 129) which states that within debates on the subject “the idea of ‘the compact city’ has been favoured, above other settlement patterns in policy for a number of decades”.

Hassan and Lee (2014; 1272) state that the term was developed by George Dantzig and Thomas L. Saaty in 1973, propagating “in the 1980s and 1990s as a backlash against postwar urban planning,

which impacted negatively on the economic, environmental, and sociocultural aspects of communities”.

According to Rogatka and Ramos Ribeiro (2015: 57), the main elements of a compact city are “mixed spatial use and high density of activities; diverse range of services; short distances; diminished pollution; car non-dependence; cycling encouragement; social interactions; high density of population; walking encouragement; accessibility; efficient public transport; well-organized urban infrastructure; energy efficiency”.

Despite the popularity of the compact city, criticisms include lack of green spaces since it is impossible for a city to provide both for higher building density and planning new spaces. As pointed out by Hassan and Lee (2014: 1273), citing Stähle (2010), “scholars urge that the compact city does not guarantee the provision of sufficient green spaces within the city, and thus, it is considered the anti-theory of a green city”. They continue, quoting Oktay (2012), that, due to the disparity of cities “in density, form, structure, and location, the compact city theory may be suitable for some cities, but it may fail in other cities”.

The influence of goals, concepts, and forms of sustainable cities on urban development

As a result of political goals, concepts, and urban forms in town planning, the influence of the sustainability concept is reflected in the context of the city itself, seeking solutions for new forms of living, work, travel, and adapting to climate change.

The paradigm of sustainable development casts the spread of cities and settlements to raw agricultural and wooded areas in a distinctly negative light. Namely, the sustainability paradigm is based on sustainable development, which, transposed to urban planning, means that the needs for city growth must be contained within existing urban areas as internal development and intact nature preserved as unzoned areas.

Internal urban development and concentration can thus provide an answer to the basic orientation towards environmental protection and nature conservation. However, excessive concentration leads to cramped living conditions which do not provide a quality living environment, important for human society. Visvanathan (2017) writes that the “resilience of cities encompasses a broad range of issues including building efficient recovery systems (engineering and multi-equilibria resilience) in the cities or planning means of adaptation to the increasing environmental, economic or socio-cultural stresses (socio-ecological resilience)”, and continues that “the cities foster networked material land energy flow which evolve around the idea of resource efficiency and 3R” (i.e. Reduce – Reuse – Recycle).

New directions in urban planning and new approaches to urban design seek solutions inside the existing city space which can be recycled and qualitatively reused for new forms of quality living.

The sustainable paradigm suggests a mental leap in urban planning from classical to re-cyclical planning. The emphasis is no longer on classical planning as technical planning and dimensioning of objects, searching for available physical space or creating new space for construction of new objects. Instead, the new approach focuses on use and recycling of the existing city adapting to new social requirements. Consumption of space, goods, and energy is replaced by recycling, which can positively affect society.

The goal of this approach is to lower the consumption of both materials and energy through reuse of the existing urban space, al-

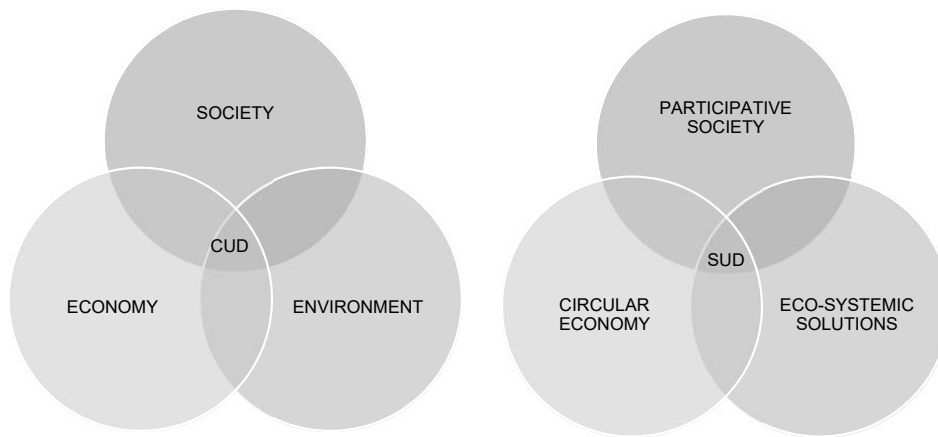


Figure 1: Venn diagram of classical urban design (CUD) and sustainable urban design (SUD) in comparison.

ready invested with materials and energy. The city is being recycled. This means that urban design is in a process of transition from its classical form based on technical planning, dimensioning of urban areas, designing activities and infrastructural integration, to a new approach based on:

- Participative society actively cooperating in the search for new solutions and ideas (including new forms of living, work, and travel);
- Circular economy recycling resources and materials, returning them into production cycles and reusing them;
- Eco-systemic solutions adapting to climate change. (Figure 1)

4. NEW APPROACHES IN URBAN PLANNING – “RE-CYCLICAL URBANISM”

The new direction in urban planning was initiated by the Spanish and Italian schools where the so-called re-cyclical urbanism was developed. Re-cyclical urbanism recycles the entire city, and not just through renovations of degraded and abandoned urban areas but also through interventions into quality built urban areas by adapting to principles of sustainability. Such approach also emphasizes the formative role of city architecture since a well-planned, high-quality and aesthetically pleasing city positively affects human well-being.

Beginnings of re-cyclical urbanism – the Spanish School

One of the progenitors of re-cyclical urbanism is the University of Alcalá near Madrid with its design studio Advanced Projects in Architecture and the City (*Proyectos Avanzados en Arquitectura y Ciudad*). The studio was founded as a response to contemporary global developmental trends and related imminent and drastic changes, writes Cervera Sardá (2011). She explains the role of the studio in researching existing “urban systems” with the aim of rebuilding or transforming them into “efficient urban cities”. The concept of the “Recycled City” was created in order to balance human, social and environmental parameters of these cities. She raises the question of whether a city can be recycled and answers that “the core concept of ‘Recycled City’ inherently carries the idea of intervention into the existing city, with the intention of adapting it to contemporary demands. To recycle a city means to build ‘towards the inside’ and to consider it as something that is ‘alive’”.

Within the scope of the studio, research was carried out into three different city areas, namely two in the centre of Madrid and one in the city suburbs. Thus a “broad and diverse basis of urban schemes” was created in order to “cover as many different situations as possible and to confront them from different aspects”.

The first case is the Salamanca neighbourhood, also known as Plan Castro, with a grid street plan and chess-like block layout, quality architecture with opulent facades, high population density (280 inhabitants per hectare), and important social activities. According to Cervera (2018), the area lacks “adjustments that were preventing its modernisation and adaptation to the needs of a balanced efficient habitability suited to the 21st century”.

Urban recycling of the “quality” city area suggests a revision of the block concept, namely interventions into existing spaces inside the block perimeter, turning such spaces into publicly accessible greeneries. In this way, the city would gain previously inaccessible new open green spaces. Another intervention was proposed into the block structure itself, where apartments “stretch between 200 and 500 m² and have several poorly lit by natural light rooms without ventilation”. As a solution, the concept of terraces was proposed in order to gain both vertical and horizontal connections and to allow light to enter the apartments.

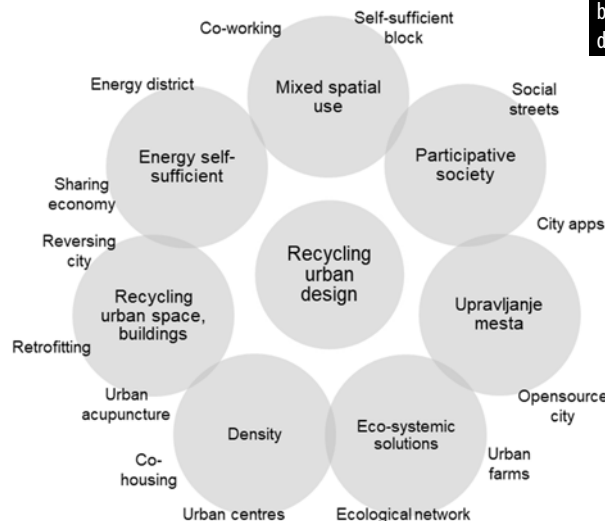
New types of apartments offer habitable space for different sets of families, social and age groups, and thus provide an answer to the lack of social housing in Madrid.

The second case is the district of Tetuán-Valdeacederas, “an outskirts unplanned borough from the beginning of the 19th century”, as described by Cervera (2018). She adds that this “peripheral settlement has had from the very beginning an irregular morphology characteristic of unorganised or unplanned settlements”. According to her, an “altogether integral rehabilitation of this zone would allow for a better distribution of population density and would furnish the interior with green and open spaces. Additionally, an integral rehabilitation plan would enable the improvement of existing infrastructures and the option of implementing sustainable energy and mobility models”. However, local “government regulations have legal vacuums” which might prove to be an obstacle to suggested interventions. Nevertheless, the main problem is the guiding principle of private capital with unplanned rehabilitation which “continues to be irregular, disorganised, congested, lacking in concerns over the sunshine and natural light, with poor optimisation of land and low quality in architectonic and landscape terms”.

The last case is the nearby area of Alcalá de Henares, one of Madrid’s industrial zones and at the same time a commuter town. This city area was forced into recycling by the economic recession. Cervera (2018) describes its configuration “as an industrial framework isolated from the city by the railway tracks and newly developed residential areas. All of it is a mixture of the historical, the new and the productive”. Urban recycling suggests using urban

Classical urban design
distribution of activities and land use
economic public infrastructure network
social activities network
public space areas
green space areas
urban and architectural design
nature and cultural heritage conservation
involvement of the public

Figure 2: Content of classical urban design and recycling urban design in comparison.



voids to establish parks and areas adjacent to railways to construct high buildings which would serve as sound barriers. One of the objectives was "to promote the use of trains as one of the better urban alternatives for environmentally friendly and sustainable travel" and "to build a fully comprehensive bicycle lane scheme widely accessible to all with the aim to promote a healthier and more sustainable transport system".

"The objective of the design exercise was primary to recover the citizen's interest in the streets. The situation called for a meticulous analysis of various urban contexts and their specific needs", concludes Cervera (2018) and adds that adequate "construction, the improvement of urban spaces, and the provision of appropriate infrastructures and services, can all be critical to the urban restructuring of an area".

Origins of re-cyclical urbanism – the Italian School

The idea of a city "that can be recycled" has also been on the minds of architects and town planners from the University of Venice, as summarized in their report *Recycling City: Lifecycles, Embodied Energy, Inclusion*. Fabian et al. (2012) write that urban "recycling is not just reusing, but, if we follow the analogy with the organic world, it puts forward a new life cycle", adding "that the city is a resource and that it can be recycled in parts or episodes or as a whole at the end of the different life cycles".

Their approach to recycling buildings, infrastructure, and the entire city is based on three pillars of sustainability: energy, social, and economic pillars, while taking into account their lifecycles. Namely, according to the authors, allowing for "the energy required to create, to use and (should it be the case) to dispose of" a structure or structures, "very often recovering what already exists is a lot more energy efficient than demolishing and rebuilding". At the same time, urban recycling provides a solution to the social aspect through integration of new needs of different social groups and social relationships.

In regard to urban recycling, this group of researchers is primarily concerned with a multitude of empty or underutilized industrial buildings as an outcome of the recent economic crisis, residential buildings which have become »empty nests« and are suddenly too big and too expensive for the remaining parents, and multi-apartment buildings in city centres which are decaying due to dispersed ownership.

Urban recycling is opening up new combinations of work and habitability/shared habitability of different social and age groups. Another possibility is recycling through public-private partnerships.

Recycling of buildings is closely connected to the infrastructure network where car use is to be gradually replaced by other forms of mobility, such as private (bicycle, walking) and public passenger traffic. Such transformations involve recycling of enormous areas, implying "the exploitation of the areas around the station, spaces of great accessibility where applying a scenario of the progressive reduction of the use of the private automobile would be plausible", while "areas freed up by the automobile (garages, service stations, carparks) would become the fundamental support" of activities towards redesign of urban public spaces (Fabian et al., 2012).

Furthermore, recycling is not confined just to the city but also applied to its edge which is closely related to areas of production and agriculture. Fabian et al. (2012) suggest these deeply connected spaces could become "a field in which possible horizons of growth can be experimented within a scenario of food self-sufficiency".

Micelli and Mangialardo (2017) explore the connection between urban recycling and potential reuse of existing real estate, primarily in connection with the construction industry. Their aim is "is to point out the potential radical change of the construction industry in Italy" which can be achieved in two manners: "through demolition and reconstruction or retrofitting the existing real-estate stock". According to the authors, recycling in this way is supported by the state of the market "because real-estate market values are not capable of supporting radical city transformations through demolition and reconstruction". Meanwhile, the available data indicate that a shift towards real estate reuse is already underway. As stated by Micelli and Mangialardo, "the construction industry confronts a new challenge: innovating reuse technology – with reduced costs and increased effectiveness – and finding new sources of value to support the investment choice".

Re-cyclical urbanism implies adapting the existing urban stock to the new ways of habitability and life, increasingly dictated by sustainable development. The city is being recycled in accordance with the social principles of sustainability in order to make it more accessible for human beings, create

	Landscape	City	Infrastructures	Districts	Social innovation	Makers
RE-nown		Creative ecosystem	Branding upcycling	Cultural districts	Talents	
RE-ticular	Ecological network	Metropolitan archipelago		Hub spaces		
			Gateway city			
RE-think	Interpretation	Cloud governance		Living lab	City apps	
RE-silience	Landfill reuse	Urban metabolism	Urban acupuncture Retrofitting	Adaptive spaces	Social innovation centres	Urban farms
RE-sponsible		Crowdsourcing		Urban centres	Co-working / co-housing	Social streets
RE-mote		Opensource city	Smart grid	Self-sufficient block	Cyber-physical spaces	FabLab
RE-make	Drosscapes	Reversing city	Waterfront regen	Energy district	Sharing economy	Urban DIY/DIT

Table 1: Conceptual draft of Re-cyclical Urbanism (after Carta, 2016).

new open and green spaces, and recycle buildings that will be energy efficient and adapted to the new ways of living. Simultaneously, the approach is in line with the environmental aspect since green cities, energy efficient buildings, and changing travelling habits in favour of short-distance walking and cycling diminish harmful impacts on the environment.

5. NEW APPROACHES TO URBAN DESIGN

Urban design is the only planning act with a comprehensive approach to cities. It has to take into account the individuality of each city and take advantage of its competitiveness. "Using various strategies to achieve sustainable performance of the city, any city is able to adjust this purpose based on its own potential and capacity", claim Roychansyah and Felasari (2018: 2). Urban design is a long-term vision of the city which "should encourage the formation of the self-image of the city, revealing what the city means to its inhabitants and what their expectations regarding its future are" (Koželj, 2007). Urban design directs the city development which, while being realized in official planning acts, still remains adaptable for new purposes.

Classical model of urban design based on distribution of activities and land use, spatial planning for construction of buildings, and traffic and communal networks, open public and green spaces, and conservation of nature and cultural heritage can no longer cope with new demands (Figure 2). Apart from sustainability, there are also demands posed by new forms of living, work, and travel in the city.

Urban design is a tool for comprehensive design of a city: from new interventions to use of existing spaces and their interconnections while simultaneously providing for sustainability principles. The cases of both the Spanish and Italian Schools point towards large urban reserves which can be reused by applying the recycling approach. Classical structure of urban design can be transformed into recycling urban design by emphasizing the use of existing spaces and the three sustainable components:

- Participative society: urban inhabitants are participating in and contributing towards better quality urban living, work, and travel (such as self-sufficient building islands, co-working, co-housing, living streets, accessibility, urban agriculture, etc.);

- Circular economy: reusing urban space, buildings, and objects with lesser input and higher utilization (use of underutilized buildings such as big apartments and abandoned production spaces, green roofs, inaccessible courtyards, as well as energy and materials recycled for reuse);
- Eco-systemic solutions: adapting to climate change, creating new green areas (for better urban climate and cleaner air).

New approaches in technology and digitalization can be used to rapidly and reliably gather and process various city data which will serve as planning basis. Re-cyclical urban design is no longer two- but three-dimensional planning; it is a search for new spaces and new solutions which aim to provide answers to new demands (see the concept of re-cyclical urbanism as suggested by Carta, 2016, in Table 1).

New approaches to urban design based on re-cyclical urbanism do not merely attempt to change the material appearance of the city but are directed towards the vision of a city on a human scale.

6. SITUATION IN SLOVENIA

When it comes to residential construction, classical urban design in Slovenia lags behind global trends. The prevailing trend is still the construction of, on the one hand, single- and double-apartment houses with gardens, contributing to urban spread, and on the other, multi-apartment buildings with minimal proportion of green spaces, contributing to urban concentration. Another major factor in urban spread has been the construction of new shopping centres and production plants on urban edges, leaving behind empty city centres and brownfield sites of former factory complexes. Another contributing factor is to be found in the new road projects, such as the city bypasses, which have additionally increased traffic congestion.

Furthermore, the urban pressure of single- and double-apartment houses has infiltrated the countryside, turning smaller formerly agricultural settlements in the city vicinity into suburbs. Traditional villages with majority agricultural population have been transformed into commuter neighbourhoods, causing congestion of farms inside the villages and their consequent

relocation to outside areas All of these changes have created a process in which urban design is lagging behind in its search for new building locations outside the city while leaving unsolved problems which have arisen inside the city.

Urban population growth in Slovenia is stagnating, and cities are following the suit. In relation to physical, functional, environmental, and social criteria, there is a growing number of brownfield sites. Hot urban islands with worsening air quality are forming due to the lack of green spaces, further negatively affecting the quality of living.

Slovenian cities need a new approach to urban design with the emphasis on urban recycling. The guiding principle in this process should be the reuse of existing urban spaces with interventions in favour of quality habitability, work and travel, reduced energy consumption, and attaining eco-systemic solutions.

7. CONCLUSION

The reviewed literature suggests that cities have not responded in a timely fashion to new forms and demands of urban living, climate change and excessive consumption of energy. Therefore, interventions into the process of urban spatial planning/urban design itself are needed. There is an increasing emphasis on comprehensive approaches to city design for which a strong and long-term vision of the city is needed, a vision based on sustainable principles.

Re-cyclical urbanism or urban recycling can provide an alternative approach. Non- and underutilized urban spaces and buildings can be recycled in a sustainable manner for new forms of living, work, and travel. Cities are increasingly adapting to the needs of their inhabitants since those can be incorporated into urban design in an easier and faster manner with the help of new technologies and data processing. At the same time, cities are becoming high quality living spaces which are self-sufficient and can adequately respond to climate change through eco-systemic solutions.

Instead of the classical process of technical planning and dimensioning, urban design has become a recycling process. Re-cyclical design is not just recycling and reuse of a space; space itself is adapting to new urban living requirements. Cities are recycled in spatial, social, economic, and environmental aspects. Cities and city planning must be regarded as living entities since they are in the process of constant change and adaptation to new requirements.

BIBLIOGRAPHY

- Agenda za trajnostni razvoj do leta 2030* (2015). Available at: <https://www.gov.si/zbirke/projekti-in-programi/uresnicevanje-agende-2030/> (accessed 14. Jun. 2019).
- Berdavs, J. (2010). *Urbanizacija, meje in trajnostni razvoj: Primer Mestne občine Koper*. Doctoral thesis. Koper, Univerza na Primorskem, Fakulteta za humanistične študije Koper.
- Carta, M. (2016). *Re-cyclical Urbanism*. Available at: https://issuu.com/mcarta/docs/01_re-cyclicalurbanism_planlab17 (accessed 14. Dec. 2019).
- Cervera Sardá, R. M. et al. (2011). *Madrid, ciudad reciclada*. Madrid, Servicio Publicaciones Universidad de Alcalá, UAH.
- Cervera R. (2018). Recycling the City: A New Pedagogical Approach to the 21st-Century City. In: Zaman Q., Troiani I. (eds) *Transdisciplinary Urbanism and Culture*, pp. 53–72. Cham, The Urban Book Series, Springer.
- de Jong, M., Joss, S., Schraven, D., Zhan, C., Weijnen, M. (2015). Sustainable–Smart–Resilient–Low Carbon–Eco–Knowledge Cities; Making sense of a multitude of concepts promoting sustainable urbanization. *Journal of Cleaner Production*, 109, pp. 25–38. <https://doi.org/10.1016/j.jclepro.2015.02.004>
- Dimitrovska Andrews, K., Nikšič, M. (2005). Vloga urbanističnega oblikovanja pri notranjem razvoju naselij. *Urbani izziv*, 16(1), pp. 21–28, 145–147. <https://doi.org/10.5379/urbani-izziv-2005-16-01-003>
- Fabian, L., Giannotti, E., & Viganò, P. (2012). *Recycling city: Lifecycles, embodied energy, inclusion*. Pordenone, Giavedoni.
- Hassan, A., Lee, H. (2015). The paradox of the sustainable city: definitions and examples. *Environment, Development and Sustainability: A Multidisciplinary Approach to the Theory and Practice of Sustainable Development*, 17(6), pp. 1267–1285. <https://doi.org/10.1007/s10668-014-9604-z>
- Hesse, M., Schmitz, S. (1998). Stadtentwicklung im Zeichen von Auflösung und Nachhaltigkeit. *Informationen zur Raumentwicklung*, 7/8, pp. 435–453.
- Kos, D. (2004). Tri ravni trajnostnega razvoja. *Teorija in praksa*, 41(1/2).
- Košir, F. (1993). *Zamiseln mesta*. Ljubljana, Slovenska matica.
- Koželj, J. (2007). Podžupan profesor Koželj o Viziji »Ljubljana 2025«. Available at: <https://www.ljubljana.si/sl/o-ljubljani/vizija-ljubljane-2025/> (accessed 14. Nov. 2019).
- Ležnicki, M., Lewandowska, A. (2014). Implementation of sustainable development on the example of the concept of eco-city. *Ecological Questions* 19, pp. 91–96. <https://dx.doi.org/10.12775/EQ.2014.010>
- Micelli, E., Mangialardo, A. (2017). Recycling the City New Perspective on the Real-Estate Market and Construction Industry. In: Bisello A., Vettorato D., Stephens R., Elisei P. (eds.) *Smart and Sustainable Planning for Cities and Regions*, pp. 115–125. SSPCR 2015, Green Energy and Technology, Cham, Springer.
- Medved, P. (2018). *Evropske trajnostne soseske*. Ljubljana, Založba FDV.
- Nova urbana agenda – Habitat III (2016). Available at: <http://habitat3.org/wp-content/uploads/NUA-Slovenian.pdf> (accessed 14. Jun. 2019).
- Oktay, D. (2012). Human sustainable urbanism: In pursuit of ecological and social–cultural sustainability. *Procedia – Social and Behavioral Sciences*, 36, pp. 16–27. <https://doi.org/10.1016/j.sbspro.2012.03.003>
- Pogačnik, A. (1999). *Urbanistično planiranje: Univerzitetni učbenik*. Ljubljana, Fakulteta za gradbeništvo in geodezijo.
- Rogatka, K., Ramos Ribeiro, R.R. (2015). Kompaktno mesto in njegova družbena percepcija: študija primera. *Urbani izziv*, 26(1), pp. 56–66. <https://doi.org/10.5379/urbani-izziv-2015-26-01-005>
- Roychansyah, M. S., Felasari, S. (2018). Does ICT make city compactness higher? Evidences from compact city attributes in Yogyakarta City's districts. *IOP Conference Series: Earth and Environmental Science*, 213. <https://doi.org/10.1088/1755-1315/213/1/012035>
- Stähle, A. (2010). More green space in a denser city: Critical relations between user experience and urban form. *Urban Design International Journal*, 15(1), pp. 47–67.
- Šašek Divjak, M. (1999). Usmerjanje urbanega razvoja na mestni ravni. *Urbani izziv*, 10(2), pp. 17–25.
- Urbana agenda EU: Dogovor iz Amsterdama (2016). Available at: https://www.gov.si/assets/ministrstva/MOP/Dokumenti/Urbani-razvoj/f7acef2454/Dogovor_Amsterdam_slo.pdf (accessed 26. Jun. 2019).
- Visvanathan, C. (2017). *Building Resilient Cities through 3R Principles and Higher Resource Efficiency*. 5th International Symposium on Advances in Civil and Environmental Engineering Practices for Sustainable Development. Available at: <http://www.dcee.ruh.ac.lk/images/donaimage/ACEPPPProceeding2017/KetNote/BuildingResilient.pdf> (accessed 28. Oct. 2019).

Vidmar, J., Koželj, J. (2015). Prilagodljivi urbanizem: pristop s parametričnimi kartami. *Igra ustvarjalnosti – Creativity Game*, (3), pp. 44–52. <https://doi.org/10.15292/IU-CG.2015.03.044-052>

Williams, K. (2010). Sustainable cities: research and practice challenges. *International Journal of Urban Sustainable Development*, 1(1/2), pp. 128–132. <https://doi.org/10.1080/19463131003654863>