

The environmental challenges in Macedonia:
Steps towards sustainable development

Институт за комуникациски студии

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Foreword

The environmental situation in the Republic of Macedonia is profoundly ambivalent. On the one hand, the country has numerous and very significant environmental values and world natural heritages, and on the other, for decades there has been poor management of nature, abuse of natural resources, as well as absence of a strategic approach to solving environmental problems and challenges.

This results in permanent and irreversible damage for future generations.

All environmental problems that remain unresolved result in serious consequences for the health of the population, the biodiversity, and impact the long-term sustainability of sustainable development. Due to the historical, socio-economic and political factors, no sufficient conditions were created in Macedonia to understand and apply the concept of sustainable development as a process through which the needs of communities are met today, without affecting the needs of communities in the future.

Macedonia is in an environmental "checkmate" position, where any move can lead to serious environmental or natural disasters. At the same time, the country is faced with two parallel, interconnected problems: serious environmental issues, as well as lack of availability and access to documents, information and research that could help in finding solutions.

The main idea of this special edition is precisely that – to reduce the gap between the state of the environment and the available information about it. With this edition, we are paying attention to four important topics that are discussed very little or not at all, and what is discussed is most often based on incorrect information, which makes finding the right solution and approach significantly more difficult.

The essence of the biggest environmental problems in Macedonia, among other things, lies in the enormous pollution, that can be seen in all shapes and forms. According to the European Environment Agency (EEA), ambient air in urban areas is polluted to a degree that causes a direct danger to the lives of citizens. All research points to a plethora of pollutants that directly and constantly pollute the air throughout the entire territory of the country.

The problems with the management and pollution of water resources further create pressure on the state of the environment. There is almost no aquatic ecosystem that is not directly or indirectly polluted, or under serious influence from industry, but also from human and systemic neglect. Pollution and contamination of surface waters seriously threatens access to clean water for drinking and irrigation purposes, degrades and destroys natural aquatic ecosystems and endangers already vulnerable habitats,

especially those that have significant environmental value in Macedonia, such as natural lakes and the most important watercourses.

The overall picture of the state of the environment is not helped by the current status quo of waste management, which, as a process, is a political Gordian knot that seems to be exclusively insoluble.

The destruction of habitats, pollution of soil, air and water, as well as non-existent waste management, make the national environmental problem a multidimensional, political "hot potato", for the solution of which direct and clear action is always avoided.

This situation becomes particularly problematic when compared to the country's vast ecological wealth. In addition, Macedonia is still home to numerous rare and endangered species, important ecosystems and habitats, and is a European leader in biodiversity. All this makes the stakes for the environment even greater.

Demographic trends in recent decades have led to increasing urbanization, accompanied by massive internal migration in Macedonia, with most of the population deciding to continue living in urban areas, especially within the administrative boundaries of the capital city of Skopje. This creates a new problem, from which the situation in urban areas will be directly responsible for the majority of the country's residents. Unfortunately, Macedonia is also failing significantly here, unable to create a strategic socio-economic approach that would mitigate and adapt to the changes that have occurred.

Unfortunately, the overall efforts for better management, protection and improvement of the environment can be described as limited. In terms of environmental protection measures, Macedonia can be classified as a "paper champion", that is, although it has created, written, signed, adopted, proclaimed and decided a lot about nature, all of this remains unimplemented and only on paper. Over the years, the government has lagged behind in meeting even the initial goals and commitments in all adopted legislation.

With this issue, we hope to contribute to the joint scientific and management efforts to build new social values that will ensure a stable and strategic movement towards social transformation in the direction of sustainable development goals.

Editor-in-Chief

Kiril Arsovski Przho M.Sc.

Protected area management in the Republic of Macedonia – challenges and opportunities

Maja Nikolic

1. Introduction

Today's environmental problems represent the most significant the world has ever faced. Some of the biggest global problems are climate change and biodiversity loss, which have serious consequences for nature and humanity. Climate change results in a sharp increase in temperatures, disruption of weather conditions and an increased frequency of extreme weather events, such as floods, droughts and storms[1]. Droughts have a negative impact on food production, as well as on human health. Floods, on the other hand, create favorable conditions for the spread of diseases, causing also death or damage to ecosystems and infrastructure. These factors lead to increased mortality, reduced food availability, and reduced labor capacity, which directly affects the country's economy[2]. On the other hand, biodiversity loss refers to rapid disappearance of species and degradation of ecosystems, which causes serious disruptions in natural cycles and reductions in the quality of life[3].

The country of Macedonia, although small, is equally affected by these global trends. This can be seen through the example of the Strumica Valley, which is running out of water[4], the Tetovo bean, which is slowly dying out[5], or the example of the famous Macedonian apples, which are increasingly damaged by the harsh conditions[6], We should also mention the degradation of the Macedonian forests[7], while the Balkan lynx and Egyptian vultures remain endangered species[8]. The state of the environment and nature is directly linked to addressing these challenges. For example, poor management of protected areas, such as illegal logging, often results in the destruction of forest ecosystems[9]. Therefore, protected areas and their role and management are of utmost importance in the efforts to conserve nature.

According to the Law on Protection of Nature [10], protected areas are territories that are intended to protect and conserve natural resources and biodiversity, and thereby, to continue the functions of the ecosystem and all the cultural values associated with it. They are the core of the efforts to protect nature and the resources it contains – such as food, clean water, medicines. In addition, it has been estimated that the global network of protected areas stores about 15% of terrestrial carbon, which is one of the main factors driving climate change. In addition to ecological benefits, protected areas also have significant economic and social value, as they provide essential resources

1 https://www.edengreen.com/blog-collection/environmental-problems

2 https://www.noaa.gov/education/resource-collections/climate/climate-change-impacts

3 https://oursharedseas.com/oss_downloads/living-planet-report-2020-bending-the-curve-of-biodiversity-loss/

4 https://doma.edu.mk/novinarski-storii/klimatski-migracii-strumichko-pole-ostana-zhedno/

5 https://doma.edu.mk/novinarski-storii/tetovskiot-grav-e-zhrtva-na-klimatskite-promeni-i-praznite-sela/

6 https://doma.edu.mk/novinarski-storii/klimatskite-promeni-ostavaat-rani-vrz-jabolkoto/

7 https://mes.org.mk/blog/ревитализација-на-шуми-во-северна-мак/

8 https://gradska.mk/zashtitata-na-biodiverzitetot-treba-da-bide-naczionalen-prioritet-velat-od-med-za-gradksa/

9 https://mes.org.mk/blog/ревитализација-на-шуми-во-северна-мак/

10 https://www.moepp.gov.mk/wp-content/uploads/2014/09/Zakon%20za%20zastita%20na%20Prirodata%20-%20Precisten%20tekst%20za%20neoficijalna%20upotreba.pdf

and services that are vital for the environment and the sustainable development of communities. Therefore, the protection of these areas is important not only for nature, but also for the well-being of the people who directly depend on them[11].

Ironically, the biggest cause of the destruction of these ecosystems is the anthropogenic impacts[12], which in turn leads to the fact that humans play central role in their protection. That is why there are many laws and conventions at the global level[13] which have been ratified in our laws, as changes necessary for the country's membership into the European Uniona[14].

This research is an analysis of the manner and extent of implementation of these laws in reality.

2. Beginnings and development of protected areas in Macedonia

The first efforts for sustainable management and protection of natural resources in Macedonia began after World War II, i.e. in 1948, when Pelister was declared the first national park. Due to the need to establish a legal structure for its management, the Law on Protection of Cultural Monuments and Natural Rarities of the Democratic Federal Yugoslavia was adopted in 1945[15]. Rarities of the Democratic Federal Yugoslavia was adopted in 1945 followed by adoption of another law in 1948 by the People's Republic of Macedonia followed by adoption of another law in 1948 by the People's Republic of Macedonia. The law that is in force today – the Law on Protection of Nature, was adopted in 2004 and has been amended several times over the years. It harmonizes domestic regulations with European standards and defines the legal framework for the protection of biological and geological diversity.

The Law on Protection of Nature also sets out the basic categorizations of protected areas, according to the classification of the International Union for Conservation of Nature (IUCN). According to the Law they are divided into the following categories:

No.	Name	Description
i-a	Strict nature reserve	Strict protection
i-b	Wilderness area	Strict protection
ii	National park	Ecosystem conservation and protection
ii	National monument or feature	Conservation of natural monument or feature
iv	Habitat/species management area	Conservation through active management
v	Protected landscapes or seascapes	Landscape/seascape conservation and recreation..
vi	Protected areas with sustainable use of natural resources	Sustainable use of natural resources.

(Source: Dudley 2008:4)

The new classification according to IUCN and in accordance with the Law on Protection

11 https://iucn.org/our-work/topic/effective-protected-areas#:~:text=Protected%20areas%20are%20at%20the,the%20impacts%20of%20natural%20disaster

12 https://iucn.org/sites/default/files/2023-05/climate-change-in-12-pictures_north-macedonia.pdf

13 https://environment.ec.europa.eu/international-cooperation/multilateral-environmental-agreements-meas_en

14 https://www.moepp.gov.mk/regulativa/ratifikuvani-konvencii/priroda

15 https://www.researchgate.net/profile/Milena-Secerov/publication/338804383_PRINCIPLE_OF_NEW_METHODS_IN_BILINGUAL_TEACHING_GEOGRAPHY_CASE_STUDY_-_SREMSKA_MITROVICA_HIGH_SCHOOL/links/5e2b308092851c3aadd7bbb5/PRINCIPLE-OF-NEW-METHODS-IN-BILINGUAL-TEACHING-GEOGRAPHY-CASE-STUDY-SREMSKA-MITROVICA-HIGH-SCHOOL.pdf#page=147

of Nature of 2004, should be implemented out within 6 years. There is, therefore, a need for reclassification of existing protected areas, in addition to the current need to declare new protected areas. However, the result of this reclassification is that the number of protected areas in the Republic of Macedonia is stagnating – the current number of protected areas is 86[13].

This stagnation is obvious through the revaluation procedure of the Mavrovo National Park, which began in 2012 and is not finished yet[16].

The declaration of a new national park, such as the example of Jablanica, is yet another proof of the stagnation in terms of the expansion of protected areas in the country. Jablanica, similar to Mavrovo National Park, has been pending for 20 years to be declared a national park and, despite the great support of the local population, such a decision has not yet been adopted[17].

An additional example is the Law on Declaring the Matka Canyon a Protected Area – a Natural Monument. It has been pending for more than a year to be put on the agenda of the Parliament, after the draft law was finally adopted by the Government – after about ten years of work on the documentation. Despite being one of the most valuable natural resources in the country, it is not given priority for the final officialization of the procedure[18].

In addition to the aforementioned qualification according to IUCN standards, the Law8 also provides for a detailed procedure for declaring a protected area, starting with a proposal to declare a certain area as protected, then conducting a valorization study, as well as a public debate and, finally, approval by the Government of the Republic of Macedonia. With regard to the management of protected areas, it is envisaged to prepare a management plan, as well as to select a manager of the protected area – which, in most cases, is the municipality. All further activities for the protection and development of the protected area are the responsibility of the manager, and are defined in the management plan.

The municipalities of Resen and Vevchani are good examples of implementing this law. They not only have a good understanding of the needs and benefits, but also have developed management plans. In addition, they are actively undertaking activities to strengthen their capacities cooperating with scientific institutions, NGOs and international donors[19].

3. Management problems

Protected area management is a key element in the efforts to conserve biodiversity, to sustainably use natural resources, and to ensure ecological balance. These areas play

16 https://www.vecer.press/nezavrsenata-revalorizacija-na-np-mavrovo/

17 https://trn.mk/darko-%D1%9Citanoski-eko-svest-vevchani-kra%D1%98no-vreme-e-%D1%98ablanicza-da-%D1%98a-proglasime-zanaczionalen-park/

18 https://www.radiomof.mk/matka-20-godini-cheka-zashtita-zakonot-e-gotov-no-zaglavi-vo-sobranieto/

19 https://ekosvest.com.mk/wp-content/uploads/2024/10/%D0%98%D0%B7%D0%B2%D0%B5%D1%88%D1%82%D0%B0%D1%98-%D0%B2%D0%BE-%D1%81%D0%B5%D0%BD%D0%BA%D0%B0-2023-%D0%9C%D0%9A%D0%94.pdf

a vital role in protecting ecosystems, regulating climate, protecting water resources, and supporting local communities via ecotourism and traditional practices. Therefore, there is a continuing need for effective management models that ensure long-term protection, adequate funding, stakeholder involvement, and implementation of modern environmental and legal standards.

However, despite several good examples of proper management of protected areas, there are also a number of other problems in that management. They directly affect the functioning, sustainability, the state of natural resources, as well as the local populations. The research showed that most of the challenges can be clustered in several main categories: corruption, financial difficulties, lack of management capacities, weaknesses in law enforcement, environmental threats and lack of transparency and public awareness.

a. Financial difficulties

One of the biggest challenges protected areas face is the lack of financial resources. National parks are a clear example of this – although the Law on Protection of Nature (Article 141-a) provides for their support from the government, they have never received such support. In the meantime, the parks are developing their own ways of financing[20].

In addition to national parks, the Markovi Kuli Monument of Nature, which has an (already outdated) Management Plan for the period 2019–2023, announces the following in terms of financing: No financial resources have been provided for the management of the Markovi Kuli Monument of Nature since no revenues are generated yet, in accordance with the possibilities provided by the Law on Protection of Nature[21]. It was declared a natural monument in 2006[22].

b. Corruption and unregulated activities

Challenges to the management of protected areas resulting in destruction of natural habitats and environmental degradation can also be seen through many examples of corruption and irregular activities. One such example is Studenchishko Blato, which is a Nature Park[23] protected by law and in which anthropogenic impacts and their negative consequences are clearly visible. The dumping of construction waste, the formation of illegal landfills, the anthropogenic use of marshy areas for processing purposes, the construction of buildings, as well as the burning and destruction of marshy vegetation are all real threats facing the marsh. In addition, the communication between the waters of the marsh and the lake has been interrupted[24].

On the other hand, the Alshar site[25] – which, according to the law, is a protected area, and in fact is the only one in the world with larger quantities of the minerals lorandite and thallium – was withdrawn from protection in 2012 and given under concession as a

20 https://meta.mk/drzhavata-ne-dava-pari-za-zashtitenite-podrachja-shto-samata-gi-proglasuva/

21 https://www.moepp.gov.mk/wp-content/uploads/2020/01/MARKOVI-KULI-PLAN-%D0%B7%D0%B0-%D1%98%D0%B0%D0%B2%D0%BD%D0%B0-%D1%80%D0%B0%D1%81%D0%BF%D1%80%D0%B0%D0%B2%D0%B0-1.pdf

22 https://www.moepp.gov.mk/wp-content/uploads/2014/09/Zakon%20za%20proglasuvanje%20na%20lokalitetot%20%E2%80%9CMarkovi%20kuli%E2%80%9D%20za%20spomenik%20na%20prirodata%2010.04.2006.pdf

23 https://trn.mk/sobranieto-go-potvrdi-zashtiteniot-status-na-ohridskoto-ezero-i-ka%D1%9Aonot-matka/

24 https://doma.edu.mk/foto-prikazna/studenchishko-blato-kontinuirano-unishtuvanje-na-retko-prirodno-nasledstvo/

25 https://bankwatch.org/wp-content/uploads/2018/11/kolku_cini_zivotot.pdf

mine. Its value, based on the amount of ore in the mine, was estimated at around 1.5 billion euros[26]. Moreover, it is known that thallium[27] is extremely toxic and dangerous to wildlife and human health. During mining, there is a high risk of releasing thallium into water, soil and air. Therefore, opening a mine at such a site poses a serious environmental threat and endangers a unique natural and scientific resource.

Furthermore, the Government submitted a draft law in 2022 to regulate the status of illegally constructed buildings, which envisages legalization of illegal buildings in protected areas – built as of January 1, 2021. This means that illegal houses and holiday homes in Popova Shapka and Mavrovo, which are located in strict protection zones, will be given room for legalization. According to Article 4 of the Law, this should not be permissible[28].

Illegal logging is another serious and long-term problem that significantly threatens the forest ecosystem in protected areas. With the proclamation of the Shar Planina National Park, the percentage of state forests that are under protection within national parks has increased. Additionally, the total area of forests under protection has increased significantly with the establishment of the Osogovo and Maleshevo protected areas, which is an important step towards preserving biodiversity and natural resources.

However, despite increased legal protection, illegal logging remains a major problem. According to some experts, around 25-30% of the total amount of timber cut annually in the country is the result of illegal activities.

In the period from 2008 to 2017, the total quantity of illegally cut wood was 196,206 m^3. According to the State of the Environment Report, published by the Ministry of Environment and Physical Planning (MEPP), in the period from 2010 to 2019, forest damage caused by illegal logging increased by 3.9 times. This is a clear indicator of the continuous destruction of forests and the inadequate management of protected areas.

In addition to illegal logging, there is another key problem — legal logging in protected areas, which is, paradoxically, one of the main sources of income for national parks. Namely, national parks and protected areas are subject to regulation under the Law on Protection of Nature, where the Ministry of Environment and Physical Planning has jurisdiction. The main source of income for the management of these areas comes from fees for the use of natural resources, including logging. This creates an obvious conflict of interest – while legal protection aims to preserve nature, revenues from logging directly undermine this process.

In recent years, funds to cover the costs of operating national parks have increasingly come from various donors. As a result, the focus of future action is directed towards the development of tourism activities as an alternative source of income. This indicates the need for a transformation of the financing system — instead of dependence on logging, the future of protected areas should be based on sustainable ecotourism, education

26 https://www.facebook.com/nova.makedonija/posts/380490201978766/

27

28 https://refordcentre.org/wp-content/uploads/2023/03/%D0%9F%D1%80%D0%B8%D1%80%D0%B0%D1%87%D0%BD%D0%B8%D0%BA-%D0%91%D0%BE%D1%80%D0%B1%D0%B0-%D0%BF%D1%80%D0%BE%D1%82%D0%B8%D0% B2-%D0%BD%D0%B5%D0%BB%D0%B5%D0%B3%D0%B0%D0%BB%D0%BD%D0%B8-%D0%B0%D0%BA%D1%82%D0%B8%D0% B2%D0%BD%D0%BE%D1%81%D1%82%D0%B8-%D0%B2%D0%BE-%D1%88%D1%83%D0%BC%D0%B8%D1%82%D0%B5.pdf

and the development of alternative economic models that will preserve natural wealth in the long term[29]. Such an example is the operation of Galichica National Park[30].

In addition to the above, protected areas are essential for protecting biodiversity, as they represent safe havens for that diversity – precisely because of the higher level of protection. Unfortunately, however, a large number of wild animals are subject to smuggling, illegal trade and poaching.

c. Lack of management capacities

One of the main challenges in the management of protected areas is the lack of management capacity. According to the 2023 Shadow Report17, municipalities responsible for the management of protected areas, or in whose territory those areas are located, lack administrative and technical resources. This includes the lack of management plans (which are mandatory under the Law on Protection of Nature), as well as problems with waste and wastewater. However, awareness of the potential benefits that protected areas can bring is generally satisfactory. In addition, there is a lack of professional staff who would be able to develop and implement such plans. An example of this is the Municipality of Makedonski Brod, which transferred the management of the Slatinski Izvori SP to the Ursus Speleos Research Society who also face limited capacity for effective management, including the development of a management plan.

A similar situation exists with the management of the Kuklica – Kratovo SP, where it is not clear how the management responsibility is divided between the NGO "Izvor" – Kratovo and the Kratovo Museum, but in both cases there is a lack of sufficient capacity for proper management.

In addition, the managers of protected areas often have no insight into the situation. According to Branislav Risteski, director of the Institute for Old Slavic Culture in Prilep – which is responsible for the Markovi Kuli protected area – they have no real insight into about 90% of the protected area, and they are the first point for protection and promotion of the area[31].

d) Weaknesses in law enforcement

In addition to primary challenges in law enforcement, such as the lack of management plans that often stem from a lack of capacity – protected area management is also susceptible to a plentitude of other weaknesses.

For example, despite the fact that the Law on the Protection of Kuklica requires nomination of a guard service to protect the site – in practice this has not been achieved[32].

29 https://refordcentre.org/wp-content/uploads/2023/03/%D0%9F%D1%80%D0%B8%D1%80%D0%B0%D1%87%D0%BD%D0%B8%D0%BA-%D0%91%D0%BE%D1%80%D0%B1%D0%B0-%D0%BF%D1%80%D0%BE%D1%82%D0%B8%D0% B2-%D0%BD%D0%B5%D0%BB%D0%B5%D0%B3%D0%B0%D0%BB%D0%BD%D0%B8-%D0%B0%D0%BA%D1%82%D0%B8%D0% B2%D0%BD%D0%BE%D1%81%D1%82%D0%B8-%D0%B2%D0%BE-%D1%88%D1%83%D0%BC%D0%B8%D1%82%D0%B5.pdf

30 https://gradska.mk/zashtitata-na-biodiversitetot-treba-da-bide-naczionalen-prioritet-velat-od-med-za-gradksa/

31 https://infokompas.com.mk/%D0%B2%D0%B8%D0%B4%D0%B5%D0%BE-%D0%BC%D0%B0%D1%80%D0%BA%D0%BE%D0%B2%D0%B8-%D0%BA%D1%83%D0%BB%D0%B8-%D0%B4%D0%BE%D0%B1%D0%B8%D0%B2%D0%B0-%D0%BF%D0%BB%D0%B0%D0%BD-%D0%B7%D0%B0-%D1%83%D0%BF%D1%80%D0%B0/

32

On the other hand, the Gradeshka Reka canyon, which was declared a Natural Monument by the Bitola Municipality Council in 1996 due to its geological and biological diversity and authentic nature – has not yet received the necessary revaluation and appropriate status of a protected area – despite the obligation under the Law on Nature. In contrast, the Demir Kapija gorge has had the status of a protected area for 6 decades, but not once has a management plan been prepared, nor has a manager been appointed[33].

Furthermore, one of the biggest problems that directly violates national and European laws is the construction of small hydropower plants in most protected areas. This directly endangers the entire ecosystems which are of particular ecological and biological value. One of many examples is May 14th, 2019, when a decision was made by the Government of the Republic of North Macedonia to grant concessions for the construction of small hydropower plants in a large number of such areas[34].

e) Environmental threats

All these impacts inevitably lead to ecological disasters. The consequences are many:

A clear example of ecological consequences from human activities can be seen in the Ezerani site, which was declared a nature reserve in 1996 due to the large number of nesting and migratory birds. Today, due to human influence and the decline in the water level in Lake Prespa, some bird species are much less present, and others have not been observed for a long time. As a result of this and other anthropogenic influences, the area has lost the characteristics of a strict nature reserve, and was thus re-declared a Nature Park by law[35].

Studenchishko Blato marsh is another clear example of constant destruction of rare natural resources. In the past, it was inextricably linked to Lake Ohrid via numerous channels, with any change in the water level in the lake directly affecting the water level in the marsh. This natural connection created favorable conditions for a dynamic exchange of life between the two ecosystems, which, among other things, allowed for spawning of several species of fish from the lake in the marsh. Unfortunately, this natural balance has been disrupted by the construction of the promenade from Biljanini Izvori to Gorica, which has a negative effect on the water regime and the entire ecosystem of the marsh[36].

f) Lack of transparency and public awareness

Public involvement in environmental decision-making plays a key role in ensuring effective environmental protection. Such an approach not only ensures transparency and accountability of the processes, but also allows for new ideas and possible solutions, taking into account the different perspectives of stakeholders. Not only is public involvement important, it is also a guaranteed right under the Aarhus Convention[37], which provides for access to information, public participation and access to justice in environmental matters. However, the implementation of these provisions in Macedonia

33 https://lider.mk/klisurata-demir-kapija-shest-decenii-e-spomenik-na-prirodata-no-nema-nikakva-zashtita/

34 https://ekosvest.com.mk/?p=410

35 https://doma.edu.mk/foto-prikazna/park-na-prirodata-ezerani-nash-i-svetski/

36 https://doma.edu.mk/foto-prikazna/studenchishko-blato-kontinuirano-unishtuvanje-na-retko-prirodno-nasledstvo/

37 https://unece.org/DAM/env/pp/documents/cep43mac.pdf

is at a low level.

A concrete example of non-compliance with transparency requirements is the strategic initiative and special law for the construction of Corridors 8 and 10e. The expropriation of properties through which the routes will pass has started, including through the protected area in Ohrid[38], without prior implementation of the Environmental Impact Assessment (EIA) procedure. This denies the public the opportunity to provide their opinion and be involved in the process, which is a clear violation of the principles of transparency and public accountability[39].

But an even bigger problem is the public's lack of awareness of the importance and value of the country. In order to identify the level of knowledge of the geosites in Macedonia, including protected areas, a survey was conducted in 2022[40], where a questionnaire was used for certain target groups of respondents. The results obtained indicate that young people aged 18 to 29 have some basic knowledge about the actual situation of protected areas and geolocations. Despite this, it is shown that there is a large number of young people who have minimal or no knowledge about these areas, and only 16.6% of them answered correctly, i.e. that the number of protected areas in the country is 86.

These results can be also confirmed by the example of the Cham Chiflik site. Despite being classified as a protected area, the site still has no educational signs or signs on the local road indicating the direction and exact location of the protected area[41].

4 Protected areas and local populations

The protection of natural areas is closely linked to the local communities that inhabit them. In addition to the direct protection of nature, declaring areas as protected also yields benefits to the community. One of the main benefits is the increase in ecotourism, which leads to an increase in financial income in the region, as is the case with the Iskar-Penega geolocality in Bulgaria[42], which has seen a 40% increase in accommodation capacity. In addition, the management of protected areas requires efficient management, which leads to the creation of new jobs. The socio-economic study for the proposal for a protected area – Shar Planina National Park, highlights the need to secure funding for 30 job positions[43].

Additionally, activities are being carried out within the protected areas to promote and create opportunities for research activities, which not only open up new job opportunities, but also increase awareness of natural values among the population living in these regions, as well as the general public. An example of this is the project "Support for Sustainable Management of the Vevchani Springs Natural Monument", implemented by Eko-svest in Vevchani, and funded by the Prespa Ohrid Nature Trust – PONT, which Darko Kjitanovski talks about. This project focuses on improving the

38 https://plusinfo.mk/kulturnoto-nasledstvo-zashtiteno-od-bagerite-na-behtel-i-enka-zasega-pod-pritisok-na-avnosta-povlechen-sporniot-predlog-za-zakonski-izmeni/

39 https://ekosvest.com.mk/?p=230509

40 https://www.researchgate.net/publication/361984467_A_QUESTIONNAIRE-BASED_STUDY_OF_THE_KNOWLEDGE_OF_GEODIVERSITY_AND_GEOSITES_IN_NORTH_MACEDONIA_AS_WELL_AS_THE_CONDITION_OF_PROTECTED_AREAS

41 https://doma.edu.mk/foto-prikazna/park-na-prirodata-cham-chiflik-nepoznatata-makedonska-suma-nad-strumica/

42 https://web.archive.org/web/20080807142007/http://www.geopark-bg.com/e_index.html

43 https://www.moepp.gov.mk/wp-content/uploads/2020/07/FL-SES-za-Shar-Planina_11.09.2020.pdf

protection of the Vevchani Springs Natural Monument by promoting educational activities and research initiatives, such as publications pertaining to the Natural Monument of Vevchani Springs, which aim to increase the awareness about nature and encourage active participation of young people in the protection of natural resources.

The same applies to the natural treasures in our regions, such as the molika tree – a Balkan endemic, which was recorded as a plant species in the Pelister National Park as early as 1839[44]. The molika is currently under threat due to the dense fern in the belt of the oldest molika forest. However, the Pelister National Park, which plans to seek support from experts and institutions, is actively working to confront this problem and take measures to protect this unique species[45].

Globally, according to an IUCN Study on how protected areas impact the achievement of the United Nations Sustainable Development Goals[46], these areas have a significant impact on local communities, especially in terms of health and well-being. An example of this is Goal 6.3, which focuses on improving water quality, where protected areas, such as natural forests, provide, with good management, high-quality water, which directly affects the health of the population. There is also Goal 16.7, which deals with inclusiveness in decision-making and creates opportunities for the involvement of local communities in the management processes of protected areas. This strengthens their awareness of natural resources and improves their health. Sustainable development policies (Goal 17.14), such as protection of natural resources, open opportunities for involvement of local communities in the management of resources, which directly improves their living standards and improves their health. Using partnerships (Goals 17.6 and 17.17), such as public-private partnerships, provides resources for developing local initiatives and improving infrastructure in protected areas, which supports efforts to improve the quality of life of local populations[47].

5 Recommendations for the protection of nature and protected areas

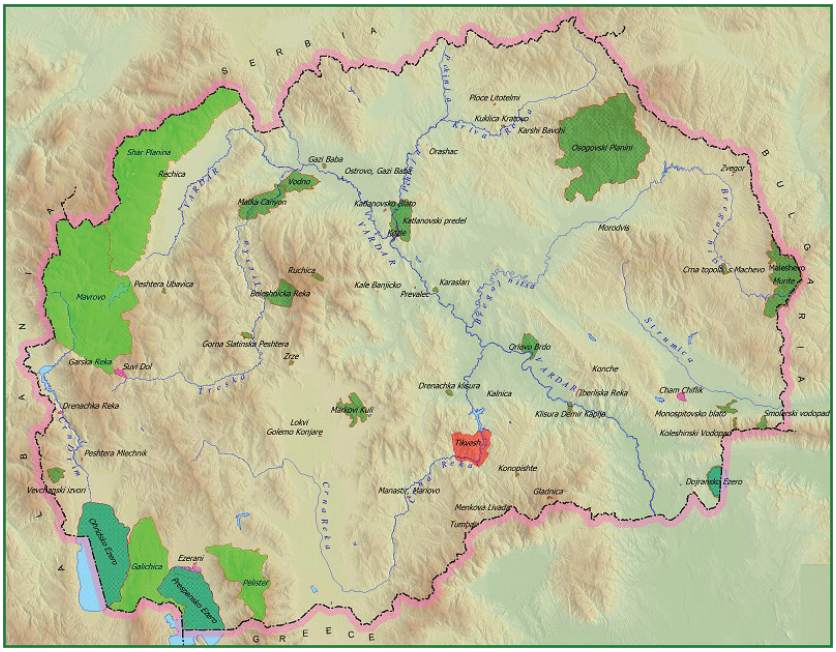
According to this research, the results showed many problems in the management of protected areas. Their gradual resolution is a key objective for effective protection of the natural values in Macedonia, which are important not only for biodiversity, but also for sustainable management of natural resources, for tourism development and for the well-being of local communities. The protected areas have a significant role in the preservation of ecosystems and relevant legal and institutional frameworks should be implemented for their better management and protection.

44 https://doma.edu.mk/ekoucilnica/molika/

45 https://mia.mk/story/%D1%98%D1%83-%D0%BD%D0%B0%D1%86%D0%B8%D0%BE%D0%BD%D0%B0%D0%BB%D0%B5%D0%BD-%D0%BF%D0%B0%D1%80%D0%BA-%D0%BF%D0%B5%D0%BB%D0%B8%D1%81%D1%82%D0%B5%D1%80-%D1%81%D0%BE-%D0%BF%D1%80%D0%B5%D0%B2%D0%B5%D0%BD%D1%82%D0%B8%D0%B2%D0%BD%D0%B8-%D0%BC%D0%B5%D1%80%D0%BA%D0%B8-%D0%B7%D0%B0-%D0%B7%D0%B0%D1%88%D1%82%D0%B8%D1%82%D0%B0-%D0%BD%D0%B0-%D0%BC%D0%BE%D0%BB%D0%B8%D0%BA%D0%B0%D1%82%D0%B0

46 https://www.undp.org/north-macedonia/sustainable-development-goals

47 https://iucn.org/sites/default/files/2022-09/6.-natural_solutions_-_sdgs_final_2.pdf



Map of the protected areas in Macedonia - source:
Ministry of environment and physical planning (2021)

The draft Roadmap for Nature Protection (2022) developed by Eko-svest, provides the following recommendations in the context of protection of nature in Macedonia:

The Roadmap identified three priority areas for nature protection, namely harmonization of the legal framework from different sectors, harmonization with EU legislation and international agreements, implementation of international conventions, strengthening of the administrative and institutional framework and capacities, as well as establishing a system for sustainable financing of environmental protection. It is particularly important to establish an independent, professional and scientific body, which will be responsible for monitoring, research, analysis and promotion of nature protection and natural resource management, such as an Agency or Institute for Nature Protection, following the example of all countries in Europe. However, in order to achieve all this, it is necessary to establish a system for sustainable financing of nature protection, increase the sources of funding and establish an Environmental Fund[48].

However, according to the 2023 Shadow Report, the recommendations that focus directly on protected areas recommend specific directions for improving the protection of these areas. In particular, the Report emphasizes the need to accelerate the processes of revaluation and re-designation of protected areas, as well as the adoption of management plans for all areas that have a designated management entity. This includes advancing the process of developing management plans for areas that are in progress, such as the Mavrovo National Park, the Smolari Waterfalls Monument of Nature, and others.

Summarizing the findings and recommendations, it is clear that effective protection

48 https://ekosvest.com.mk/?p=228786

and management of protected areas in Macedonia requires a systemic approach that includes institutional reforms, improvement of the legal framework and ensuring sustainable financing. Ensure long-term protection of natural values and improvement of the environment is possible only through coordinated efforts between government institutions, the civil society sector and international partners. The implementation of the proposed measures will not only contribute to the conservation of biodiversity, but will also strengthen the socio-economic development and quality of life of the local communities..

Biography

Maja Nikolić is a committed environmental activist, with a strong background in renewable energy and project management. With experience in climate research, youth education and NGO work, she coordinates initiatives that bring about sustainable change. Her work in environmental governance, advocacy and conservation is complemented by an ability to navigate complex government and organizational structures. As a committed leader and lifelong learner, she actively contributes to climate diplomacy, education and activism, leaving a significant impact in the community and beyond.

The waste saga in Macedonia: Current situation overview and possible solutions

Andrijana Papic Manceva

1. Introduction

Waste management is one of the biggest challenges of modern life. Given the exceptionally harmful and long-lasting impact that waste has on the environment and all living things, it should undoubtedly be the first among the national priorities. Fortunately, waste management is among the requirements that the Republic of North Macedonia needs to fulfill in order to become part of the European Union. This, in practice, for a start, implies harmonization of the Macedonian laws, rules and procedures with European legislation in the field of waste. It also requires the establishment of the basic infrastructure for collection, selection, treatment, processing, and waste disposal, including improved obligations for all stakeholders in waste management. However, given that waste is a symptom of the unsustainability of modern life – and not the root of the problem! – efforts in waste management will also require reducing the quantities of waste produced, which in the long term would undoubtedly contribute to a significant extent to the protection of nature and well-being.

The package of legal solutions adopted and revised by the relevant Ministry of Environment and Physical Planning for this purpose includes the six-year Waste Prevention Plan from 2022[1]. Highlighting the declarative commitment to waste management in a comprehensive manner, Minister Nuredini points out that the solutions to the waste problem according to this Law must be based on the concepts of "zero waste" and "circular economy".

2. Zero waste and circular economy – what do they mean?

Conceived at first in the context of industrial production, these concepts imply the use of practices by which resources are used for as long as possible so that at the end of their life they can be processed and renewed, thus avoiding the generation of waste. If taken as principles in the world of manufacturing, these concepts will undoubtedly encourage regenerative design, which is "a comprehensive economic, industrial and social framework for designing systems that are efficient and do not produce waste; are based on processes in nature and are not harmful to the environment."[2] Hence, these concepts are applicable not only in industrial design and manufacturing, but also in many other aspects of the human civilization, such as urban environments, buildings, the economy, and social systems.

1 Waste Prevention Plan (2022 – 2028). Link: https://www.moepp.gov.mk/wp-content/uploads/2014/12/%D0%9F%D0%A1%D0%97%D0%9E-2022-2028.pdf

2 Bea Johnson, "Zero Waste Home" published in Macedonian translation by "ViG Zenica" (2018)



Visual representation of the circular economy concept - source
Ministry of environment and physical planning

If “zero waste” and “circular economy” were the basic parameters according to which something is done, then it would be easily possible to live with less waste and garbage. It is important to note that, contrary to the widespread belief, which is also justified by marketing strategies, these concepts do not imply extensive recycling. On the contrary – they question the uncertain effects and costs of recycling processes, which, in essence, are just another way of dealing with waste and are understood as the last step before throwing the waste into a landfill.

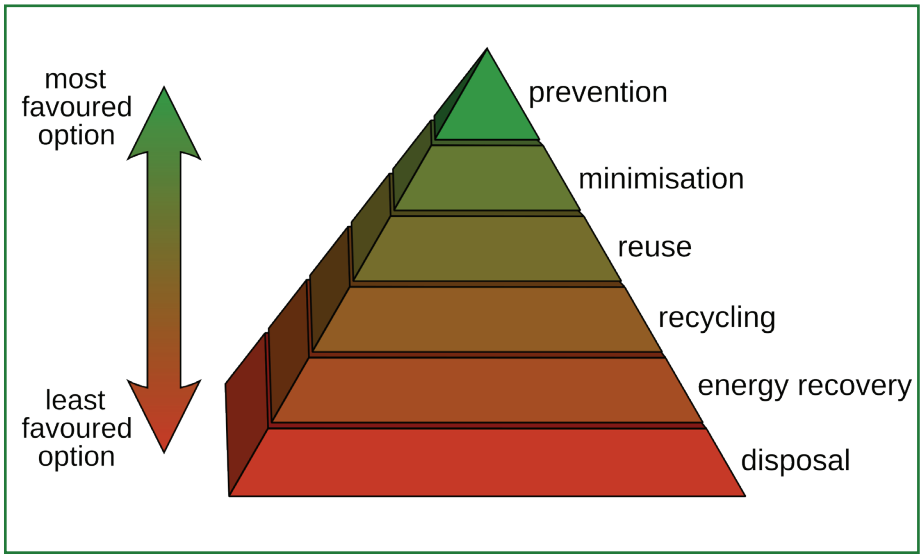
The first step in dealing with waste is to prevent it, which makes sense given that we have been taught since childhood that “prevention is better than treatment.” It is necessary to incorporate this type of thinking into future sectoral planning, policies, and practices at all levels, as evidenced by data from the State Statistical Office, which, while incomplete, are alarming enough, and which, of course, increase year after year in tandem with the cost of the consumer basket, which is no coincidence.

Finally, improper waste management directly pollutes our water, attracts insects and rodents, increases the risk of flooding due to clogged drains, and contributes to air pollution, which kills 5,000 people in the country each year. According to the World Bank, this problem has an extremely serious impact on health, the local and global environment, and the economy – so much so that, in the long run, the additional costs arising from the consequences associated with improper waste management far outweigh the cost of establishing a functioning waste management system[3].

3 Daniel TOMIC, Biserka DIMISHKOVSKA. Public Participation In Solid Waste Management in N. Macedonia, published in Quaestus Open Access Journal, 2021. Link:https://www.quaestus.ro/wp-content/uploads/2012/03/Daniel-tomic.pdf

3. Status quo on the ground

Generally speaking, current legal solutions indicate that waste management can be a possible mission in our country. There are national policies[4] on waste management which are based on the Law on the Environment, the National Environmental Action Plans and the Law on Waste Management. This area is also regulated by the laws on packaging and packaging waste management and on the management of electrical and electronic equipment and waste electrical and electronic equipment, as well as the Law on the management of batteries and accumulators and waste batteries and accumulators. In addition, the relevant Ministry has recently prepared a National Waste Management Strategy (2024 – 2036), the implementation of which over the next 12 years should ensure an integrated and cost-effective waste management system in line with national and European legislation.



Hierarchy of waste management

Waste management is noted as a priority issue in the European Commission's Progress Report on the country, along with improving ambient air quality, urban wastewater treatment and combating climate change (decarbonization). According to the 2024 Report[5], with regard to Chapter 27: Environment and Climate Change, North Macedonia has a certain level of readiness in this area, which is mostly due to the adoption of the Law on Extended Producer Responsibility for Waste Management[6] and the Law on Additional Waste Streams[7] in the system of extended responsibility of the producer.

However, things look completely different on the ground. According to data from the State Statistical Office, Macedonia generated a total of 878,303 tons of municipal waste

4 Waste Management Plan of the Republic of North Macedonia (2021 – 2031), link: https://www.moepp.gov.mk/wp-content/uploads/2021/10/Plan-for-Waste-Management-of-RSM-2021-to-2031-godina.pdf

5 European Commission Report on North Macedonia for 2024. Link:https://www.mep.gov.mk/data/North%20Macedonia%20report_MK2.pdf

6 The Law on Extended Producer Responsibility for Waste Management, entered into force on 24.09.2021, and amended in April 2024. Link: https://dejure.mk/zakon/zakon-za-proshirena-odgovornost-na-proizvoditelot-za-upravuvanje-so-posebnite-tekovi-na-otpad

7 Law on Management of Additional Waste Streams, entered into force on 25.09.2021. Link: https://www.moepp.gov.mk/wp-content/uploads/2022/01/SLUBEN-VESNIK-NA-RSM-br.-216-zakon-za-posebni-tekovi-otpad.pdf

in 2023, which is an increase of 7.7% compared to 2022[8]. That is, 503 kilograms of waste per capita per year, which is not exactly the most accurate calculation considering that the largest amounts of waste are generated by Skopje households. Hence, solutions for preventing waste generation – not only as part of waste management, but also of sustainable development planning – should also take into account the concentration of population and the purchasing power in the urban areas.

Composting of biodegradable waste is not practiced. Awareness of the importance of waste sorting is gradually growing, but the recycling rate in our country is extremely low because most of the collected sorted waste ends up outside the country where it is recycled, according to the largest local collective handler of packaging waste[9]. On the other hand, over 80% of the unsorted recyclable waste is sorted and collected by around 5,000 informal collectors in the country, who remain excluded from systemic waste management solutions. The only social enterprise through which the status of collectors is formalized and decent working conditions are provided for them has recently been facing aggravating administrative obstacles in some of the Skopje municipalities[10], which is just another example of the local governments' neglect of both vulnerable groups of citizens and service users, and about the protection of the environment.

4. Landfilling – the most undesirable, yet still the most common, method of waste management

For 15 years after the adoption of the first Law on Waste Management, waste management in Macedonia is based on the most undesirable management option, which is landfilling – laying in or above the ground. Given that waste collection and disposal is the responsibility of municipalities, and the equipment, vehicles and quality of service do not meet the established standards, most of the waste ends up in the Skopje landfill "Drisla", as well as in municipal substandard landfills and illegal dumpsites, the total number of which is estimated at up to 1,000. According to the relevant Ministry, 54 of these landfills are prioritized for closure, of which 30 are high and medium risk. With the exception of "Drisla", where around 15,000 tons more waste ended up in 2023 compared to 2022, and the landfill in Novo Konjsko near Gevgelija, no other municipal landfill meets the minimum technical requirements, which is why they rightly represent "hot spots" for the environment.

8 State Statistical Office of the Republic of North Macedonia, Report on Waste Generation for 2023. Link: https://www.stat.gov.mk/PrikaziSoopstenie.aspx?rbrtxt=80 Published: April, 2024.

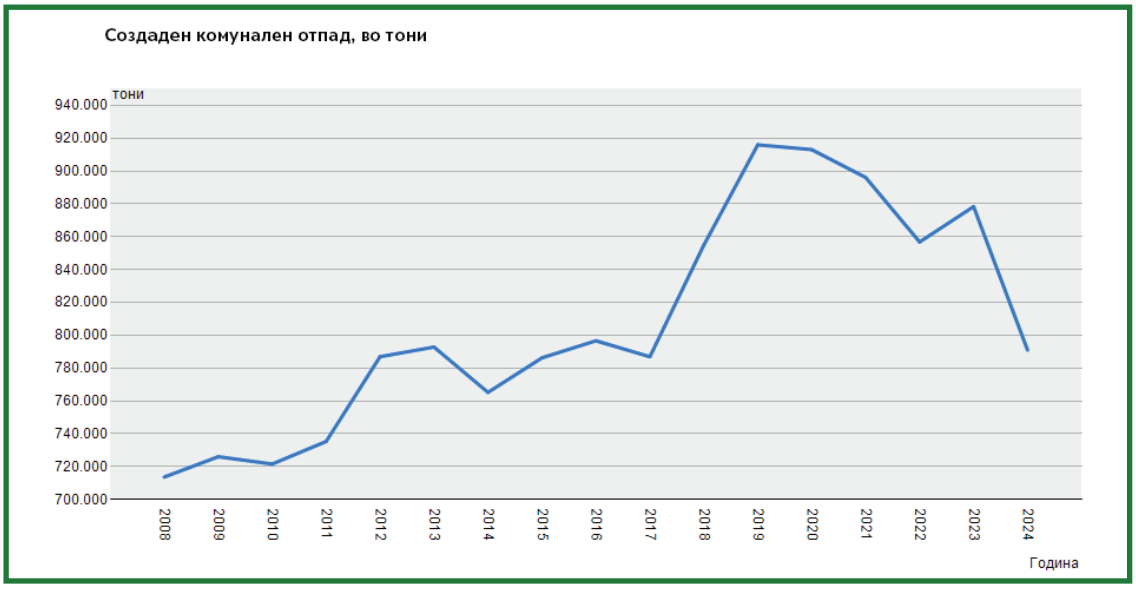
9 Podcast of the Yes for Less association with a representative of "Pakomak". Link: https://www.youtube.com/watch?v=WONin8dH-zY Published: August, 2024.

10 Racin.mk: "REDI Recycling is withdrawing from Karposh and Centar" Link:https://racin.mk/makedonija/redi-recziklazha-se-povlekuva-od-karposh-i-czentar/ Published: April, 2025.

The waste that can be found in landfills across the country is classified into as many as 20 groups with corresponding subgroups. Thus, this List of waste types[11], prescribed in accordance with the Law on Waste Management, includes, among other things:

1. Municipal waste

Municipal waste is inseparable from the urban and rural landscape. According to the State Statistical Office, households are responsible for as much as 82% of all municipal waste collected in 2023[12],with over 85% falling into mixed municipal waste. This includes everyday items such as product packaging, grass clippings, furniture, clothing, bottles, food scraps, newspapers, white goods, paint and batteries. In addition to waste generated by households, municipal waste also includes waste generated by local governments (e.g. waste from street cleaning, rubbish bins and parks) and commercial waste generated during food preparation (e.g. supermarkets). The same also goes to the plastic bags, in which this waste is most often disposed of.



The annual amount of accumulated mineral waste from construction and demolishing

The 7% increase in quantities of municipal waste collected compared to 2022 is due to the increased number of settlements included in the public system of collective municipal waste collection (about 78% of the population, compared to 22% who do not use municipal services and are concentrated in rural areas)[13]. According to the European Framework Directive on Waste, Macedonia should recycle 50% of municipal waste by 2020, but given that this goal is unattainable, the National Waste Management Plan (2021 – 2031) envisages recycling 25% of all collected municipal waste in 2025, or 45% in 2035.

Mixed municipal waste is composed of non-degradable materials for everyday use, but also of materials that, if selected, could be reused, recycled or composted. Hence, the achievement of any set goals for treatment and recycling of municipal waste is impossible

11 State Statistical Office of the Republic of North Macedonia, Statistical Classification of Waste, SCOT. Link:https://www.stat.gov.mk/KlasifikaciiNomenklaturi.aspx?id=13Published: 2017

12 State Statistical Office of the Republic of North Macedonia, Report on Waste Generation for 2023. Link:https://www.stat.gov.mk/PrikaziSoopstenie.aspx?rbrtxt=80 Published: April, 2024.

13 State Statistical Office of the Republic of North Macedonia, Statistical Classification of Waste, SCOT. Link:https://www.stat.gov.mk/KlasifikaciiNomenklaturi.aspx?id=13Published: 2017

without having waste selection. Although there are at least 1,750 containers installed in the country, of which 1,300 are for glass, and the rest for paper, plastic and cans, everyday practice shows that this number is not sufficient, among other things due to the irregular cycles of emptying of the containers.

2. Packaging waste

One of the most visible types of waste in our everyday lives is packaging waste, the management of which has been prescribed since 2010, when the first Law on Packaging and Packaging Waste Management (LPWM) came into force. The new Law[14], adopted in 2021, applies to all types of packaging placed on the market in the territory of the Republic of North Macedonia, i.e. to all packaging waste generated in households and from performance of industrial, commercial, sales, service, administrative, as well as other activities in the country, regardless of the type of packaging material and packaging waste.

According to the annual reports submitted to the relevant Ministry by collective waste handlers, the total amount of packaging waste collected is 50,662 tons, of which only 7,947 tons are collected and processed[15]. According to the Law on Packaging and Packaging Waste Management, in 2024/2025, 70-75% of the packaging placed on the market in the country should be collected (a percentage that should reach a fantastic 85% in 2027), while 50-80% of the collected quantities should already be recycled. Although the recycling of packaging waste produced in Macedonia is increasing, the majority is not recycled here, but is exported.

The Law on Packaging and Packaging Waste Management stipulates that packaging should be designed, manufactured and sold in a way that enables reuse or processing, including recycling, in accordance with the waste management hierarchy, whereby the negative impact on the environment when disposing of packaging waste or its residues resulting from the undertaking of packaging waste management operations is minimized. Although the measures, standards and objectives set out in this Law are intended to be applied as minimum requirements that need to be met in the management of packaging and packaging waste, they still seem difficult to achieve, or are even unattainable, due to the obvious problem of excessive packaging.

Excessive packaging is a symptom of linear production, in which the assessment of the product's life cycle is completely neglected - something that should be done during the design of the product and the packaging, if necessary. In that regard, although the management of packaging and packaging waste also requires the responsibility of the manufacturer, he cannot fully bear it because he will never be able to collect, process and recycle as much packaging waste as the amount of packaging it has placed on the market in the previous year by product category – although he is required to do this by law.

14 Law on Packaging and Packaging Waste Management, link:https://www.moepp.gov.mk/sites/default/files/alfa/regulativa/zakon-pakuvanje-otpad-215-2021.pdf

15 Draft Strategic Environmental Assessment Report, National Waste Management Plan (2020-2030). Link:https://www.moepp.gov.mk/wp-content/uploads/2020/10/Nacrt-SOZS-NPUO_14.10.2020_v02.pdfPublished: October, 2020.

Although according to the Law on Packaging and Packaging Waste Management, producers must ensure that this waste is selected, collected, processed and recycled, an unknown number of companies do not report the quantities placed on the market and do not pay for this purpose to the current three collective agents.[16]. Due to the problem with non-paying companies, no one takes care of more than 25,000 tons of packaging waste and this waste ends up in landfills or in nature.

The most obvious example of this are the plastic bags for carrying goods whose placing on the market is prohibited under the Law on Packaging and Packaging Waste Management, unless they meet the prescribed biodegradability criteria. Another example is single-use plastic, which, although it is the second most common type of waste in the environment, right after cigarette butts, is prohibited on the territory of protected areas only. According to data from the State Statistical Office, the ban on plastic bags came into force in 2021 but 5,800 tons of plastic bags and sacks were produced in the country since then. At the same time, statistics also show that the measure for paying for bags has had an effect, i.e. that the sale of biodegradable bags, which are now the only ones that the Law allows with payment from end consumers, has decreased by at least 10%. However, four years after the introduction of the ban on plastic bags, the questions still remain: Is it possible for biodegradable bags to decompose in a landfill? And even if citizens did not use them as municipal waste bags and would sort them in appropriate places, could biodegradable bags be recycled at all?

3. Biodegradable waste

Food waste from households, restaurants, catering and retail establishments, as well as from food processing facilities, agricultural and garden waste, green residues from parks, green areas and green markets, waste biomass from forestry and the wood industry constitute biodegradable waste – that is, waste that can be decomposed by anaerobic (without the presence of oxygen) or aerobic (with the presence of oxygen) processes. Although, according to some estimates, it accounts for over 45% of the total municipal waste, there are no special systems for this type of waste in our country.

According to the findings of the research carried out by the Association of Biogas Power Plants and Biomass Producers within the Chamber of Commerce[17], presented in 2024, livestock farming in the country creates 1.9 million tons of biodegradable waste annually, and the processing industry in the agricultural sector creates about 41,000 tons. At the same time, as many as 93% of companies believe that “the bio-waste they generate in the production process does not negatively affect the environment” – which, of course, is not true.

As biowaste decomposes, landfill gas is produced in landfills. If not used as an energy source, landfill gas contributes to the greenhouse effect: it mainly consists of methane,

16 DOMA: “Thousands of tons of waste are not being sorted because some companies do not report it”https://doma.edu.mk/novinarski-storii/iljadnici-toni-otpad-od-pakuvanje-nezakonski-se-nadvor-od-sistemot-za-selekcija/Published: March, 2023.

17 Chamber of Commerce of North Macedonia, workshops for mapping the organic waste problem and finding solutions, link:https://www.mchamber.mk/mk/news/index/523Published: May, 2024.

which is 21 times more potent greenhouse gas than carbon dioxide. Landfill gases further increase the risk of fires in landfills. When organic matter is disposed of, landfill leachate is also produced, which pollutes the soil and requires its collection and treatment over a longer period of time. In addition, if this waste was managed differently, the available landfill capacity could be used for much longer, for materials that cannot be treated or reused.

Inadequate treatment of biodegradable waste can lead to land degradation and air pollution, even when it is burned within the production process. An example of this is the current unecological practices in grape and wine production in the Tikvesh region, where it has been mapped[18] that as much as 100 thousand tons of biowaste generated from vineyards is burned.

Sustainable and appropriate waste management is therefore key, which in this case means diverting biodegradable waste from landfills. The annual targets are set by the National Waste Management Plan (2021-2031) and they are in line with the European Landfill Directive requirements, which sets out the amount of biodegradable municipal waste that can be landfilled annually. Thus, a more realistic diversion schedule would see 25% less biodegradable waste going to landfills in Macedonia by 2026 compared to 2019, and 50% less by 2031.

One systemic solution could be municipal composting plants where such waste would be converted into compost, which would then be used as fertilizer. Skopje would need 40 composters with a capacity to process 1,000 tons of waste per year for the treatment of 40,000 tons of biodegradable waste, which is approximately the total annual amount. Although there are isolated examples of organized composting such as in Resen and Kavadarci, and the City of Skopje has conducted public procurement for two composting plants, awareness and concrete steps for waste management in this way remain at an extremely low level.

4. Commercial and industrial waste

Practice shows that mixed municipal waste contains both commercial and industrial waste. Commercial waste is any other waste generated by legal entities and individuals in the course of carrying out commercial, industrial, trade, service, administrative and similar activities and is similar in nature or composition to household waste (e.g. wholesale and retail trade, catering services and bars, offices and markets, as well as the rest of the service sector). In contrast, industrial waste differs from municipal waste because it is waste generated in the production processes of industry. Moreover, industrial waste that ends up in landfills can be both hazardous and non-hazardous. It is estimated that around 5,000 tons of non-hazardous industrial waste is disposed in municipal landfills, along with around 500 tons of hazardous industrial waste.

According to data from the State Statistical Office, 1,397,000 tons of waste were generated in 2022, of which 70.5% was non-hazardous and 29.5% was hazardous waste. The mining and quarrying sectors generated the most hazardous waste (almost 405,000

18 MIA, “Conference on the use of organic waste in grape and wine production”. Link:https://mia.mk/en/story/konferencija-za-koristjenje-na-organskiot-otpad-pri-proizvodstvoto-na-grazje-i-vinoPublished: November 2024

tons), while the manufacturing industry generated the most non-hazardous waste (around 488,850 tons). In the same year, a total of 1376,000 tons of waste were treated. The amount of recycled waste or waste sent for recycling is 564,000 tons: the largest amounts are ferrous metal waste, non-ferrous metals, paper and cardboard waste and plastic waste. Almost 21,000 tons of the waste generated is stored waste.

Currently, commercial waste is mostly collected by the Public Utility Company (PUC). However, the current system of charging for waste collection by PUCs – based on the total area of commercial or industrial facilities rather than on the weight or volume of waste produced – is considered to be in conflict with EU waste legislation as it does not encourage commercial and industrial operators to minimise their waste production. There are currently no legally prescribed recycling targets for commercial and industrial waste as a whole, either at European or Macedonian level.

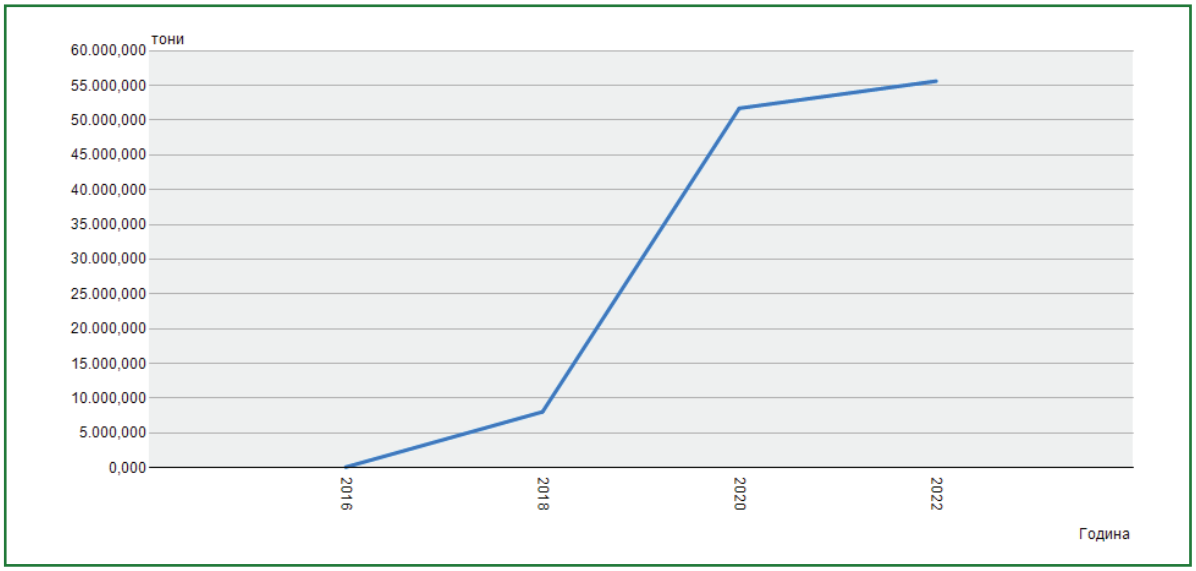
5. Construction and demolition waste and rubble

Construction waste and rubble are among the waste streams that are the highest priority for management precisely because of the large quantities generated, but also because of the great potential for reuse and recycling of these materials. It includes waste from excavations and construction sites, from demolition and breaking of materials, from reconstruction of buildings and streets, but also from construction works and activities in private households. Proper management, among other things, would involve sorting construction waste and rubble into its constituent fractions and recycling of inert waste (bricks, tiles and concrete) into recycled aggregate. In this way, natural materials could be used efficiently, and the impacts of the construction industry on the environment could be mitigated.

The State Statistical Office recorded that, in 2022, the construction industry generated 64,463 tons of waste, mostly non-hazardous. According to the data, the largest percentage of it goes to mineral waste from construction and demolition (almost 45,000 tons), followed by excavation waste (over 7,000 tons) and waste from glass, paper and cardboard, and plastic. In 2023, 48,383 tons of construction waste were received and deposited at the Drisla landfill[19], which is 15,000 tons more than in 2022.

On the other hand, the European Waste Framework Directive stipulates that by 2020, 70% of all non-hazardous construction and demolition waste should be processed, including preparation for reuse, recycling and other processing of materials – another deadline that will have to be significantly extended for Macedonia.

19 PE Landfill Drisla Skopje, Report on the overall operation of PE Landfill Drisla Skopje for 2023. Link:https://drisla.mk/wp-content/uploads/2024/07/izveshtaj-za-czelokupno-rabotene-na-drisla-za-2023.pdfPublished: April, 2024.



The annual amount of accumulated mineral waste from construction and demolishing

Construction waste and rubble are not collected by the Public Utility Company, which is why this waste is most often disposed of illegally. Therefore, the government should introduce construction waste and rubble into the formal sector for collection, processing and disposal as soon as possible.

In 2022, the City of Skopje announced the implementation of a circular model for dealing with construction waste[20]. However, in order to be able to talk about proper management of this type of waste, it is crucial, first of all, to improve the data recording. Some other steps envisaged by the National Waste Management Plan (2021 – 2031) are the introduction of measures to promote selective demolition and disposal of hazardous substances, in order to facilitate reuse and high-quality recycling, as well as a legal requirement for on-site Waste Management Plans for large construction projects. According to the authorities, this will take at least another 10 years.

6. Hazardous waste

Hazardous waste is waste that, due to its composition or concentration of hazardous substances, may pose a threat to the environment, human life and health and that has one or more hazardous properties, such as: explosivity, reactivity, flammability, irritation, toxicity, infectivity, carcinogenicity, mutagenicity, reproductive toxicity, ecotoxicity and the property of emitting toxic gases upon contact with water, air or acid. Thus, in addition to hazardous waste from industry and construction (including asbestos), this also includes waste oils, hazardous agricultural waste, waste electrical and electronic equipment, batteries and accumulators, hazardous household waste, medical waste and end-of-life vehicles.

Much of the hazardous waste is temporarily stored or disposed of together with non-hazardous waste in substandard municipal landfills – a practice that is prohibited by law. It is estimated that in the last 10 years, about 65,000 tons of various hazardous

20 City of Skopje, official website: "Arsovska: The City of Skopje is the first local government unit with a project for recycling and reuse of construction waste." Link:https://skopje.gov.mk/mk/vesti/2019/14062022_grad-skopje-e-prva-edinica-na-lokalna-samouprava-so-proekt-za-recikliranje-i-reupotreba-na-gradezen-otpad/ Published: June, 2022.

waste have been stored at various locations throughout the country. There is neither a hazardous waste landfill in the country, nor is there any prospect of such an undertaking being undertaken in the near future. Thus, it remains to find ways to transport chemical waste to other countries, since temporary measures such as covering and fencing will not solve the pollution problem.

On the other hand, certain types of hazardous waste can be reused, processed or recycled, although the options available always depend on the nature of the hazardous component of the waste. Despite this, the separation of certain hazardous waste streams generally depends on market demand, i.e. separation is carried out for those types of hazardous waste for which a commercial market exists. Hence, some of the first steps the state should take is to improve data on the amount of hazardous waste generated and the ways in which it is handled, which is why it is envisaged to establish a national information system for collecting environmental data.

Existing data from the State Statistical Office for 2022 show that mining and quarrying generate drastically more hazardous waste in the country than any other economic sector. According to the Annual Environmental Quality Report for 2023[21], 144 business entities that generate hazardous waste in the process of their operations reported a total quantity of 417,753 m3 and 3,751 tons of generated hazardous waste. Of this, only 2,897 tons and 40 m3 were reported as processed hazardous waste. In addition, a part of this waste was independently removed by the business entities, i.e. deposited (almost 417 thousand m3) or temporarily stored (239 tons and 10 m3). It is not known how 364 tons and 380 m3 of hazardous waste was treated.

The following is an overview of several hazardous waste streams in the country.

6.1. Batteries and accumulators

Batteries and accumulators are produced from valuable and rare raw materials, but they contain various dangerous chemicals and heavy metals, which is why they are hazardous waste and must be collected separately from other waste. Accumulators (car batteries) can be recycled up to 70%, so given that they have a high purchase price, such waste, fortunately, almost never end up in landfills. But ordinary batteries are much more problematic – they are very often thrown away together with the municipal waste from households and commercial and industrial facilities, although they can be recycled up to 60%. A study on the disposal of waste batteries in three municipalities (Skopje, Ohrid and Delchevo)[22] shows that up to 270 tons of waste batteries are disposed of in municipal landfills this way every year. Large supermarkets and other facilities have dedicated battery collection bins, but although collection rates are improving, they are still low.

According to the Law on Management of Batteries and Accumulators and Waste Batteries and Accumulators)[23], the end user is required to deliver the waste industrial batteries or accumulators to the manufacturer (from where he purchased them) or to legal or natural

21 Annual report of processed data on environmental quality for 2023 Link: https://www.moepp.gov.mk/sites/default/files/alfa/reports/2023_vkupengodisen_final.pdf Published: September, 2024.

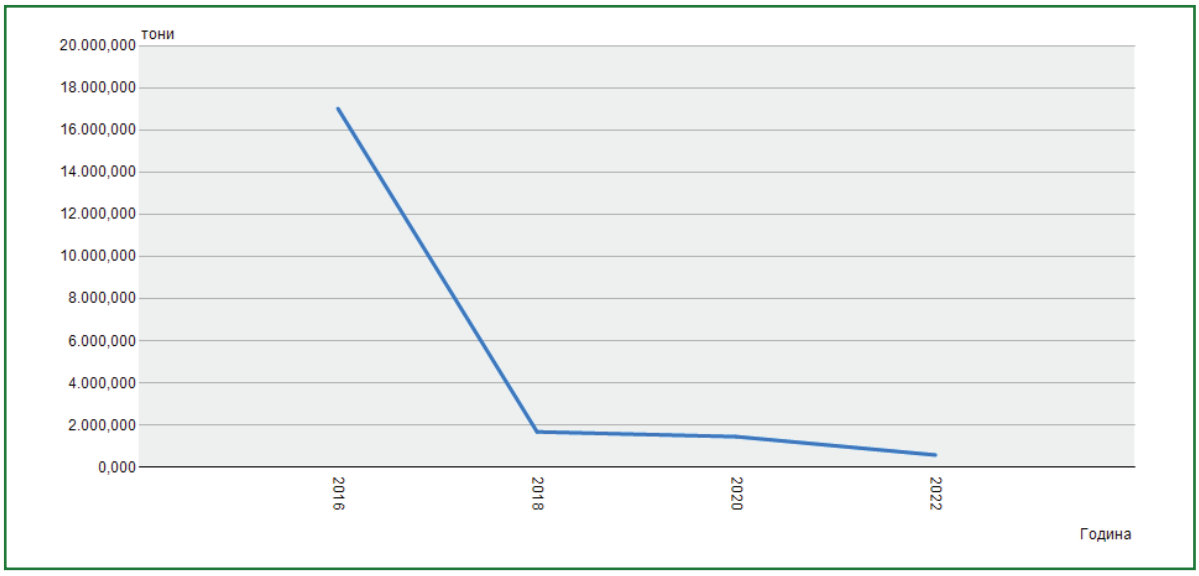
22 Waste Management Plan of the Republic of North Macedonia (2021 – 2031), link: https://www.moepp.gov.mk/wp-content/uploads/2021/10/Plan-for-Waste-Management-of-RSM-2021-to-2031-godina.pdf

23 Law on the Management of Batteries and Accumulators and Waste Batteries and Accumulators, entered into force on 11.08.2021. Link: https://dejure.mk/zakon/zakon-za-upravuvanje-so-baterii-i-akumulatori-i-otpadni-baterii-i-akumulatori-1

persons who have a permit for waste management, and no owner or trader may refuse the handover of portable waste batteries and accumulators, nor demand the purchase of new batteries and/or accumulators in return or charge a fee for the return.

Aiming to create market conditions for high levels of collection and treatment, this Law introduced extended producer responsibility, which led to the establishment of the first collective action groups. Such collective action groups unite around 57% of producers that place batteries on the market and who have a collective action permit.[24]. Due to the lack of electronic data collection system and weak inspection, these collective operators, together with one other independent operator, are the only ones filling in the database by submitting annual reports to the relevant ministry. As a result, complete and up-to-date data is also lacking for this type of waste.

According to the Annual Report on Environmental Quality Data of the Ministry of Environment and Public Health[25], in 2023, a total of 5,848,122 tons of batteries and accumulators were collected, and 5,743,870 tons were recycled. It can be seen that the largest share in the total amount of batteries and accumulators placed on the market and collected and recycled are automotive batteries and accumulators (over 98%).



The annual amount of accumulated waste from batteries and car batteries during 2016-2022

Given that the collection and treatment targets for this type of waste set by the EU Directive on waste batteries and accumulators are unattainable for us, the government has defined national targets according to which 45% of portable batteries and accumulators, i.e. 80% of industrial batteries and accumulators, should be collected by 2025. The Law also sets targets for recycling the collected batteries – 65% of the average weight of lead-acid batteries (accumulators), 75% for nickel-cadmium batteries and 50% for other waste batteries and accumulators.

24 Waste Management Plan of the Republic of North Macedonia (2021 – 2031), link: https://www.moepp.gov.mk/wp-content/uploads/2021/10/Plan-for-Waste-Management-of-RSM-2021-to-2031-godina.pdf

25 Annual report of processed data on environmental quality for 2023 Link: https://www.moepp.gov.mk/sites/default/files/alfa/reports/2023_vkupengodisen_final.pdfPublished: September, 2024.

6.2. Waste electrical and electronic equipment (WEEE)

This type of waste is one of the fastest growing waste streams in the EU, with an increase of 3–5% per year. Improper management of this waste results in a number of environmental and health risks and denies the possibilities for extraction of secondary raw materials. And yet, almost 70% of the heavy metals in the landfills comes from electrical and electronic devices[26].

According to the new Law adopted in 2021[27], the manufacturer is required, at his expense, to ensure the fulfillment of the obligations and objectives of the Law, through return, separate collection, reuse, recycling and processing of waste equipment that is created by the placing of such equipment on the market in the country.

Based on reports submitted so far by only three collective action participants[28], 18,527 tons of such equipment were placed on the market in 2023, with the largest share being large equipment (45.58%), followed by heat exchange equipment and screens, monitors and equipment with screens with area larger than 100 cm2. In comparison to these categories, lamps, small information and communication technology and telecommunications equipment as well as other small equipment have a negligible share. Only 6,758 tons of the quantities placed on the market were actually collected. Of these, 5,698 tons were recycled and processed (including prepared for reuse). Approximately 2,400 tons were exported for recycling, processing and disposal, and about 523 tons were stored waste.

Given that Macedonia has failed to meet some of the targets set by various EU Waste Directives and is finding it difficult to achieve the planned pace, national targets have been set to collect 40% this year, and 50% by 2027, of electrical and electronic equipment placed on the market.

6.3. Waste oils

Waste oils are edible mineral, synthetic or industrial oils, in a liquid or semi-liquid state, which have become unsuitable for the use for which they were originally intended. By processing them, a processed fuel oil can be obtained that can be used as a substitute for industrial fuel. Moreover, just one liter of waste oil can contaminate millions of liters of water.

There are three authorized private companies in the country for regeneration of waste oils (i.e. for refining waste oils intended for production of base oils), and 9 companies are licensed for collection and transport of waste oils. Current knowledge indicates that the majority of waste oil in the industry is illegally burned or simply dumped out in the open. The planned development of an extended producer responsibility scheme is expected to provide financing for separate collection, as well as more sustainable options for

26 Waste Management Company Zero Waste LLC – Skopje. Link: https://www.nulaotpad.com.mk/elektrichna-i-elektronska-oprema

27 Law on the Management of Electrical and Electronic Equipment and Waste Electrical and Electronic Equipment, entered into force on 11 August 2021. Link: https://dejure.mk/zakon/zakon-za-upravuvanje-so-elektrichna-i-elektronska-oprema-i-otpadna-elektrichna-i-elektronska-oprema-1

28 Annual report of on environmental quality for 2023 Link: https://www.moepp.gov.mk/sites/default/files/alfa/reports/2023_vkupengodisen_final.pdf Published: September 2024.

treatment, processing or regeneration of waste oils. In addition to industry, which is the largest producer of waste oils and lubricants, some stakeholders in the country also collect and process waste oils from households.

According to the national waste oil collection targets set by the Law on Management of Additional Waste Streams[29], 15% of all waste oils placed on the market in the current year of 2025 should be collected, and this quantity should increase to 45% in 2031. The same Law stipulates that, starting from 2031, each producer will be required to meet national targets for reuse, recycling and other types of processing of waste oils: 70% will have to be processed and 30% to be incinerated. No more recent data were found during the research on the total collected and/or processed quantities of waste oils in the country.

6.4. End-of-life vehicles

Recycling rates for end-of-life vehicles and waste tires are among the progress indicators set out in the National Waste Management Plan until 2031. This stems from the EU End-of-Life Vehicles Directive, which requires an increase in the recycling of end-of-life vehicles and their components, as well as improved environmental performance of all economic operators involved in the life cycle of vehicles. For this reason, an extended producer responsibility scheme for end-of-life vehicles is currently being developed, which should contribute to the development of a complete system for managing this waste stream.

Since 2021, the management of end-of-life vehicles and waste tires has been more specifically regulated by the Law on Management of Additional Waste Streams[30]. According to this Law, 40% of waste tires and 15% of end-of-life vehicles should be collected in 2025, and the figures should be 30% higher in 2031. In addition, starting from 2031 the manufacturer will be required to process as much as 98% of the collected tires, and by January 1, 2027, the reuse, processing and recycling of all collected end-of-life vehicles will have to increase by at least 70% of the average mass of the empty vehicle.

However, the situation on the ground contradicts the legal provisions. The first registration of new vehicles in the country is five times cheaper than the registration of used vehicles. The number of passenger vehicles registered is constantly growing from year to year (149,484 cars at the end of 2018 on the territory of Skopje; 184,646 cars or over 35,000 more vehicles at the end of 2023[31]) at the expense of the number of passengers transported by public transport, which, in turn, is drastically decreasing: in 2022, 28.5 million passengers used buses, compared to the years before the COVID

29 Law on Management of Additional Waste Streams, entered into force on 25.09.2021. Link:https://www.moepp.gov.mk/wp-content/uploads/2022/01/SLUBEN-VESNIK-NA-RSM-br.-216-zakon-za-posebni-tekovi-otpad.pdf

30 Ibid.

31 MAKSTAT database, link:https://makstat.stat.gov.mk/PXWeb/pxweb/mk/MakStat/MakStat__Transport__RegistraniVozila/

pandemic, when an average of 45 million passengers used public transportation[32]. Moreover, in 2025, three municipalities in Skopje announced in 2025 that they will be granting subsidies for young people for taking driving test.

There are about 250 scrap metal dumps in the country, but only two companies have a license to store and treat end-of-life vehicles. Waste tires, on the other hand, are mainly landfilled, but some of them are collected and used as fuel in the production of lime. Burning tires is not used as an energy source, although there is a processing capacity in the cement plant in Skopje, which has expressed interest in processing old tires.

7. Textile waste

In the period up to 2031, progress in waste management will also be measured through the recycling rate of textile waste. This is logical considering that the textile industry, which is one of the leading industrial branches in the country, generates 6,000-7,000 tons of waste annually[33]. According to some national estimates, textile waste accounts for about 5% of total mixed municipal waste.

Given that the most dominant in our country is the so-called "lohn" production - textile materials are imported and used to cut and sew the products, after which the final product is delivered back to the countries of origin. All the remaining textile material that was not used remains here - dealing with such waste requires, primarily, a legal solution. The current regulation requires from the textile companies to store their own waste, and then to submit it to the Customs Administration, after which the waste ends up in landfills. In addition to dumping it in landfills, textile companies transport textile waste to the Skopje cement plant "Usje", where it is incinerated. Without measuring and monitoring the effects of this practice, the exact consequences for health and the environment remain unknown.

Solving this problem also requires developing recycling capacities that are currently far from sufficient. For now, there are two operators that deal with one type of waste textile, which is then returned to production. In this sense, one of the most pressing challenges is the management of mixed textiles. Textile waste can also be recycled and applied in construction as an insulation material, as well as in the automotive and furniture industries. Although few in number, there are examples of such innovative approaches in Macedonia.

The ten-year National Waste Management Plan envisages the adoption of a Textile Strategy in 2022, as well as the development of an extended producer responsibility scheme for this type of waste. National targets have also been set, according to which, producers are required to collect 15% of the total quantities of textile waste in the country during 2025, and this percentage should increase to 45% in 2031. The mayor is required to provide collection points for free disposal of textile waste by end users, just as in the case of waste tires. From January 1, 2031, almost all textile waste (98%) will have to be recycled and reused.

32 META.MK: „Катастрофален пад на бројот на патници во скопскиот јавен превоз (инфографик)" Линк: https://meta.mk/katastrofalen-pad-na-brojot-na-patnici-vo-skopskiot-javen-prevoz-infografik/ Објавен: март, 2023 год.

33 State Statistical Office of the Republic of North Macedonia, Press Release on Collected Municipal Waste for 2023. Link: https://www.stat.gov.mk/pdf/2024/9.1.24.03_mk.pdfPublished: April, 2024.

5. What are the actions of the government?

After a decade, the tender for selection of a company that will build the first regional landfill in the country that will operate according to European standards was finally published in late 2024[34].This should finally kickstart the long-awaited hierarchical and integrated approach to waste management at the local or regional level, which is foreseen by the EU Chapter 27, "Environment and Climate Change."

The plan is to build this landfill in the Sveti Nikole village of Mechkuevci, along with six other forwarding stations in Kumanovo, Rankovce, Shtip, Vinica, Makedonska Kamenica and Berovo, which is expected to cover the needs of the residents of 18 municipalities in the Eastern and Northeastern regions. For this reason, activities are being carried out in these two regions aimed at closing the substandard landfills and garbage dumps.

The construction is planned to take place in parallel so that when the regional center is put into operation, it will be fully functional, meaning the landfill will be operational, along with the mechanical-biological treatment plant, the actual treatment plant and the selection line. This regional center will receive all the waste that the municipalities will not be able to select, and they have already received garbage collection trucks and 4,000 containers for waste selection for this purpose. A total of 40 million euros have been provided for this undertaking via IPA funds, but they should be used by 2026. Otherwise, the country risks losing this financial support from the EU.

The regional approach to waste treatment will also be implemented in other parts of the country. In addition to the one in Sveti Nikolsko and "Drisla" in the Skopje planning region, regional waste management centers are also planned at the "Meglenci" landfill in the Municipality of Novaci (Southwestern planning region and Pelagonija), the "Dobroshinci" landfill in the Municipality of Vasilevo (Southeast and Vardar Planning Region) and at the "Rusino" landfill (Polog Planning Region), a location that is planned to be replaced with a new one after five years.

In the past ten years, as long as it took the country to get this far, thousands of pages of documents, strategies and plans have been prepared, and new landfills have been created on the ground. The reasons for this prolongation are numerous – from the lack of legislation and disagreement over who will manage the public enterprise responsible for the regional center, to the absence of a punitive policy and sanctions for improper waste disposal. But one of the most important, it seems, is the resistance of the population. This, on the one hand, is due to the justified distrust in the institutions and the fear of polluting the environment even more, and on the other hand, to the lack of information and the exclusion of citizens from the actual decision-making processes.

6. Environmental awareness – current situation

In order for the regional waste centers – or any environmental solution – to truly function, it is not sufficient to simply design and implement them. A prime example is the recent ban on plastic bags, which showed that even when the legal solution is well-intentioned, in practice there is a tendency to circumvent it and tolerate non-compliance. In order

34 Ministry of Environment and Spatial Planning, "Medjiti: We are ready to face environmental challenges" Link:https://www.moepp.gov.mk/medija/novosti/241025-mediti-podgotveni-sme-da-se-soochime-so-predizvicite-vo-zhivotnata-sredinaPublished: October, 2024.

to change the (current) ways of doing things, environmental protection must become a priority in virtually every sphere of social life.

First, a long-term work must be done in order to raise awareness – among citizens, the private sector, civil society, the scientific community, but also among the media and the government. However, given the ridiculous budget funds that have been allocated for this purpose for years, it should not be surprising that, although the awareness about the serious effects of the climate crisis and the need for urgent action is growing, half of the students in the country[35] still do not recognize the human activities as the main cause of climate change.

In order for the climate action and waste management to be integrated in future sectoral policies, climate and environmental education must become an integral part of all levels of the education system as soon as possible. That is why it is included in a number of documents and conventions such as the Paris Agreement, the UN Framework Convention on Climate Change, the European Union Green Deal, the Western Balkans Green Agenda, etc. However, as shown by a survey carried out among 80 Macedonian freshmen related to the circular economy[36], neither knowledge nor a positive attitude on a certain topic necessarily means a change in behavior. Hence, it is not enough to just produce knowledge and map problems, but also to find solutions because "if young people do not know how to behave differently, then the easiest thing will be to do as it has always been done."

In our country, as in all other areas of life, the environmental education currently depends on the awareness and commitment of individuals[37]. There are teachers with developed environmental awareness, but as with many other things, they are short of resources for this. A novelty that may turn the course in a favorable direction is the draft Concept for Reforms in the Gymnasium Education[38], which the Ministry of Education and Science and the Bureau for Development of Education announced in January this year and includes four main principles one of which is promotion and protection of the environment. Through cross-curricular learning, sustainable development topics should be integrated into social studies subjects, which would enable students to relate environmental topics with broader social and economic aspects. The adoption of the concept would pave the way for the introduction of environmental education in gymnasiums, as has already started with vocational schools.

The poor implementation of policies is also closely related to the low level of participation of all stakeholders in the process of their creation. By involving the public, it is much more likely that decisions will be based on shared knowledge, experiences and scientific evidence, that innovative and creative options will be taken into account and, finally, that the decisions and measures will be applicable, functional and acceptable to the public, and especially to those who are directly affected by them[39]. Hence, public awareness and

35 DOMA: "More than half of students in Macedonia do not believe that humans contribute to climate change." Link: https://doma.edu.mk/novinarski-storii/povekje-od-polovina-studenti-vo-makedonija-ne-veruvaat-deka-chovekot-pridonesuva-kon-klimatskite-promeni Published: September, 2024

36 Marica Antovska-Mitev, Tatjana Drangovska. Awareness on Concept of Circular Economy in North Macedonia on the Example of First Cycle University Students. Published: Central and Eastern European Online Library, 2024. Link: https://www.ceeol.com/search/article-detail?id=1264634 e University Students. Објавен: Central and Eastern European Online Library, 2024 год. Линк: https://www.ceeol.com/search/article-detail?id=1264634

37 DOMA: "Macedonians are ecologically literate – maybe?" Link: https://doma.edu.mk/istrazuvanje-i-edukacija/makedoncite-se-ekoloshki-pismeni-mozhebi/ Published: March, 2025.

38 Ministry of Education and Science, Bureau for Educational Development. Concept for High School Education (January 2025). Link: https://www.bro.gov.mk/wp-content/uploads/2025/01/КОНЦЕПЦИЈА-гимназиско-1-2025.pdf

39 Daniel TOMIC, Biserka DIMISHKOVSKA. Public Participation In Solid Waste Management in N. Macedonia, published in Quaestus Open Access Journal, 2021. Link: https://www.quaestus.ro/wp-content/uploads/2012/03/Daniel-tomic.pdf

the willingness of citizens to cooperate are equally important for waste management as building the necessary infrastructure or adopting the necessary legal solution. However, it seems that the authorities are having a hard time adopting this lesson. Confirmation of this is the triple-digit number of complaints that civil society organizations such as "Front 21/42" have filed before the Administrative Court[40], many of which relate precisely to the non-compliance with legal provisions on participation of public in the process of adopting environmental laws.

Another indicator of the low awareness in the country is the fact that, out of a total of 132 final judgments for crimes against the environment and nature, found at the sud.mk portal adopted in the period from January 1, 2017 to July 31, 2021, only one judgment relates to endangering the environment and nature with waste[41]. In a situation where the government persistently lags behind in caring for the environment, and thus in caring for human health, persistently reducing the National Waste Management Goals in every new legal solution, nature desperately needs aware citizens who will demand responsibility from those who should most zealously implement the laws – because they were the ones who adopted those laws in the first place!

7. Is it possible to deal with the waste if we constantly being piled up by it?

Another way – according to some, the most effective – to raise awareness and change the behavior of citizens and companies is by imposing fines for violators without any compromise. However, in order for the authorities to be able to punish those response, there must be a sufficiently developed infrastructure. It is also proposed that, instead of according to area, the price of waste management services be determined according to the type and quantity of waste generated. Another possibility is to financially stimulate producers to switch to circular production models. It certainly sounds trite, but perhaps it would be enough, as a start, to mandatory and consistently implement the legislation, at the same time insisting on compliance with the provisions that relate to the extended responsibility of the producer.

Although there is no person in this country who thinks that they live in a healthy and clean environment, it still seems that there are as many recommendations as there is a lack of political will. However, if the waste problem is seen through the lens of the existing economic system, that is, as a consequence of poor design and mindless exploitation of non-renewable natural resources for profit, then at the same time it could be undoubtedly concluded that waste management – and even sustainability! – is an impossible mission in the existing capitalist system.

Dealing with – and even overcoming – waste as a problem requires changing the economic system as a whole. The initiative for this endeavor can come from conscious individuals,

40 DOMA: "The state forgets that the Constitution guarantees us a healthy environment" Link: https://doma.edu.mk/novinarski-storii/drzhavata-zaborava-deka-ustavot-ni-garantira-zdrava-zhivotna-sredina/ Published: March, 2022.

41 Center for Legal Research and Analysis (CPIA), "How to achieve efficient and effective environmental justice?" Link: https://cpia.mk/mk/kako-do-efikasna-i-efektiva-ekoloshka-2/ Published: March, 2021.

but the entire burden must not fall solely on the shoulders of consumers. As long as we have to manage and deal with waste, we cannot have sustainable development. And to achieve sustainability, the waste problem – like any other social problem – must be solved intersectionally. In other words, we will not get rid of waste if we do not combat corruption, if we do not roll up our sleeves to overcome class inequality, if we do not strive for decentralization and reduction of urban population, if we do not have equal access to quality healthcare, administrative services, cultural and youth facilities everywhere, if food is imported instead of grown domestically. Because there is no point in recycling and incinerating all waste, even if it is to produce energy to heat homes, if we continue to generate it at the same pace and degrade nature, to which we have clearly forgotten that we belong.

Green socialism is probably our only option if we want to survive as a species. In such a system, "economic growth will not only cease to be an aspiration in the economic sphere, but will lead to growth, reduction of working hours, non-consumerist well-being, development in a human sense. Production will not be for profit, but to satisfy real, unmanipulated human needs. No perishable goods will be produced, but durable goods. We will live in harmony with nature, not treating it as a source of resources and a garbage dump."[42]. In other words, if we want to live without being suffocated in waste, we must ensure as soon as possible that "consumer" is not the definition of modern man, nor "natural resources"–definition of nature.

Biography

Andrijana Papić Manceva is a translator and reproductive freedom advocate with significant work experience in the civil society sector and in the team of the Creative Documentary Film Festival "Makedox". In 2017, on her own initiative, she translated, and the following year managed to publish and promote the book "A Zero Waste Home" originally written by Bea Johnson. The passion for living with less waste, which has since grown along with parenthood, has over the years transformed into an inexhaustible interest in ecofeminism through the prism of intersectionality.

42 Zdravko Saveski, "Towards the Green Economy of the Future" published in the collection "Another World: Reflections on Systemic Transformation", publisher: Ploshtad Sloboda, editor: Ivana Dragšić, Skopje, 2021.

Housing as a key factor in the sustainable development of cities and in combating climate change in Macedonia

Iva Petrunova

"Soon we should have smoke extractors, dust absorbers, ozonizers, sterilizers of water, air, food and clothing everywhere; systems for preventing accidents on streets, multi-level roads and subways. It would be almost impossible to get sick from bacteria or get injured in any way in the city, and villagers would come to the city to rest or recover." – this is how Nikola Tesla described his idea of development of cities

1. Introduction

One of the main aspects in creating a sustainable future is revising the ways of housing and creating sustainable housing. Housing is physically most present in the urban fabric, recognizable in urban morphology and represents a fundamental right of every person. By exploring the concepts of housing and the lifestyle they encourage, one can understand the urban challenges faced by modern people and find their potential solution. Analyzing housing in an urban and social context shows the connection of all areas of urban life with the home and the space. However, housing in the city cannot be seen only as an isolated segment, but it exists in a broader context. When talking about quality housing, one must inevitably mention the surroundings of that housing, i.e. the public space and the services available in the immediate vicinity that support the city living. For sustainable housing, it is mandatory to include the socio-cultural context in which housing takes place.

The home, the house, the apartment, that is, the habitat is an inextricably linked medium between man and nature. Man, in order to protect himself from natural disasters, first begins to find shelters in nature, such as caves, and then begins to build a dwelling, settlement or city. Petar Mulichkovski explains that the complexity of the concept of environment includes the concepts of habitat (dwelling) and habitability (living). The term habitat (dwelling) refers to the static spatial and existential environment, while the term habitability, as a broader and more developed term, represents a dynamic concept of the environment. Habitability is the result of a symbiosis created between natural factors and the products of conscious human activity, which implies that it is also temporally determined, that is, it represents a historical category. In certain time periods (historical intervals), certain specific characteristics of a parricular habitat have been created[1].

By analyzing vernacular architecture and its socio-cultural context and contemporary cities in the modern socio-cultural context, one can find architectural principles that are recurring, enduring, and applicable in the future. Rethinking the home and its surrounding context through the lens of the challenges that humanity may face in the future is more than necessary.

2. Current context

The world population is increasing and most of the people prefers to live in a city[2]. This pressure that the population puts on the city creates many problems and indicates

1 Mulichkoski, P. (2002). The Spirit of the Macedonian House. Skopje: AEA Publishers.

2 World Bank Group (2023). Urban Development. [online] World Bank Group. Available at: https://www.worldbank.org/en/topic/urbandevelopment/overview.

that life in the city must be reconsidered, in order to have dignified conditions for urban life for all citizens. Cities are increasingly facing problems such as overpopulation and dysfunctional infrastructures due to overpopulation; pollution: air, sound, light; too much waste and poor management of it; traffic congestion and dysfunction; reduced greenery; poor quality housing production and many more problems that cause urban stress among citizens and reduce the quality of life. Urban stress or city stress is a state of physical or mental tension developed through life in a city or due to physical, chemical or emotional factors that cause that tension[3]. In parallel with the problems that cities face due to population growth, problems related to climate change are also emerging, which indicate the urgent need for cities to be planned in resilient, green and sustainable ways. All these problems are interconnected and one of the key aspects for their solution is housing, since the apartment, i.e. the home, is the basic unit in the settlement from many aspects: economic, cultural, sociological, spatial...

Tai Lee Siang and Valerie Ang point to three major problems that we will face in the future, which are driven by urban migration: lack of quality housing, lack of infrastructure, and destruction of nature[4].

1. Lack of quality housing: Although cities are considered attractive places that provide a quality life, increased urban migration does exactly the opposite. Increased density and small area for development of housing units means expensive housing, often with poor quality and too small for a family. Some of the consequences of the influx of population into cities are:

   - Inadequate housing and infrastructure.
   - Rapid emergence of slums and favelas.
   - Increased land costs.
   - Real estate agents, through the sale of small units, increase their contribution.
   - Increase of property prices.
   - Lack of quality (or adequate) housing and unaffordable (inaccessible) housing.

   All of these reasons contribute to the emergence of irresponsible urban planning and poor maintenance of housing facilities, which causes internal or external deterioration of buildings[5]. Such irresponsible urbanism causes a poor quality of life with health risks for citizens and reduced security in the city.

2. Lack of infrastructure: It is often said that cities meet all the needs of citizens, but many cities do not even meet the basic requirements, which are:

   - Clean water and sewage.
   - Public transportation.
   - Education.
   - Health and safety.

   According to the United Nations, approximately 1.1 billion people currently live in slums or slum-like conditions in cities, and another 2 billion more are expected to live in such conditions in the next 30 years[6].

   As the city grows, its infrastructure often does not develop in parallel. A poor transportation system causes an increase in the number of cars and traffic jams,

3 European Environment Agency (n.d.). urban stress — European Environment Agency. [online] www.eea.europa.eu. Available at: https://www.eea.europa.eu/help/glossary/gemet-environmental-thesaurus/urban-stress.

4 Lee Siang Tai and Ang, V. (2016). Cities of Love. World Scientific. p.21

5 Lee Siang Tai and Ang, V. (2016). Cities of Love. World Scientific. p.23

6 United Nations (2024). SDG Indicators. [online] unstats.un.org. Available at: https://unstats.un.org/sdgs/report/2023/Goal-11/.

which, in turn, increases the time that citizens spend in cars and reduces the quality of life. Poor traffic also causes an unsuitable urban environment for children. This problem is particularly related to transportation between home, school and the parent's workplace. Prices are lower in the suburbs, and schools are most often chosen near the home, and in this case parents have to travel additionally to the workplace every day, which causes increased traffic chaos. Business centers, which are often in the city center, are active only during working hours, while the rest of the time a large part of citizens travel to their homes in the suburbs, so these business centers are relatively deserted. This occurrence of inactive spaces for several hours encourages crime, vices and deviant phenomena[7].

3. Destruction of nature: Are cities and nature mutually exclusive and independent of each other? While a city is understood as a built-up block, nature in it is considered only as a street decoration or decorative space. Land brings profit, and any unused land is a loss. This is precisely why construction takes priority over green space in the city. This has huge negative consequences on the quality of life and health of citizens[8]. Some of the benefits of nature and greenery in cities are:
   - reduced risk of flooding;
   - cooling the city in summer;
   - better health and increased well-being;
   - sports, recreation and socialization;
   - attractive business atmosphere;
   - increased real estate value;
   - biodiversity[9].

   Conversely, cities that lack sufficient green space have higher mortality rates and street crime. Growing without the right balance of built environment and nature, there is a risk that cities will serve to erase larger parts of natural assets[10].

3. Local context

In the Republic of North Macedonia, according to the 2021 census, there are 1,836,713 citizens, including 598,632 households and 839,174 apartments, with an average number of household members of 3.06.[11]. Of these, Skopje has 526,502 inhabitants, 171,171 households and 213,850 apartments. According to the 2002 Census, Skopje had 506,926 inhabitants, 146,566 households and 163,745 apartments.[12]. Compared to the 2002 Census, at the national level, the total population decreased by 185,834 people, or 9.2%, while the number of households increased by 34,336, or 6.1%, and the number of dwellings increased by 141,031, or 20.2%.

7 Lee Siang Tai and Ang, V. (2016). Cities of Love. World Scientific. p.24

8 Lee Siang Tai and Ang, V. (2016). Cities of Love. World Scientific. p.29

9 Grad, Z. (nd). URBAN GREENERY IN THE CITY AND ARCHITECTURE. [online] Available at: https://ekosvest.com.mk/wp-content/uploads/2024/02/%D0%97%D0%B5%D0%BB%D0%B5%D0%BD-%D0%B3%D1%80%D0%B0%D0%B4-%D0%BA%D1%80%D0%B0%D1%98%D0%BD%D0%B0-%D0%B2%D0%B5%D1%80%D0%B7%D0%B8%D1%98%D0%B0.pdf [Accessed 25 Feb. 2025].

10 Lee Siang Tai and Ang, V. (2016). Cities of Love. World Scientific. p.29

11 Anon, (n.d.). Available at: https://popis2021.stat.gov.mk/%D0%9D%D0%B0%D1%81%D0%BB%D0%BE%D0%B2%D0%B8/%D0%92%D0%BA%D1%83%D0%BF%D0%BD%D0%BE%D1%82%D0%BE-%D1%80%D0%B5%D0%B7%D0%B8%D0%B4%D0%B5%D0%BD%D1%82%D0%BD%D0%BE-%D0%BD%D0%B0%D1%81%D0%B5%D0%BB%D0%B5%D0%BD%D0%B8%D0%B5-%D0%BD%D0%B0-%D0%A0%D0%B5%D0%BF%D1%83%D0%B1%D0%BB%D0%B8%D0%BA%D0%B0-%D0%A1%D0%B5%D0%B2%D0%B5%D1%80%D0%BD%D0%B0-%D0%9C%D0%B0%D0%BA%D0%B5%D0%B4%D0%BE%D0%BD%D0%B8%D1%98%D0%B0-%D0%B8%D0%B7%D0%BD%D0%B5%D1%81%D1%83%D0%B2%D0%B0-1-836-713-%D0%B6%D0%B8%D1%82%D0%B5%D0%BB%D0%B8/.

12 REPUBLIC OF MACEDONIA STATE STATISTICAL OFFICE. (n.d.). Available at: https://www.stat.gov.mk/Publikacii/knigaXIII.pdf.

The average living area (of dwellings inhabited by individual households) was 19.7 m2 in 2002, while in 2021, the average living area per person was 30.06 m2. It is perculiar that 96% of households live in an apartment owned by a household member. As much as 36.61% of the total number of dwellings are empty[13].

Census 2002[14]	Total population	Households	Apartments	Census 2021	Population	Households	Apartments
Republic of Macedonia	547 022 2	296 564	143 698	Republic of Macedonia	713 836 1	632 598	174 839
Skopje	926 506	566 146	745 163	Skopje	502 526	171 171	850 213
Bitola	385 95	942 28	225 37	Bitola	164 85	154 30	724 43
Veles	108 55	959 16	717 20	Veles	463 48	566 16	630 18
Gevgelija	988 22	221 7	292 9	Gevgelija	582 21	386 8	833 10
Gostivar	042 81	091 18	339 20	Gostivar	770 59	054 20	945 27
Kavadarci	741 38	026 12	324 16	Kavadarci	733 35	375 12	917 14
Ohrid	749 55	012 16	437 28	Ohrid	428 51	368 18	660 33
Strumica	676 54	896 15	473 18	Strumica	995 49	400 17	621 24
Tetovo	580 86	094 20	592 22	Tetovo	770 84	848 23	167 30

Table 1: Comparative table of the cities of Skopje, Bitola, Beles, Gevgelija, Gostivar, Kavadarci, Ohrid, Strumica and Tetovo on the number of population, households and apartments in the 2002 and 2021 Censuses.

Such statistics indicate the emigration of citizens from smaller towns and cities in the country and their settlement in the capital city or their emigration from the country. What is visible and alarming for analysis is the increase in the number of apartments, as opposed to the decrease in the number of households, i.e. the overproduction of residential space. The demand for residential space in the capital is growing, and with the increase in demand for apartments, more and more are being built, and the spatial, ambient and architectural values of the home/neighborhood/city that guarantee quality of life are being neglected. With the increase in the construction of homes in the urban settlement, there is also a need to build surrounding services, such as streets, hospitals, offices, schools, kindergartens, markets, etc. Such construction implies the growth of urban settlements and the creation of new suburbs. An increase in density occurs in three ways:

1. In the free spaces within the city and the neighbourhood, at the expense of free areas, and the first to be hit are the free green areas.

2. By increasing the number of storeys of buildings through superstructures and extensions that increase density and burden the city's infrastructure. This implies the need to widen streets and build additional parking spaces and service facilities. Such intervention often occurs at the expense of tree rows placed along the streets,

13 Anon, (n.d.). Available at: https://www.stat.gov.mk/publikacii/2022/Statistichki-atlas-mk-al-web.pdf.

14 PxWeb. (2025). Вкупно население, домаќинства и станови во Република Македонија, Попис 2002-PxWeb. [online] Available at: https://makstat.stat.gov.mk/PXWeb/pxweb/mk/MakStat/MakStat__Popisi__PopisNaNaselenie__PopisOpstini/01Popis_op_02_VkNasDomSt_mk.px/table/tableViewLayout2/?rxid=0115c726-da76-47a3-9d6b-7edab015cb08 [Accessed 25 Feb. 2025].

in order to obtain another lane of traffic or to obtain additional parking space. Also, the creation of ever-higher buildings in an inappropriate urban context means reduced air circulation, reduced sunlight, which directly affects the quality of life and the quality of housing and threatens basic human rights such as the right to a healthy environment.

3. By expanding the city through the suburbs of free land at the expense of taking away agricultural land or reducing the land from nature, such as meadows, forests and pastures. By reducing nature in and around cities, the negative impact of climate change on urban living is increasingly felt and the health of citizens is threatened by their isolation from the natural ecosystem. Additional problems that arise are polluted air, light and visual pollution, noise or sound pollution, traffic congestion, urban stress, a decrease in the overall quality of life that contributes to a decrease in the well-being of citizens and a potential risk of reduced health status and reduced opportunities for proper growth and development of the individual. The burdened city infrastructure also causes reduced democracy, risk of crime and deviant phenomena, weakening of social cohesion and weakening of communities, reduced inclusiveness, confusion, identity problems, marginalization of certain categories of citizens, poverty, reduced culture and education, i.e. poorer access to all city services[15].

The capital city of Skopje is facing urban chaos that is felt in all areas of urban life. As a city with a rich historical past, Skopje has different layers that reflect the morphological, urban and socio-cultural values of the societies that existed in it. From a Roman barracks, a medieval fortress, an Ottoman city, it has grown into a city that strives to develop according to the principles of Western European values and eclecticism in the first half of the 20th century. In 1963, after the catastrophic earthquake, Skopje was rebuilt, according to the principles of modernism. As layers of the past we have the Skopje neighborhoods, which are made up of city houses with courtyards. The displaced homeless population, i.e. those whose homes collapsed in the earthquake, are accommodated in temporary and quickly built barracks, which grow into urban settlements. The newly built housing stock consists of buildings and apartment blocks, which were not very typical of the city until then and have created a new lifestyle.

After the collapse of Yugoslavia, privatization, denationalization and a change in the value system in the country took place. Capitalism, privatization, neoliberalism and globalization created a new urban layer of homes, i.e. overproduction of residential space. Skopje neighborhoods with houses with yards became plots of land on which investors built multi-story buildings, while the owners of the house received apartments in exchange for the land given to the investor. In a place where there was one house in

15 Grad, Z. (nd). URBAN GREENERY IN THE CITY AND ARCHITECTURE. [online] Available at: https://ekosvest.com.mk/wp-content/uploads/2024/02/%D0%97%D0%B5%D0%BB%D0%B5%D0%BD-%D0%B3%D1%80%D0%B0%D0%B4-%D0%BA%D1%80%D0%B0%D1%98%D0%BD%D0%B0-%D0%B2%D0%B5%D1%80%D0%B7%D0%B8%D1%98%D0%B0.pdf. p.9-10

which one or two families lived, there is now a building with 10 apartments/families (for example). The density has increased several times, but the public space, streets and surrounding infrastructure remain the same[16]. The greenery in the settlement that used to be the yards of the houses is now paved or concreted area intended for the already scarce parking space. The free space in the city, which is state owned land, is sold by the municipality to investors who build a residential building, a business center or an indoor shopping center, in order to have the greatest possible profit. In this way, the municipality acquires one-time funds, and the space that could have been a park, a school, a kindergarten is alienated and built in order to bring profit, but not to contribute to the common good. A similar situation occurs with the barracks, where multi-storey buildings are built in their place. Residential buildings are also being built on free land in the suburbs. In parallel with this, the existing housing stock is considered outdated and difficult to maintain, so the city abounds with old apartments that citizens avoid, because they do not want to invest in renovation. New apartments are considered more attractive, although many of them lack adequate surrounding infrastructure and have questionable interior and exterior architectural and spatial values.

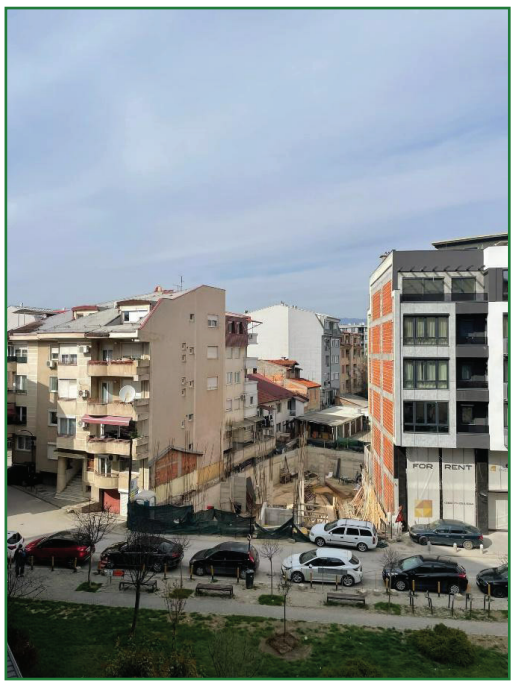




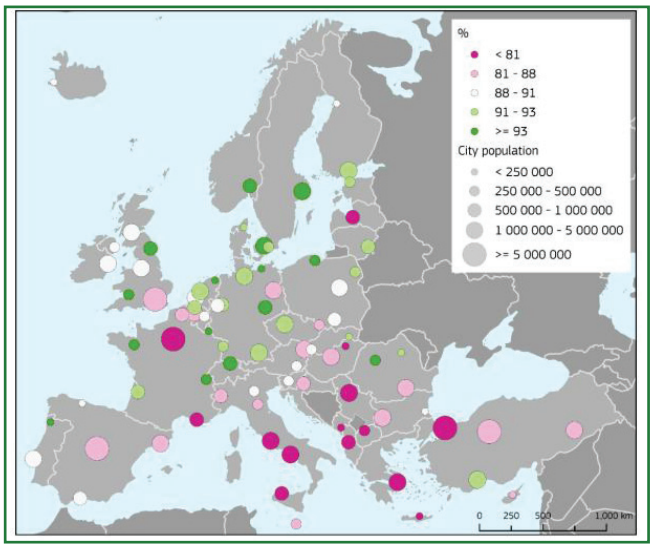
Figure 1, 2: Construction site on “Dane Krapchev” Street in Debar Maalo in Skopje, March 2025.

The photographs show the narrow street originally intended for houses with courtyards and the layers of increasingly taller residential buildings that obstruct basic living conditions, such as views, light, air currents, sunlight, etc. Photographs by Iva Petrunova.

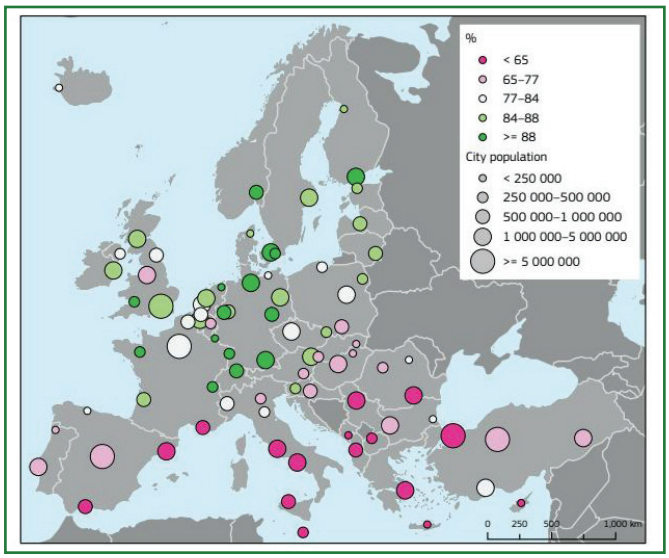
As a result of this attitude towards housing and space in general, the quality of life in the city is decreasing. Public space is becoming smaller, very congested, of poor quality

16 Borche Krstevski and Vladimir Kalinski (2024). Urbanization of Skopje in the last 20 years – Many buildings, narrow streets, few parking lots and greenery. [online] Radio Free Europe. Available at: https://www.slobodnaevropa.mk/a/urbanizacija-na-skopje---mnogu-zgradi-tesni-ulici-malku-parkinzi-i-zelenilo-/32797841.html [Accessed 17 Mar. 2025].

and cannot meet the needs of the large number of residents. The city has been turned into a construction site, citizens are exposed to noise, light and air pollution and urban chaos. According to the Report on the quality of life in European cities, issued by the European Commission in 2023, Skopje is at the bottom in most of the parameters. This Report shows that Skopje has noise and air pollution, poor public transport and citizens generally move around by car, a lack of green public spaces and public spaces in general, there is corruption in institutions, poor pedestrian infrastructure..., but good housing can be found for a decent price[17].



Map 1: Citizens that are satisfied with life in the city. Source: https://ec.europa.eu/regional_policy/sources/reports/qol2023/2023_quality_life_european_cities_en.pdf (p.16)



Map 12: Citizens that are satisfied with the green space in the city. Source: https://ec.europa.eu/regional_policy/sources/reports/qol2023/2023_quality_life_european_cities_en.pdf p.80

17 (2023). Report on the quality of life in European cities, 2023. Luxembourg: Publications Office of the European Union, 2023
Anon, (nd). Available at: https://ec.europa.eu/regional_policy/sources/reports/qol2023/2023_quality_life_european_cities_en.pdf

Top 10 (highest score first)		Bottom 10 (lowest score first)	
City	Score	City	Score
Białystok (PL)	62 %	Rome (IT)	3 %
Gdańsk (PL)	60 %	Skopje (MK)	13 %
Cluj-Napoca (RO)	59 %	Bologna (IT)	14 %
Vilnius (LT)	56 %	Stockholm (SE)	15 %
Ostrava (CZ)	55 %	Munich (DE)	15 %
Kraków (PL)	53 %	Barcelona (ES)	16 %
Tallinn (EE)	53 %	Turin (IT)	16 %
Sofia (BG)	52 %	Malmö (SE)	17 %
Warsaw (PL)	46 %	Dortmund (DE)	17 %
Antalya (TR)	45 %	Berlin (DE)	18 %

Table 2: Citizens who believe that the quality of life in the city has increased compared to 5 years ago, highest and lowest percentages; Source: https://ec.europa.eu/regional_policy/sources/reports/qol2023/2023_quality_life_european_cities_en.pdf p.23

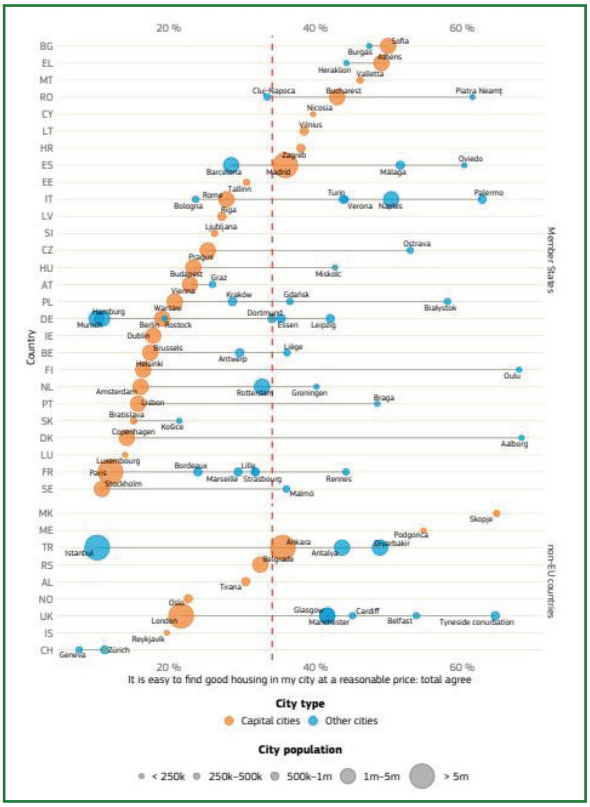
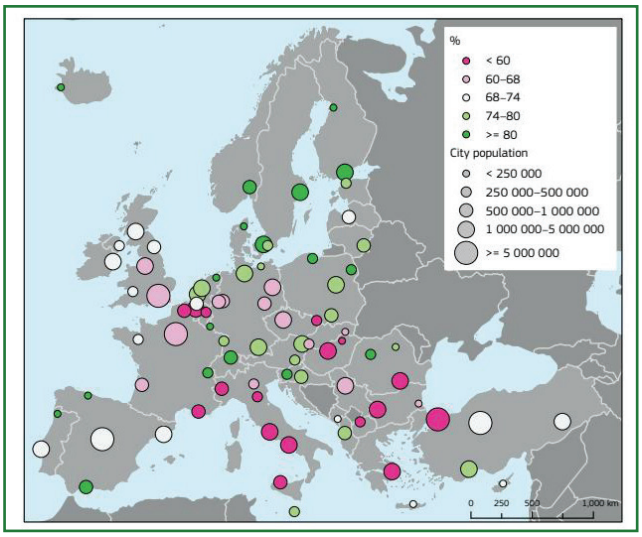


Figure 22: Citizens who agree that it is easy to find good, reasonably priced housing in their city. Source: https://ec.europa.eu/regional_policy/sources/reports/qol2023/2023_quality_life_european_cities_en.pdf p.51

Top 10 (highest score first)	
City	Score
Zürich (CH)	89 %
Helsinki (FI)	88 %
Rostock (DE)	88 %
Aalborg (DK)	87 %
Oulu (FI)	85 %
Groningen (NL)	85 %
Białystok (PL)	85 %
Reykjavik (IS)	83 %
Leipzig (DE)	83 %
Dublin (IE)	82 %

Bottom 10 (lowest score first)	
City	Score
Skopje (MK)	12 %
Bucharest (RO)	20 %
Kraków (PL)	22 %
Paris (FR)	26 %
Athens (EL)	28 %
Turin (IT)	29 %
Tirana (AL)	29 %
Rome (IT)	31 %
Belgrade (RS)	33 %
Ostrava (CZ)	33 %

Table 24: Citizens' satisfaction with air quality, the best and worst 10 results. Source: https://ec.europa.eu/regional_policy/sources/reports/qol2023/2023_quality_life_european_cities_en.pdf p.88



Map 6: How safe do citizens feel walking alone around the city at night? Source: https://ec.europa.eu/regional_policy/sources/reports/qol2023/2023_quality_life_european_cities_en.pdf p.34

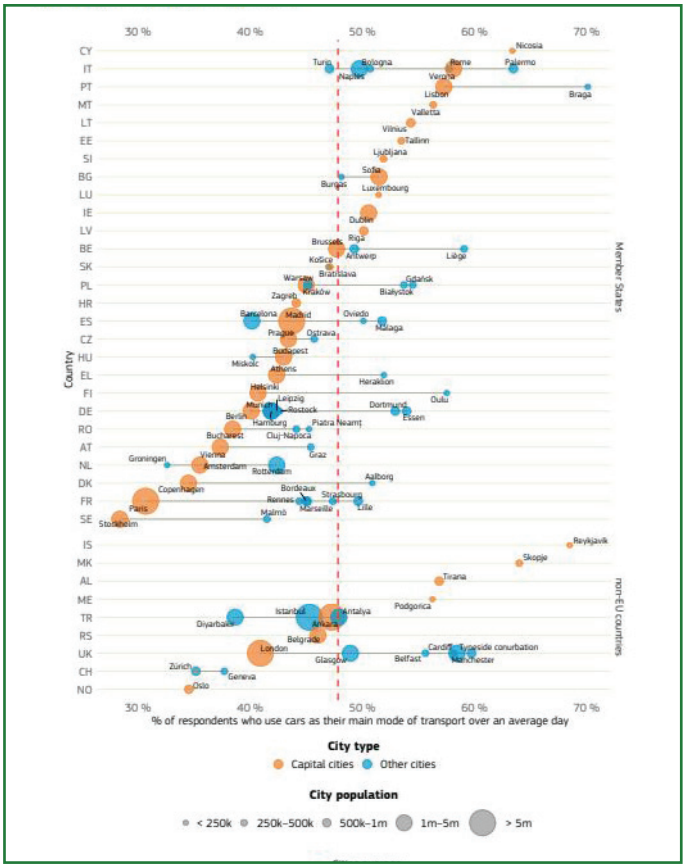


Chart 28: Citizens who use a car on an average day, by city. Source: https://ec.europa.eu/regional_policy/sources/reports/qol2023/2023_quality_life_european_cities_en.pdf p.61



Chart 31: Citizens using public transportation on an average day, by city. Source: https://ec.europa.eu/regional_policy/sources/reports/qol2023/2023_quality_life_european_cities_en.pdf p.64



Chart 35: Citizens who walk on an average day, by city. Source: https://ec.europa.eu/regional_policy/sources/reports/qol2023/2023_quality_life_european_cities_en.pdf p.69

1. Health

A healthy society in a healthy city

WHO defines health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. WHO also states that the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being, without distinction of race, religion, political opinion, economic or social condition[18].

Throughout history, human health has been a very common theme, directly linked to the pursuit of long life and self-realization. The pursuit of eternity is visible through the monumental buildings built throughout the centuries as material evidence in the space.

However, increased life expectancy as a result of higher living standards, more advanced technological and scientific development, does not necessarily guarantee a happier and better quality of life or better health. The old saying “A healthy mind in a healthy body” refers not only to physical health, but also to the mental and spiritual state of the citizen, and cities should guarantee a physical and spatial organization that enables, encourages and promotes a healthy life among citizens.

18 World Health Organization (2025). Constitution of the World Health Organization. [online] World Health Organization. Available at: https://www.who.int/about/governance/constitution.

Even in Ancient Greece we find a typology of public buildings whose main role is to care, directly or indirectly, for the health of citizens. Gymnasiums are a building found in ancient Greek and Roman cities and indicate the culture of health and the proper growth and development and care of the body[19]. The culture of city baths, which is typical of Roman society and their culture of life, continues to live in Ottoman cities. Characteristic of these cities is that they have an ensemble of three buildings in the bazaar for social purpose – mosque, han and hamam. With this it can be noted that one of the most important aspects of city life is the spiritual life, i.e. going to the mosque, hygiene and health, going to the hamam and rest, i.e. spending the night in a han an after a hard-working day. These three aspects – spiritual health, hygiene and rest, make up the daily care of the individuals, which is made possible in the city.

Throughout urban history, there are many examples of the emergence of infectious diseases and pandemics and the introduction of various measures by city authorities to remedy them with new and better standards for the health of citizens and for life in the city. Social facilities related to health and the need for such facilities arise directly from the development of technology and science and from the cultural development.

The industrial city, as a consequence of the industrial revolution, distorts all value and moral norms in both space and people and is focused only on work and profit as the main values. The traumas caused from the consequences of this lifestyle are reflected in modernism, where the city is zoned into space for housing, work, recreation and transport. Such modern concepts that abound with empty green spaces, as opposed to residential towers and blocks and monumental social buildings, are criticized for the unsustainable concrete and green spaces that do not have a good effect on the mental health of the citizen and are fertile ground for various deviant phenomena due to the lack of anthropomorphism, density, proximity, etc.

According to WHO, a healthy city is a conscious effort to improve the health of its citizens. It continuously creates and improves its physical and social environments and expands community resources that enable citizens to support each other in performing all the functions of life and to develop their maximum potential.

Healthy cities engage the whole of society, encouraging the participation of all communities in the pursuit of peace and prosperity. They strive for positive change, addressing inequalities and promoting good governance and leadership for health and well-being. They value innovation, knowledge sharing and health diplomacy. The WHO healthy city model focuses on the following aspects: citizens, participation, prosperity, planet, space (location) and peace[20].

19 Innovation, K. (n.d.). The Large Palestra (Palestra Grande) - Planet Pompeii. [online] www.planetpompeii.com. Available at: https://www.planetpompeii.com/en/map/the-large-palestra.html.

20 People, participation, prosperity, planet, place, peace
World Health Organisation (2024). What Is a Healthy City. [online] www.who.int. Available at: https://www.who.int/europe/groups/who-european-healthy-cities-network/what-is-a-health-city.

4. The focus on citizens is through investing in human and social capital as a strategic approach to urban development; promoting inclusion, integration and non-discrimination; building trust, resilience and focusing on ethics and values.
5. Community participation in decision-making is demonstrated through improved urban spaces and services, based on the needs and assets of communities; stronger accountability and governance for health and well-being; empowered and resilient populations; increased ownership over individual health and well-being.
6. Community prosperity means progressive measures of social progress; investments in circular economy; universal minimum social protection.
7. Caring for the planet is demonstrated through city-wide accessibility to health and well-being; coherence between the levels of governance in the approach to health and well-being; strengthening the city's health diplomacy.
8. The emphasis on the importance of space is through moving from a needs-based approach to a means-based approach; people-centered urban development and planning; integrating health equity and sustainability into urban development and planning; increased inclusiveness in the use and management of shared spaces.
9. Peace means institutions, governance systems and architecture that prioritize social justice and inclusive participation; promoting cultural norms of inclusion and fairness, non-exploitative equal access; formal governance and social norms that address corruption, discrimination and all forms of violence.

One of the key aspects of solving the crisis in the city is properly planned and designed housing with all the necessary social facilities[21].

It is important to note that a healthy city is a city in which the daily life of citizens is exposed to as little urban stress as possible. Such a city has appropriate infrastructure that supports healthy habits among citizens. An example is a city that has excellent public transportation and excellent pedestrian paths and public spaces. Public transportation reduces chaos, congestion, stress among citizens for easy movement and arrival at the right time, reduces sound, light and air pollution. The reduced number of vehicles frees up streets and public space for pedestrians, which has the opportunity to be arranged and developed in a humane way according to the needs of citizens. Public space arranged in this way encourages pedestrian movement among citizens, which has a large number of health benefits, especially if that public space is covered in greenery. At the same time, such a design of the space causes the retention of public space, which opens the possibility of meetings and exchange of ideas among citizens[22]. Such meetings strengthen social cohesion and democracy and encourage socializing, which has huge positive effects on

21 World Health Organisation (2024). What Is a Healthy City. [online] www.who.int. Available at: https://www.who.int/europe/groups/who-european-healthy-cities-network/what-is-a-health-city.

22 Jan Gell talks about several types of activities that take place in public space depending on how physically suitable the space is. The physical environment is one of the factors that influences activities in many different ways. There are three types of outdoor activities that take place in public space: necessary activities, optional activities and social activities. Each of these activities requires a specific physical space. Social activities occur spontaneously, as a result of people moving and being in the same space. This means that social activities indirectly depend on whether and how good the space is for necessary and optional activities to take place. The nature of social activities depends on the context in which they take place, people know each other because they often see each other.
Gehl, Jan (2011). Life between buildings: using public space. Island Press: Washington. P.9-13

the mental health of citizens. Of course, the home plays a key role in all this, since all other infrastructures, such as public transport, pedestrian paths, greenery, are planned in relation to housing, as a key purpose for the formation of a settlement. The standard of housing plays a huge role in the entire community and contributes to its prosperity. According to UN-Habitat, the impact of housing on the well-being of citizens includes: physical health that is not endangered in appropriate housing conditions; mental health and participation of residents in the planning and improvement of the home; safety and security in the home from natural and social risks; a stable home that allows for a stable education for children and economic stability as a consequence of a stable home and stable education and the possibility of investments[23].



Infographic: The impact of housing on well-being

A healthy home for healthy citizens

Housing is becoming increasingly important for public health due to demographic and climate change, especially given urban growth, an aging population, and climate change. The number of people over 60 years of age who spend most of their time at home is set to double by 2050[24]. Changing weather patterns associated with climate change highlight the importance of housing to provide protection from cold, heat, and extreme weather conditions[25].

In the WHO Guide to Housing and Health, healthy housing is defined as a shelter that supports a state of complete physical, mental and social well-being. Healthy housing also refers to the physical structure of the dwelling and the extent to which it enables physical health. This includes a home with sound construction that provides shelter from the elements, is free from damp, has adequate temperature, sanitation and lighting, sufficient space, safe fuel or electricity connection, and is protected from pollutants, hazards of injury, mould

23 UN-Habitat (2024). Housing | UN-Habitat. [online] unhabitat.org. Available at: https://unhabitat.org/topic/housing.

24 WHO (2015). World report on aging and health. Geneva: World Health Organization.

25 WHO (2018). WHO HOUSING AND HEALTH GUIDELINES. [online] Available at: https://iris.who.int/bitstream/handle/10665/276001/9789241550376-eng.pdf?sequence=1.p.3

and pests. Healthy housing also provides a sense of home, belonging, security and privacy. Whether housing is healthy also depends on external factors, such as the local community, which enables social interactions that support health and well-being. Healthy housing relies on the immediate environment of the home and the extent to which it provides access to services and amenities, green spaces and public transport options, protection from waste, pollution and disaster risks, whether natural or man-made[26],[27].

Inadequate housing brings a number of problems, such as improper psycho-physical development of the individual, especially when it comes to children; risk of poverty; potential for development of criminal and deviant phenomena; risk of disease; social isolation...

According to WHO, inadequate housing is associated with a wide range of health conditions, such as respiratory diseases, including asthma, cardiovascular diseases, injuries, mental health and infectious diseases, such as tuberculosis, influenza and diarrhoea. Recommendations for a healthy home include: not using harmful and toxic building materials, having access to water for hygiene and sanitation, not having indoor air and noise pollution, having good insulation to control the temperature in the home, being accessible to people with disabilities, being aware of potential home hazards and having residents living in the home in accordance with the square footage of the space, i.e. not overcrowded[28].



Infographic: How housing can improve health and well-being. Source: https://www.who.int/multi-media/details/housing-can-imrpove-health

26 WHO (2018). WHO HOUSING AND HEALTH GUIDELINES. [online] Available at: https://iris.who.int/bitstream/handle/10665/276001/9789241550376-eng.pdf?sequence=1. p.3

27 Bonnefoy, X., Braubach, M., Davidson, M. and Robbel, N. (2007). A pan-European housing and health survey: description and evaluation of methods and approaches. International Journal of Environment and Pollution, 30(3/4), p.363. doi:https://doi.org/10.1504/ijep.2007.014816.
(Bonnefoy X. Inadequate housing and health: an overview. International Journal of Environment & Pollution. 2007;30(3-4):411–29)

28 WHO (2018). WHO HOUSING AND HEALTH GUIDELINES. [online] Available at: https://iris.who.int/bitstream/handle/10665/276001/9789241550376-eng.pdf?sequence=1. p.2

There are significant benefits from interventions to improve housing conditions. Installing effective and safe thermal insulation can improve indoor temperatures that support health, while reducing energy costs and carbon emissions. Improved housing conditions can save lives, reduce disease, increase quality of life, reduce poverty, help mitigate climate change, and contribute to achieving a number of sustainable development goals[29].

The home is a refuge for every person, a place where they should feel safe, relaxed and have a sense of belonging. Such feelings are very important for the individual to be able to realize their potential and be a useful member of society. Without such a feeling of safety and security in the home, psycho-physical impairment often occurs, which is further reflected in social functioning. In addition, it is important to see the home as a unit of a larger whole. For a healthy home, it is necessary to have a healthy environment that would satisfy all the psychophysical needs of the citizen according to the set standards. It is important to understand that, when talking about healthy homes and cities, they are a reflection of the culture, values and policies of a society, and those values that occur in the public space of the city are largely applied in the home. Precisely for this reason, homes that support a healthy lifestyle also create a healthy city with citizens who can fulfill their potential in society.

2. Safety

Home, the basic unit for a safe city

The home, as the basic element from which the city is built, has a huge impact on the safety of citizens, although this has not always been taken into account. In general, architectural history is focused on buildings of social importance, with little attention to the housing of the ordinary citizen. The preserved buildings are of cultural and historical importance, grandeus monuments, religious buildings, squares, manors, castles, palaces, which, in addition to housing, also had a political function in a certain period of time[30]. Куќите на обичните граѓани се граделе од посиромашни материјали и често претставувале места без големи стандарди на достоинствен живот. Со ограничените ресурси на обичниот граѓанин се развива вернакуларната архитектура. Архитектурата без архитекти[31] is created from a long-term tradition of folk wisdom and represents sustainable architecture adapted to the geographical and cultural characteristics of the specific location. After the industrial revolution and with modernism, the way of housing changes and the life of the ordinary citizen comes into focus, housing becomes a visible and important social factor, and vernacular architecture dies out.

Cities have faced and are still facing many disasters, such as wars, natural disasters, pandemics, fires, revolutions, crime, etc. The new unofficial geological era in which we now live – the Anthropocene[32] and human-induced changes to the planet are causing

29 World Health Organization (2018). Housing impacts health: New WHO guidelines on housing and health. [online] www.who.int. Available at: https://www.who.int/news/item/26-11-2018-housing-impacts-health-new-who-guidelines-on-housing-and-health.

30 Rapoport, A. (1969). House form and culture. Englewood Cliffs, Nj: Prentice-Hall.p. 2-3

31 Rudofsky, B. (1965). Architecture without architects : An introduction to non-pedigreed architecture. New York: Museum Of Modern Art ; Garden City, N.Y.

32 National Geographic Society (2023). Anthropocene. [online] education.nationalgeographic.org. Available at: https://education.nationalgeographic.org/resource/anthropocene/.

a new and certain risk to humans, namely climate change. Population growth and the pressure on cities, pollution and infrastructure problems, together with climate change, point to a series of security risks to which vulnerable groups are most exposed.

One of the key findings in UN-Habitat's Cities and Climate Action 2024 report is that cities with informal housing and employment are more vulnerable to climate change[33].

To achieve a better and safer world, it is necessary to act on multiple societal aspects simultaneously, i.e. to fulfill the 17 UN Sustainable Development Goals[34]. SDG 11 is about sustainable cities and communities and provides guidance on how cities and human settlements can become safe, resilient and sustainable. To achieve SDG 11, the focus must be on implementing inclusive, resilient and sustainable urban development policies and practices that prioritize access to basic services, affordable housing, efficient transport and green spaces for all[35].

The first sub-point reads: "By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums." The remaining sub-points relate to sustainable transport systems, improved urbanization, conservation of cultural and natural heritage, improvement of water systems, air quality and waste management, improvement of public and green spaces, improvement of urban-rural linkages, holistic disaster risk management and increased construction with sustainable and local materials[36].

According to UN-Habitat, adequate housing has the following characteristics: habitability or space that provides protection from natural phenomena; affordability, i.e. costs that allow the resident to afford other basic life needs; accessibility to the needs of all individuals; security and legal protection from forced eviction; access to basic services such as clean water, sanitation, electricity, transportation, urban services[37].

33 UN Habitat (2022). World Cities Report 2022. [online] unhabitat.org. Available at: https://unhabitat.org/wcr/.

34 northmacedonia.un.org. (nd). Sustainable Development Goals | United Nations in North Macedonia. [online] Available at: https://northmacedonia.un.org/mk/sdgs.

35 United Nations (2024). SDG Indicators. [online] unstats.un.org. Available at: https://unstats.un.org/sdgs/report/2023/Goal-11/.

36 northmacedonia.un.org. (nd). Sustainable Development Goal 11: Sustainable Cities and Communities | United Nations in North Macedonia. [online] Available at: https://northmacedonia.un.org/mk/sdgs/11.

37 UN-Habitat (2024). Housing | UN-Habitat. [online] unhabitat.org. Available at: https://unhabitat.org/topic/housing.



Infographic: What is adequate housing?

Such adequate housing benefits not only the household that lives in the home, but the positive effect extends to the entire community, neighborhood or city. The benefits to the community are safety and security that lead to a stable plan for the future; improved health and well-being as a result of access to clean water, sanitation, electricity and physical protection from external hazards; reduced inequality and increased education and employment; improved access to opportunities such as employment and increased income[38].



Infographic: How do communities benefit from adequate housing?

38 UN-Habitat (2024). Housing | UN-Habitat. [online] unhabitat.org. Available at: https://unhabitat.org/topic/housing.

The risks of inadequate housing

Despite the benefits of adequate housing, inadequate housing poses many risks to the health and safety of citizens, not only for those living in inadequate housing, but for the community as a whole. Exposure to and health risks in the home environment are crucial to the health of citizens, especially for those who spend a lot of time in their homes, such as children, the elderly, the unemployed, and people with disabilities or chronic diseases. Poor construction or maintenance increases the likelihood that citizens will slip or fall and be injured. Poor accessibility to homes can expose residents to the risk of injury, stress, and isolation. Insecure or inaccessible housing is very stressful. Housing that is difficult or expensive to heat can contribute to poor breathing and cardiovascular risks, as can high indoor temperatures. Indoor air pollution can cause allergies and irritation. Overcrowded housing increases the risk of infectious diseases and stress. Inadequate water supply and sanitation facilities affect food safety and personal hygiene. Urbanization that discourages physical activity contributes to obesity and related conditions, such as diabetes and poor mental and cardiovascular health. Unsafe building materials or construction practices, or building homes in unsafe locations, can expose people to a range of risks, from injury to building collapse.

According to UN-Habitat, a "slum household" is a group of individuals living under the same roof, in an urban environment, who lack one or more of the following: a durable home (a house that does not provide protection from natural elements); sufficient living space; secure property status; sanitation and infrastructure; and access to improved (unpolluted) water sources. Slum dwellers are therefore exposed to many housing-related risks, such as substandard housing, inadequate housing in structures, and overcrowding, but they also face particular health risks from poor sanitation and unsafe electrical connections, toxic building materials, unventilated cooking facilities, and unsafe infrastructure and roads. In addition, such settlements are sometimes in locations where residents are more likely to be exposed to hazards, such as landslides, flooding, and industrial pollution. In terms of well-being, not having legal rights to housing is stressful and can put slum dwellers at risk of forced eviction[39].

While anyone can be exposed to risks associated with unhealthy housing, people on low incomes and vulnerable groups are more likely to live in inadequate or unsafe housing, or to be denied housing altogether[40],[41].

39 WHO (2011). Housing: shared interests in health and development. Geneva: World Health Organization; 2011.

40 WHO (2018). WHO HOUSING AND HEALTH GUIDELINES. [online] Available at: https://iris.who.int/bitstream/handle/10665/276001/9789241550376-eng.pdf?sequence=1. p.2-5

41 Jacobs DE (2011). Environmental health disparities in housing. American Journal of Public Health. 2011;101 Suppl 1:S115–22.

Some of the solutions for improving homes in poor and/or informal settlements include: improving infrastructure to improve living standards; encouraging community involvement in settlement planning; housing security and legal protection; affordable construction; natural solutions and incorporating green infrastructure[42].



Infographic: Housing solutions in informal settlements

Sustainable housing – climate-resilient housing

According to the UN-Habitat Cities and Climate Action 2024 Report, urbanization and human settlements are among the main factors causing greenhouse gas emissions[43]. Therefore, one of the main messages of this report is that promoting low-carbon and sustainable housing with basic services offers major benefits for climate action. Consequently, investments in urban infrastructure should integrate climate considerations into their planning, implementation and maintenance[44].

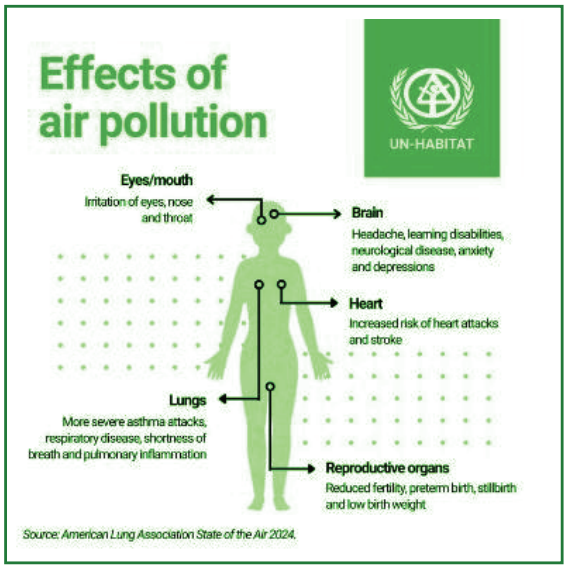
One of the biggest risks to the health of citizens in cities is polluted air. It causes eye, nose and throat irritation, lung diseases and pulmonary infections, headaches, learning disabilities, neurological problems, anxiety, depression, increased risk of heart attacks, reduced fertility, premature birth, stillbirths and low birth weight babies[45].

42 UN-Habitat (2024). Housing | UN-Habitat. [online] unhabitat.org. Available at: https://unhabitat.org/topic/housing.

43 Cities and Climate Action. (n.d.). Available at: https://unhabitat.org/sites/default/files/2024/11/wcr2024_-_full_report.pdf.

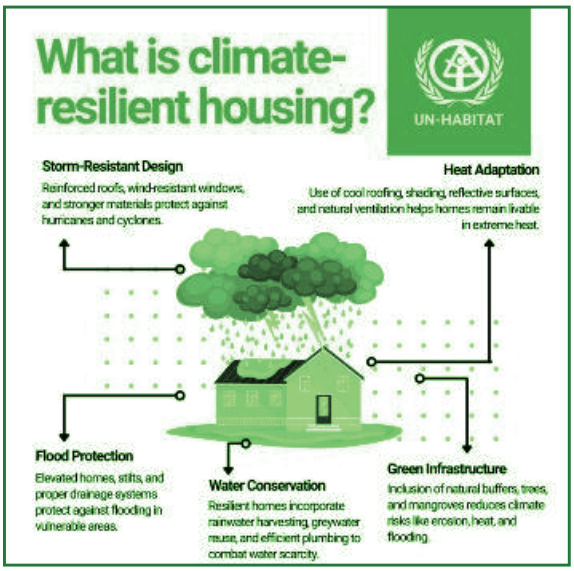
44 World Cities Report 2024: Facts & Messages. (n.d.). Available at: https://unhabitat.org/sites/default/files/2024/11/wcr2024_fact_and_key_messages_f.pdf.

45 UN-Habitat (2024). Housing | UN-Habitat. [online] unhabitat.org. Available at: https://unhabitat.org/topic/housing.



Infographic: The effects of air pollution

One of the key problems, in addition to pollution in cities, is climate change. Combating climate change also involves creating climate-resilient housing, which has the following characteristics: storm-resistant design; thermal adaptation; flood protection; water storage and green infrastructure[46].



Infographic: What is climate-resilient housing?

The most general definition of sustainability is spending resources in a way that will leave them for future generations. Sustainable management of all resources is key to combating climate change and its risks. If we see space as a limited resource, its management is crucial for the future. That is why housing must be as sustainable as possible and with the following characteristics: renewable energy; sustainable materials; water storage; green space; energy efficiency[47].

46 UN-Habitat (2024). Housing | UN-Habitat. [online] unhabitat.org. Available at: https://unhabitat.org/topic/housing.

47 UN-Habitat (2024). Housing | UN-Habitat. [online] unhabitat.org. Available at: https://unhabitat.org/topic/housing.



Infographic: What makes housing sustainable?

All these aspects of sustainable and climate-resilient housing contribute to creating a sustainable and resilient community and a sustainable and resilient urban infrastructure. These aspects of home - settlement (city) - community are interconnected, and only in this way do they create a complete picture of a healthy and safe home/city/community. Green infrastructure around homes makes homes both healthier and safer by reducing the risks of diseases and the negative impacts of climate change. This positive impact on human health, especially mental health, also contributes to greater social cohesion that makes the environment safer and with a lower rate of deviant and criminal phenomena. Mobility, i.e. public transport and the movement of citizens on the streets and public spaces, also greatly contributes to increasing safety in cities. The concept of a 15-minute city, i.e. a city in which all necessary services would be available within a 15-minute walking distance, is one of the ways to create resilient and sustainable settlements[48]. Jan Gehl says that the more people move around the city, the safer it is. Such a city must be coherent, with short pedestrian areas, attractive public spaces and diverse urban functions. This increases the feeling of security and many eyes follow the events in the city from the surrounding homes[49].

3. Sustainable home in the republic of North Macedonia, between legislation and reality

Recognizing the home as a fundamental human right and a foundation for prosperity in society is key to a resilient and sustainable future. In the Republic of North Macedonia, there is an urgent need to review the laws and legislation that should define and govern housing. Article 1 of the Law on Housing stipulates the following:

This Law regulates the types of housing facilities, the management of residential buildings, the relations between the owners of separate parts and third parties, the community of owners, the records of apartments, the tenancy relations in housing, the manner of management and maintenance of the facilities, the rights and obligations of the Republic, municipalities,

48 Grabar, H. (2023). Is the tiny little neighborhood the city of the future? [online] the Guardian. Available at: https://www.theguardian.com/us-news/2023/jan/25/15-minute-city-urban-planning-future-us-cities.

49 Гел, Јан (2017). Градови за луѓе. Скопје: Комора на овластени архитекти и овластени инженери на Република Македонија. Стр. 6-7

municipalities in the City of Skopje and the City of Skopje in housing, inspection and administrative supervision and other issues in the field of housing[50].

This Law does not cover many aspects of housing and, in general, it is focused on the management of residential buildings.

The Housing Strategy of the Republic of Macedonia (2006 – 2011) sets out a main goal which is achievement of long-term, standardized and harmonious development of housing, in accordance with modern standards for quality of life. In this document, housing policy is recognized as a complex problem that requires a multidimensional approach. It is also recognized that successful housing policies have a positive impact on other aspects of social life, such as social, economic, sociological, health, psychological, political, legal and others. Although this document refers to the right to housing and international documents[51] and recognizes the term "urban poverty"[52], it is still outdated and does not offer strategies for sustainable housing and protection from climate change.

This Strategy explains the terms adequate and minimum housing:

The term adequate housing implies standardized housing that society considers satisfactory, that is, a housing standard that is defined as a general goal that should be achieved in the future. It includes a wider range of spatial, physical and legal standards. The definition of this category does not only refer to the area and of the living space and how it is equipped, but also to issues related to the legal certainty in the use of apartments, which is essentially related to the continuity of the legal system and housing policy. From a technical and technological perspective, the determination of this category is important for regulating the matter in the acts that regulate the issues related to construction of new apartments (building, maintenance and use).

According to the definition taken from the Habitat agenda and accepted by the Council of Europe, adequate housing does not only mean adequate shelter and "roof over one's head" but also adequate privacy, adequate space, physical accessibility, adequate security, structural stability and durability, adequate lighting, heating and ventilation, adequate basic infrastructure, such as water supply, sanitation and waste collection, adequate environmental quality and health-related factors, as well as an appropriate and accessible location in relation to work and essential services. All these elements should be physically and economically accessible.

The category of minimum housing is more restrictive in determining the level of standard that society defines as the lowest level of housing standards. Namely, it encompasses the physical and legal standards that this level should provide, in order to be determined as the minimum basic needs of the users[53],[54].

50 I. GENERAL PROVISIONS. (n.d.). Available at: https://dki.gov.mk/wp-content/uploads/2015/01/zakon-za-domuvanje.pdf [Accessed 12 Mar. 2025]. https://www.rkd.gov.mk/sites/default/files/ptv_zakon_za_domuvanje_38_21032012.pdf

51 The policies of the UN Conference held in Istanbul in 1996 (HABITAT II), the Declaration on cities and other human settlements in the new millennium, June 2001, adopted by the UN General Assembly, the International Covenant on Economic, Social and Cultural Rights, the European Convention on Human Rights, the Revised European Social Contract, the Charter of Fundamental Rights of the European Union of 2000, the definition of adequate housing, taken from the HABITAT agenda by the Council of Europe in the document with recommendations of May 2004, the Rio Declaration on Human Environment and Development.

52 Aceski, Ilija (2003). Man and the City. Skopje: Faculty of Philosophy. Pp. 112

53 Министерство за транспорт и врски. (2006). Стратегија за домување на Република Македонија (2006-2011), предлог-текст. стр.17

54 https://studiorum.org.mk/h2020mkd_upload/upload/Strategija%20za%20domuvanje.pdf стр. 8-9

In the Law on Housing, Article 8, housing is defined as minimal and adequate.

> *...(2) Minimum housing includes meeting minimum spatial requirements, equipping of the apartment with basic communal infrastructure such as electricity, water and drainage, and traffic connection of the apartment with the settlement, i.e. the city, including legal security of ownership or use of the apartment.*
>
> *(3) Adequate housing, in addition to the elements of minimum housing, includes adequate privacy and space, physical accessibility, safety, structural stability and durability, lighting, heating and ventilation, basic infrastructure such as water supply, drainage and waste collection, environmental quality and health-related factors, as well as accessibility in relation to work and essential services*[55].

Some of the measures to reduce poverty and social exclusion include housing in the National Strategy for Reducing Poverty and Social Exclusion in the Republic of Macedonia (revised 2010 - 2020)[56]. The measures include completing the infrastructure (transport and communal) in settlements constructed in unplanned manner, providing urban services and legalizing the facilities that can be legalized, meeting the minimum spatial requirements, equipping the apartment with basic communal infrastructure, electricity, water and sewage, and the transport connection of the home with the settlement and the city, as well as the legal security of ownership or use of the apartment[57].

There is a Regulation on standards and norms for design issued by the Ministry of Transport and Communications. Article 2 of this Regulation refers to the following:

> *When architecturally designing buildings, in addition to the parameters set out in this Regulation, the parameters set out in the "Architectural Design" manual by Ernst Neufert should be used*[58].

According to Neufert, housing, which in the past represented the spatial realization (spatialization) of immediate human basic needs through defined (adopted) spatial models, in today's modern society represents a complex interweaving of a large number of factors that influence different requirements and individual quality parameters. The models, concepts and requirements of (potential) tenants encounter building and legal regulations, political concepts and their urban consequences (with an ideological emphasis), but also architectural considerations expressed through the disposition (position), the type of building, the approach and the foundation[59].

55 I. GENERAL PROVISIONS. (nd). Available at: https://dki.gov.mk/wp-content/uploads/2015/01/zakon-za-domuvanje.pdf.

56 https://mtsp.gov.mk/wbstorage/files/revidirana_str_siromastija.pdf

57 https://mtsp.gov.mk/wbstorage/files/revidirana_str_siromastija.pdf

58 https://mtc.gov.mk/media/files/2022/5.%20%D0%9F%D1%80%D0%B0%D0%B2%D0%B8%D0%BB%D0%BD%D0%B8%D0%BA%20%D0%B7%D0%B0%20%D1%81%D1%82%D0%B0%D0%BD%D0%B4%D0%B0%D1%80%D0%B4%D0%B8%20%D0%B8%20%D0%BD%D0%BE%D1%80%D0%BC%D0%B0%D1%82%D0%B8%D0%B2%D0%B8%20%D0%B7%D0%B0%20%D0%BF%D1%80%D0%BE%D0%B5%D0%BA%D1%82%D0%B8%D1%80%D0%B0%D1%9A%D0%B5.pdf

59 Ernest Neufert (2010). Neufert: Architectural Design, 39th edition, 2009. Skopje: Ars Lamina. p. 147

Laws in the Republic of North Macedonia related to housing are the Law on Construction[60], Law on Urban Planning[61] и and the Urban Planning Rulebook[62] [63]

This leads to the conclusion that the Republic of North Macedonia has not recognized and actualized housing and the right to a home as an important factor in its policies for many years. It is necessary to clearly establish definitions and concepts for housing, harmonize laws and adopt a new housing strategy, which would be in line with international policies on human rights, sustainability and combating climate change.

Harmonized intersectoral cooperation and collaboration between central and local authorities and citizens are needed. The first step towards creating adequate and affordable housing is an analysis of the current state-of-affairs of the housing stock in the country. This analysis should be then followed by mapping of the facilities and their ownership. It is necessary to classify the types of facilities according to their maintenance, age and suitability for life. Urgent protection of the housing stock, which has cultural-historical, spatial, architectural and environmental significance, is needed. Citizens need to be encouraged, stimulated and supported in policies of preservation, use, renovation and improvement of old and already built housing space as opposed to preferring newly built housing space and encouraging the overproduction of apartments. Recycling of housing space and already built facilities must be introduced, in order to reduce as much as possible unused housing space and the construction of apartments in locations that could pose a threat to natural ecosystems. Various campaigns, education, information, subsidies, financial relief, favorable loans, simplification of documentation, etc. can be implemented for this.

The analysis and mapping of the housing stock in cities should be accompanied by urgent revision of the DUPs.

Along with the improvement of the housing space, it is also necessary to improve the actual infrastructure: sufficient greenery, kindergartens, schools, parks, pedestrian and bicycle paths, available and accessible public transport. The non-parallel development of urban settlements causes spatial and social segregation and a potential risk of creating poor settlements. Therefore, it is important to see the city as a whole and to make a strategy with parallel action of multiple aspects and their spatial connection.

A healthy and safe home implies a broad infrastructure of city services, activities and actions that include the entire social system.

60 https://www.mtc.gov.mk/media/files/2022/3.%20%D0%97%D0%B0%D0%BA%D0%BE%D0%BD%20%D0%B7%D0%B0%20%D0%B3%D1%80%D0%B0%D0%B4%D0%B5%D1%9A%D0%B5%20-%20%D0%BF%D1%80%D0%B5%D1%87%D0%B8%D1%81%D1%82%D0%B5%D0%BD.pdf

61 https://www.komoraoai.mk/zakoni_i_propisi/zakoni/urb_novo/2020.02.10_zakon_za_urbanistichko_planiranje.pdf

62 https://www.mtc.gov.mk/media/files/2022/4.%D0%9F%D1%80%D0%B0%D0%B2%D0%B8%D0%BB%D0%BD%D0%B8%D0%BA%20%D0%B7%D0%B0%20%D1%83%D1%80%D0%B1%D0%B0%D0%BD%D0%B8%D1% 81%D1%82%D0%B8%D1%87%D0%BA%D0%BE%20%D0%BF%D0%BB%D0%B0%D0%BD%D0%B8%D1%80%D0%B0 %D1%9A%D0%B5%20-%20%D0%BF%D1%80%D0%B5%D1%87%D0%B8%D1%81%D1%82%D0%B5%D0%BD.pdf

63 Additional laws and documents regulating this area are: Law on the Sale of Socially Owned Apartments; Law on Ownership and Other Real Rights; Law on Obligations; Decree on the Criteria and Manner of Determining the Selling Price of Socially Owned Apartments; Law on Construction Land; Program for Construction and Maintenance of Apartments Owned by the Republic of North Macedonia for 2007; Law on Denationalization; Law on Expropriation; Law on Special Rights of Members of the Security Forces; Law on Management of Residential and Business Space; Law on Local Self-Government; Law on Survey, Cadastre and Registration of Real Estate; Law on Borrowing of the Republic of North Macedonia from the Development Bank of the Council of Europe under the Loan Agreement for the Project for the Construction of Apartments to be Rented to Low-Income Persons.
https://hto.org.mk/wp-content/uploads/2021/12/HTO-HOUSING-RIGHTS-MK-webversion.pdf

Biography

Iva Petrunova is an architect, urban sociologist and researcher, engaged in research on physical, architectural and urban phenomena and their relationship with the social, ecological and political context. In 2014, she defended her master's thesis "Tactics of transformation of the housing structure towards a new collective form: Linear neighborhood - a new collective form for Novo Maalo" at the Faculty of Architecture at the University of Ss. Cyril and Methodius. In 2019, she defended her doctoral dissertation titled "The city in transition - sociological, socio-spatial and architectural changes (example of Skopje)" at the Department of Sociology at the Faculty of Philosophy at the University of Ss. Cyril and Methodius. She began her work experience in 2014 in a construction company. During 2015 to 2019, she worked as a university assistant. Since 2016, he has been actively collaborating with civil society organizations and participating in trainings, forums, panel discussions, etc. She participates in international scientific conferences, exhibitions, workshops, seminars and is the author of scientific research papers, projects and publications.

Katerina Ilijovska

1. Introduction and brief overview of rural-urban migration in Macedonia and globally

According to data from the State Statistical Office, the differences in development between the regions in Macedonia are more than obvious and it is clear that regional development in the country is far from even. The population and economic activities are concentrated in the capital city Skopje, whose infrastructure fails to meet the increased needs of the newly arrived residents, while in parallel, rural areas are being abandoned and villages and entire regions are being devastated. Although the government is adopting planning documents to bridge the gap between urban and rural areas, as well as between different regions (for example, the Regional Development Strategy and the National Development Strategy), significant progress in this area is still lacking, and the large differences in development between the eight planning regions remain unresolved[1].

Rural-urban migration is not just a problem in our region. In 2008, for the first time in history, the global urban population surpassed the rural population, as predicted by the United Nations the year before[2]. Rural development was first considered as a topic by the Commission on Sustainable Development in 1995 at the third session of the Commission, which noted that despite some changes, progress towards sustainable agriculture and the development of rural communities in many countries was slow and worrying. Globally, cities use about 3% of the Earth's land and are home to about 57% of the world's population (2023)[3] and 74% at the European level (2018)[4]. According to the same 2018 document – "The World Urbanization Trends Review – 2018 Revision", produced by the United Nations, the population living in cities worldwide is expected to increase to 70% by 2050 and to 85% in Europe.

The decline of the population in rural areas in Europe has shown that the trend results in a growing mismatch between the supply and demand of goods and services, creating difficulties for both the public and private sectors. As a result of weak local markets, services become underused, poorly maintained and often unprofitable, leading to their withdrawal. This creates a domino effect, with schools closing, local living conditions and quality of life deteriorating, unemployment rising and a skilled workforce becoming increasingly scarce, leading to population desertion and obsolescence. This further reduces the attractiveness of regions and accelerates the negative demographic cycle by reducing birth rates and forced aging of the remaining population[5].

1 https://epi.org.mk/wp-content/uploads/Рамномерен-регионален-развој-во-Република-Северна-Македонија_Причини-за-нерамномерност-и-позитивни-примери-за-развој.pdf

2 https://digitallibrary.un.org/record/3924405?v=pdf

3 https://macrotrends.net/global-metrics/countries/WLD/world/urban-population?utm_source=chatgpt.com

4 https://population.un.org/wup/publications

5 https://archive.espon.eu/sites/default/files/attachments/ESPON%20Policy%20Brief%20on%20Shrinking%20Rural%20Regions.pdf?utm_source=chatgpt.com

According to the latest Census of 2021, Macedonia lost 9.2%, or 185,834 inhabitants of the total resident population compared to the 2002 Census, while the city of Skopje gained 19,576 inhabitants (from 506,926 to 526,502). The population of the city of Skopje and the other seven Skopje municipalities between the two censuses has increased from 578,144 to 607,007 inhabitants, which means that currently 33% of the population lives in the Skopje Region, unlike 19 years ago, when that figure was 28.6%. This shows that the Skopje Region is still favored and, 19 years after the last Census, this Region still remains the most developed and richest of all regions. The number of settlements also generally increased only in the Skopje Region, from 142 in 2005 to 156 in 2021, while in the other regions it either remained the same or increased by a maximum of 3 settlements[6]. The reduced number of primary schools also proves the above. The State Statistical Office data shows that, from 2017 to 2023, a total of 26 primary schools were closed in all seven planning regions except for the Skopje region, where 2 new schools were opened. The trend of moving from village to city in the last ten years has been upward compared to migration from city to village – except in 2021, when 1 770 residents moved from city to village compared to 1 007 from village to city, most likely as a result of the COVID-19 pandemic[7].

Urban and rural areas can benefit each other if they are well designed and connected to sustain each other. Cities are often associated with employment opportunities, quality education, better healthcare, and cultural and recreational activities. On the other hand, villages and rural areas are associated with clean air, healthy food, and a healthy environment.

The Sustainable Development Goals (SDGs) are a global plan adopted by the United Nations in 2015, with the aim of ensuring balanced economic, social and environmental development by 2030. The seventeen goals define specific sub-targets and indicators that, if roughly examined, it is easy to conclude that their achievement requires resources and conditions that are most often associated with both urban and rural environments. The aim of this research is to examine the phenomenon of rural-urban migration through the lens of several of the sustainable development goals that are most closely related to this issue, as well as to understand the role of the rural communities and their development in achieving the goals.

6 https://makstat.stat.gov.mk/PXWeb/pxweb/mk/MakStat/MakStat__ProstorniEdinici/125_PrEdn_reg_09_BrOpstiniNM_ml.px/

7 https://makstat.stat.gov.mk/PXWeb/pxweb/mk/MakStat/MakStat__Naselenie__VnatresniMigracii/775_N_Migr_reg_meguselovnat_ml.px/

2. Impact of rural-urban migration on the sustainable development goals

Urban areas are the primary drivers of economic activity in Europe. According to the European Commission, as of 2016, urban regions accounted for approximately 85% of Europe's GDP. In Macedonia, the Skopje Region alone generates almost half of the country's gross domestic product (45.8% in 2023)[8]. Although it is considered the richest region, which is the main driver of the economic progress of the country, this does not mean that the Region can also boast of being a pioneer in the quality of life from a social and environmental perspective.

Globally, Macedonia ranks 51st out of 166 countries in terms of progress towards achieving the Sustainable Development Goals[9], However, compared to other countries in Europe, Macedonia is in the penultimate, 33rd place out of a total of 34 ranked countries[10], with the exception of 7 countries that are not ranked due to insufficient data. Compared to neighboring Balkan countries that are not yet members of the EU, according to the world ranking, only Montenegro is behind Macedonia, as can be seen in the Figure below.

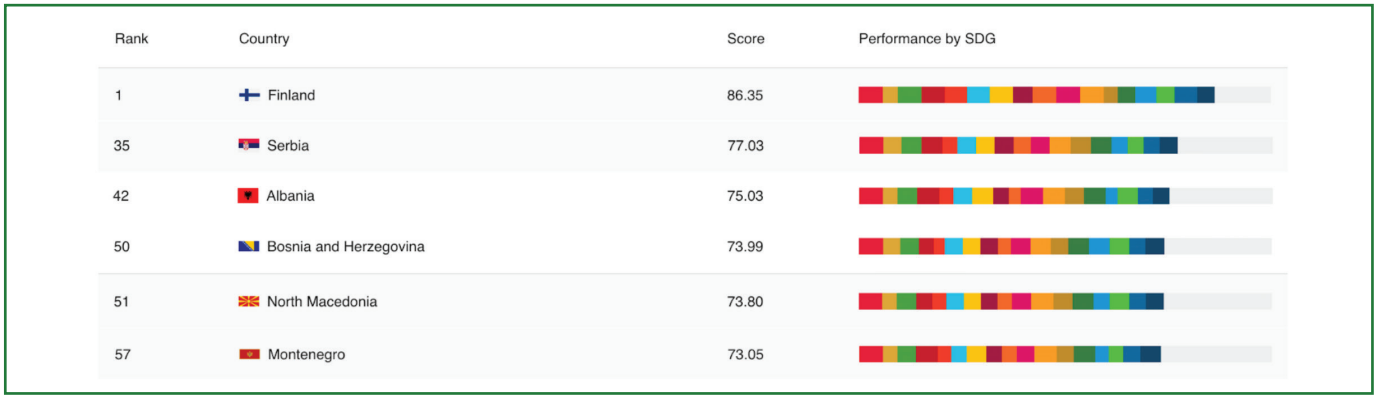


Figure 1. Macedonia's global ranking according to its progress towards the seventeen sustainable development goals compared to other Balkan countries and the highest ranked country

In the interest of the scope of the research, four of the seventeen Sustainable Development Goals were selected and are discussed here. These are considered the most relevant in relation to rural-urban migration in Macedonia – SDG 2 (Zero Hunger), 3 (Health and Well-being), 11 (Sustainable Cities and Communities) and 15 (Life on Land).

The trend for Macedonia's progress on two of these four sustainable development goals (SDG 2 and SDG 11) is assessed as negative, progress on SDG 15 is stagnant, while for SDG 3, progress is moderately improving. In terms of challenges that currently exist for achieving the goals, for Life on Land and Sustainable Cities and Communities they are serious, while Health and Well-being and Zero Hunger are in better status, but still with significant challenges[11]. The current status and trends for these and other Sustainable Development Goals are shown hereunder.

8 https://makstat.stat.gov.mk/PXWeb/pxweb/mk/MakStat/MakStat__BDP__BDPInvesGodisni__GodisniBDPsporedESS2010/675_NacSmA_Reg_BDPreg_ml.px/

9 https://dashboards.sdgindex.org/profiles/north-macedonia

10 https://eu-dashboards.sdgindex.org/rankings

11 https://eu-dashboards.sdgindex.org/profiles/north-macedonia



Figure 2. The current situation of Macedonia in terms of status of the indicators for the seventeen sustainable development goals at the European level, and the trend of progress towards achieving the goals

2.1 Sustainable Development Goal 2 – Zero Hunger

Sustainable Development Goal 2 aims to end hunger, achieve food security, improve nutrition and promote sustainable agriculture. Rural communities are the ones that directly contribute to food production and on which urban areas depend when it comes to this basic need. As one result of the failure to attract the population to remain in rural areas, Macedonia has lost a large number of farmers in recent years and thus increased its dependence on food imports, in addition to other reasons such as the lack of a strategy for purchasing from local producers. From 2005 to 2024, food imports increased by 56%, and more than 1 million euros were spent on imported food in 2024, which is a spike of 286% compared to 2005[12]. This data directly affects food prices and is completely contrary to one of the main goals, SDG 2, on food supply security, which makes the country vulnerable in this regard, especially in cases of crises.

All goals, including SDG 2 have so-called sub-targets, which cover different aspects of the larger goal:

Areas with organic agricultural production, as % of total utilized agricultural areas, increased from 0.02% in 2005, when this data was first measured, to 0.48% in 2023, which is very little progress if we look at the big picture[13]. According to the National Strategy for Agriculture and Rural Development 2021-2027, support for organic production is 30–100% higher than subsidies for conventional production, depending on the type of crop. For horticultural production, subsidies of up to 100% are provided for transition to more sustainable practices. Producers also receive reimbursement for half of the costs for certification of organic production and 70% of the costs for agrochemical, pedological or analyses of pesticide residues, heavy metals and other substances in soil and in organic products[14]. Data for this indicator for the period 2024 to 2027 should show whether the financial assistance for transition to sustainable agricultural practices envisaged in the National Strategy is sufficient to bear fruit.

12 https://makstat.stat.gov.mk/PXWeb/pxweb/mk/MakStat/MakStat__NadvoresnaTrgovija__DetalniPod__DetKumSMTK/150_SMTK_ZEMJI_ml.px/

13 https://makstat.stat.gov.mk/PXWeb/pxweb/mk/MakStat/MakStat__OdrzlivRazvoj__CeliNaOdrzlivRazvojCOR2030/150_OdrzRaz_Mk_SDG_02_Nohunger_ml.px/

14 https://ipard.gov.mk/wp-content/uploads/2021/02/%D0%9D%D0%B0%D1%86%D0%B8%D0%BE%D0%BD%D0%B0%D0%BB%D0%BD%D0%B0-%D1%81%D1%82%D1%80%D0%B0%D1%82%D0%B5%D0%B3%D0%B8%D1%98%D0%B0-%D0%B7%D0%B0-%D0%B7%D0%B5%D0%BC%D1%98%D0%BE%D0%B4%D0%B5%D0%BB%D1%81%D1%82%D0%B2%D0%BE-%D0%B8-%D1%80%D1%83%D1%80%D0%B0%D0%BB%D0%B5%D0%BD-%D1%80%D0%B0%D0%B7%D0-%B2%D0%BE%D1%98-2021-2027.pdf

Another of the SDG 2 sub-targets is **agricultural productivity**, which, according to the Sustainable Development Agenda, is planned to double by 2030, which means doubling of the income for small farmers. The situation on this issue in Macedonia is devastating, with the average age of the Macedonian farmer being 56 years old, corroborated by the field measurements of how long it takes a worker to perform an operation which showed that the workers are not 56 years old, but 70+ years old. In 2021, the share of young farmers on registered agricultural holdings up to the age of 40 was around 14%. Agriculture is not an attractive profession in which young people see their future and this is also shown by the fact that in recent years about 50 students have been enrolled at the Faculty of Agriculture at UKIM, unlike before, when there were 500 students per generation[15].

The development of rural areas and their populating with young people are particularly crucial to achieving this goal. Young people are important not only as a new workforce that would physically engage in food production, but also as people with the capacity to apply innovative practices in this sector, which are more and more needed for adaptation to climate change. The Food and Agriculture Organization of the United Nations (FAO), as well as the European Union, have recognized the importance of young people in adopting new practices and taking risks, and therefore they focus specifically on retaining young people in rural areas through various programs[16 17].

2.2 Sustainable Development Goal 3 – Health and Well-being

The life expectancy of Macedonians has increased from 73 to 75.3 years on average, in the period from 2000 to 2022, and other sub-targets set within this goal are also moving in a positive direction. However, achieving several sub-targets that migration to urban areas may negatively affect remains a challenge. Air pollution, which has been a long-standing problem in the capital and other major Macedonian cities, causes premature death, especially among newborns and young children who are most at risk of ill health from air pollution. Although the total population is decreasing, deaths due to PM2.5 particles in 2021 were practically the same as in 2010, and life expectancy at birth has also increased, then decreased. Rural areas, and especially villages and mountains, remain an important factor in dealing with air pollution, as an alternative where some residents decide to move in search of cleaner air, or places where they can go at least for a weekend to breathe clean air during the most polluted periods.

The table below shows statistical data for several of the SDG 3 indicators[18].

15 https://www.radiomof.mk/prognozite-za-domashna-i-zdrava-hrana-se-strashni-predupreduvaat-mladite-vo-zemjodelieto/

16 https://agriculture.ec.europa.eu/overview-vision-agriculture-food/young-people-agriculture-and-rural-areas_en

17 https://www.fao.org/newsroom/story/Rural-youth-protecting-the-climate-through-innovation/en?utm_source=chatgpt.com

18 https://makstat.stat.gov.mk/PXWeb/pxweb/mk/MakStat/MakStat__OdrzlivRazvoj__CeliNaOdrzlivRazvojCOR2030/175_OdrzRaz_Mk_SDG_03_Goodhealth_ml.px/

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Premature death due to exposure to particulate matter (PM2.5), number of events	5312	4968	5670	5267	4886	4438	4854	6047	6171	5121	3277	3757	4979	Нема	No data
Persons killed in traffic accidents, number per 100,000 inhabitants, total	8,2	8,3	8,9	6,8	10,3	6,8	7,7	8,7	8,2	7,0	7,0	6,7	6,3	6,8	6,9
Life expectancy at birth, years, total	74,6	74,8	75,0	75,1	75,2	75,4	75,3	75,5	75,9	76,3	75,4	75,4	74,2	75,3	No data

Table 1. Statistical data for three of the SDG 3 indicators in the period 2009 to 2023.

Although the SDG 3 sub-targets focus mainly on physical health, it would be inappropriate not to mention the mental health in the context of rural-urban migration. Target 3.4, among other things, aims to improve mental health and well-being. According to a survey by the World Economic Forum, 36% of respondents globally rated mental health as a primary health concern in 2022, ranking it higher than cancer for the first time in these annual reports[19]. In addition to the numerous causes, such as poverty, that can affect a person's mental state, a correlation has been found between migration to urban areas and the increase in modern mental disorders. Air pollution, noise, specific urban designs (e.g., excessive urbanization, especially with tall buildings), and in general, more physical threats (e.g., accidents, violence), are just some of the causative factors most often present in urban areas. The risk of some major mental illnesses such as, for example, anxiety, psychotic and other mood disorders is generally higher in cities, and research has also shown that, when it comes to development of some diseases, the risk is higher if a certain individual spent the first 15 years of his life in an urban rather than a rural environment[20]. Macedonia as a country should devote more attention and resources to research on the mental state of the population and measure modern-day disorders, such as anxiety and depression, and not just the more severe ones that lead to hospitalization, as has been done in previous reports[21].

2.3 Sustainable Development Goal 11 – Sustainable Cities and Communities

Sustainable Development Goal 11 aims to ensure resilient, safe and sustainable cities and communities. In addition to its primary focus on cities, this goal also emphasizes the need for sustainable linkages between urban and rural areas. It encompasses not only urban communities, but also peri-urban and rural communities that depend on

19 https://www.weforum.org/stories/2022/11/global-healthcare-mental-health-survey/?utm_source=chatgpt.com

20 https://pmc.ncbi.nlm.nih.gov/articles/PMC5374256/?utm_source=chatgpt.com

21 https://iph.mk/Upload/Documents/Informacija-mentalno-zdravje.pdf

cities for jobs, products and services that are not available in smaller and less developed places. Strengthening rural communities reduces pressure on urban centers and ensures balanced development. Between 2016 and 2020, €869 million was spent in Macedonia on action towards this goal, the most of any other Sustainable Development Goals[22]. Despite large financial investments, this goal is showing a negative trend and there are serious challenges to achieving it.

Sub-target 11.2 aims to ensure access to safe, accessible, affordable and sustainable transport systems for all and to improve road safety, in particular by expanding public transport. Analyzing the statistics show in Table 2, we can see that public transport is increasingly being replaced by private transport with private cars and taxis. The National Strategy for Agriculture and Rural Development 2021 – 2027 stipulates that the quality of physical and social infrastructure in rural areas has deteriorated over the past decades as a result of lack of investment in development and maintenance. Furthermore, one of the reasons for the limited development of industry in all regions is precisely the quality of road and business infrastructure.

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Passenger cars and taxis (%)	74,3	72,6	74,0	77,0	79,3	80,4	82,3	93,4	94,3	91,0	92,3
City and suburban transportation (%)	7,3	13,6	10,9	11,8	10,8	10,9	8,3	3,0	1,5	2,9	1,5
Intercity and international transport (%)	17,4	13,0	13,2	10,3	9,4	8,2	8,9	3,4	4,0	5,7	6,0
Rail passenger transport (%)	1,0	0,8	1,9	0,9	0,5	0,5	0,5	0,2	0,2	0,4	0,2

Table 2. Demand for passenger transport in Macedonia[23]

Universal access to safe, inclusive and accessible green and public spaces, especially for women and children, older persons and persons with disabilities, as pursued by target 11.7, is also far from reality in the capital city of Skopje. In 2018, the area of green space per capita was less than 10 square meters compared to the planned 25 square meters, as it is required for healthy and humane living. This sub-target would be much easier to achieve if there were more residents in the rural areas, where urbanization is much less and there is greater access to greenery.

The concentration of all types of activities in the capital increases interest in living there, thereby putting real or perceived pressure on the city to increase housing capacity, while numerous dwellings remain empty in rural areas. Almost half of the new apartments in the last ten years were built in the Skopje Region[24]. Negative impacts on the environment per capita (air quality and municipal waste generated) are also greater in cities because

22 https://sustainabledevelopment.un.org/content/documents/1578Rapid_Integrated_Assesment_North_Macedonia.pdf?utm_source=chatgpt.com

23 https://makstat.stat.gov.mk/PXWeb/pxweb/mk/MakStat/MakStat__Transport__IndikatoriZaTransport/125_Trans_pass_ucestvo_ml.px/

24 https://makstat.stat.gov.mk/PXWeb/pxweb/mk/MakStat/MakStat__Gradeznistvo__PodatociZaStanovi/275_GradRegZavrsStan_ml.px/

there are plenty of studies showing that more is consumed in cities, with migration making it more difficult to achieve target 11.6, which is about reduction of negative environmental impacts of cities.

2.4 Sustainable Development Goal 15 – Life on Land

This goal focuses on protecting, restoring and sustainable use of terrestrial ecosystems such as soil and forests, sustainable forest management, combating desertification and stopping biodiversity loss.

Natural resource management requires a population that is close to the resources to be managed. This has been established in several studies by FAO and other international organizations, which have concluded that participatory communication and the involvement of local communities who are physically present in the vicinity of these resources are key to successful management. This proximity allows for better understanding, continuous monitoring and timely response to environmental changes[25].

On the one hand, the abandonment of rural areas may have unforeseen positive results on some of the natural resources such as, for example, the soil, which if used as agricultural land treated with pesticides, could regenerate if sufficient time is allowed for the ecosystem to recover over time.

On the other hand, forests, as an important natural resource, need to be protected and maintained in a planned manner, which requires labor force. Data from the MAKStat database of the State Statistical Office show that the number of forestry workers decreased from 3,006 to 1,555 in the period 2000 - 2023, which is disproportionate to the area covered by forests as a % of the total land area, which decreased by only 1.6 % (from 40.8 to 39.2%) [26]. In the 2018/2019 academic year, 18 students enrolled at the Faculty of Forestry, part of the "Ss.Cyril and Methodius" University, and in 2024/2025 there were only 14 students. This shows that, as with agriculture, interest in this type of profession directly related to natural resource management is very low and still declining.

The decline in the number of all livestock species, except goats, and the decline in livestock farming as a sector, is also contributing to the increase in uncultivated land, which is, in turn, linked to several of the SDG 15 targets. Livestock, apart from the main reason for which they are raised, also contributes to the management of uncultivated land because, if raised on open pastures, they eat dry grasses, shrubs and other vegetation that would otherwise be fuel for fires. This is a natural and sustainable way of managing the land, and livestock also help control invasive plants and create natural fire barriers – areas with less vegetation where fires spread more difficultly.

Regarding fires as a hot topic and challenge that Macedonia has been facing in recent years, and increasingly so, it is important to mention the role of the local population

25 https://www.ifad.org/en/w/publications/how-to-do-strengthen-community-based-natural-resource-management-organizations

26 https://makstat.stat.gov.mk/PXWeb/pxweb/mk/MakStat/MakStat__OdrzlivRazvoj__CeliNaOdrzlivRazvojCOR2030/450_OdrzRaz_Mk_SDG_15_Land_ml.px/

in dealing with this issue. They are often the first people to react to fires while the fire services intervene, especially in inaccessible places such as mountainous areas and villages. In 2021, after another summer of fires, the citizens of the Municipality of Kochani self-organized and established a voluntary firefighting society. The Municipality of Kochani, currently has only 16 firefighters instead of the legal requirement of minimum 16. Currently, there are about 12 voluntary firefighting societies in Macedonia[27].

3. Review of laws and policies in support of mitigating rural-urban migration

3.1 Law on Balanced Regional Development

The Law on Balanced Regional Development was introduced for the first time in 2007. It regulates the goals, principles and the policy makers for promoting a polycentric system of development in all eight planning regions, including planning, financing and allocation of funds for its promotion, as well as monitoring and evaluation of the implementation of planning documents and projects. Funds in the amount of at least 1% of GDP are allocated annually from the Budget of the Republic of North Macedonia for promotion of the Law.

A 2020 study examining the performance of this Law showed that despite the regional development planning documents issued by the government, significant balanced regional development has not yet been achieved due to shortcomings in the legal framework and the insufficient presence of political will and active leadership.The same research proposes a polycentric regional type of development, which is a model for reducing regional disparities present in Europe and which is based on the theory that it is better to have more economic centers that will generate development, rather than one or two, as is the case with Macedonia and Skopje.

A good example of a country with a similar context to Macedonia that has gone a step further in terms of this law is neighboring Serbia, where a Ministry for Rural Welfare was established in 2020, focusing on improving living and working conditions outside cities. Some of the Ministry's initiatives include transferring uncultivated state land to young farmers and allocating empty rural houses to new residents. Serbia allocated 8.1 million euros in 2024 for a measure to provide 10 000 euros to young couples to purchase housing in rural areas[28].Our country also has a measure of awarding 10 000 euros to young farmers under the age of 40 for starting an agricultural business, which has been in place for around ten years. One fact that Macedonia can boast of as a leader in the region is the level of funds used from the EU's IPARD funds, which are programs for financial support to candidate and potential candidate countries with the aim of

27 https://plusinfo.mk/shto-nauchivme-od-pozharite-vo-minatoto-protivpozharnite-kapaciteti-se-za-aknuvaat-lokalno/

28 https://www.agroberichtenbuitenland.nl/actueel/nieuws/2024/10/18/serbia-groceries?utm_source=chatgpt.com

improving agricultural productivity, sustainability and rural development [29]. From 2011 to 2021, the majority of these funds were used for regional development, amounting to 333.7 million euros, and 16 million euros were used as assistance for the agricultural sector[30]. Despite the possibilities for financial assistance, statistics on the displaced population and the growing age group of farmers show that young people lack something other than financial resources in order to stay and decide to realize themselves in rural areas.

3.2 Youth in rural areas

The main long-term strategic document that serves as the foundation for the establishment and execution of objectives, policies, and measures for the development of Macedonia's agriculture and rural areas is the National Strategy for Agriculture and Rural Development, which was adopted in accordance with Article 6 of the Law. Youth is frequently cited in the paper as a key factor in the growth of rural communities, and its retention should get particular attention.

The Law on Youth Participation and Youth Policies was adopted in 202, which should solve some of the problems faced by young people in rural areas by including each municipality in the specific process by establishing local youth councils, opening youth offices and youth centers, and employment of youth officers. A study conducted in April 2023 showed that at that point, three years after the adoption of the Law, it had been implemented by about 10% and is the activities continue at the same pace it would mean that the full implementation of the Law would take another 10-15 years[31].

4. Conclusions and recommendations

Rural-urban migration is a problem that affects not only Macedonia, but the entire world. This trend of population movement has complex impacts on the implementation of the 2030 Agenda for Sustainable Development, adopted by the member states of the United Nations, which also includes Macedonia. To remedy the current trend, Macedonia should first work seriously on retaining its population in the country, and in parallel with that, on policies that would make rural areas not only more attractive, but also more prosperous.

The interest in life outside the capital is present among young people, and this was demonstrated by a recent initiative raised by two young people who, in less than two weeks, managed to gather a group of around 600 citizens interested in establishing an

29 https://mia.mk/story/%D0%BD%D0%B8%D0%BA%D0%BE%D0%BB%D0%BE%D0%B2%D1%81%D0%BA%D0%B8-%D1%81%D0%B5%D0%B2%D0%B5%D1%80%D0%BD%D0%B0-%D0%BC%D0%B0%D0%BA%D0%B5%D0%B4%D0%BE%D0%BD%D0%B8%D1%98%D0%B0-%D0%B5-%D0%BB%D0%B8%D0%B4%D0%B5%D1%80-%D0%B2%D0%BE-%D1%80%D0%B5%D0%B3%D0%B8%D0%BE%D0%BD%D0%BE%D1%82-%D0%B2%D0%BE-%D0%B8%D1%81%D0%BA%D0%BE%D1%80%D0%B8%D1%81%D1%82%D0%B5%D0%BD%D0%BE%D1%81%D1%82-%D0%BD%D0%B0-%D1%81%D1%80%D0%B5%D0%B4%D1%81%D1%82%D0%B2%D0%B0-%D0%BE%D0%B4-%D0%BF%D1%80%D0%BE%D0%B3%D1%80%D0%B0%D0%BC%D0%B0%D1%82%D0%B0-%D0%B8%D0%BF%D0%B0%D1%80%D0%B4 d_ml.px/

30 https://pina.mk/7856-od-podobra-iskoristenost-na-eu-fondovite-dobivaat-graganite/

31 https://www.radiomof.mk/tri-godini-zakon-za-mladi-funkcionira-ama-ne-funkcionira/

ecological community in one of the villages near Skopje[32]. Given the increasing number of jobs that can be done remotely and the existence of numerous subsidies for starting agricultural activity that do not prevent migration despite being used for that purpose, it seems that economic motives are no longer the main reason for migration.

Attention should be therefore paid and work should be done on other aspects of the problem, such as poor infrastructure and connectivity with urban areas, opportunities for a more dynamic life, especially for young people, as well as diversification of economic activities in rural areas that are not necessarily related to agriculture.

The National Development Strategy 2024 – 2044 was adopted last year. It defines the main national development goals, strategic areas and priorities for accelerated, inclusive, balanced, gender-equal and sustainable development of the Republic of North Macedonia. These are the two of the six strategic areas that have been selected as key to meeting the goals of the Strategy and which are closely related to the topic of the research:

1. Sustainable local and regional development that ensures cohesion; and

2. Demographic revitalization and social and cultural development

With these two and the other four objectives, it is expected that the circumstances for attaining the SDGs will improve over the next 20 years, ensuring, among other things, more balanced development. The Strategy mentions that the multicentric model of regional development in Slovenia, which ensures a comparable quality of life in different regions, as well as between urban and rural areas, can serve as an inspiration and example for Macedonia.

Finally, if we want to build generations that care about the environment, it is necessary for more people to spend time in nature and be closer to it, and that is just one of the things that humanity is losing with emigration from rural areas.

Biography

Katerina Ilijovska is an engineer, an eco-activist, and professionally works on activities and projects related to environmental education, waste management and reduction, and promotion of everyday sustainable practices. She is the co-founder of the Yes for Less Association, and recently returned to live in Macedonia after seven and a half years abroad, to contribute locally towards improvement of the state of the environment.

32 https://www.radiomof.mk/zagrizheni-za-zagaduvanjeto-i-narusheniot-imunitet-dvajca-gragjani-potegnaa-inicijativa-za-formiranje-eko-zaednica-na-15-20-kilometri-od-skopje/

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