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# Battle for Cleaner Air: Ways Forward

Article 1  
Article 2  
Article 3  
**Article 4**

**"I experienced  
headaches due to the  
constant exposure to  
the toxic air"**

– Personal Interview. September 2021.

November 2021, Sarajevo

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# Unique solutions to unique examples

From "champions" in air pollution towards champions in the battle for cleaner air would seem like a long stretch for North Macedonia and Bosnia and Herzegovina. National strategies and efforts from the capital cities Skopje and Sarajevo have predominantly been a focal point of interest when discussing air pollution and measures for improving air quality for both countries. Furthermore, Bitola and Tuzla, as big industrial cities, show that regional and local specificities on the matter of air pollution are part of the puzzle too. With thermal power plants situated in their vicinity, they are examples of strong codependency between electricity production and energy security on one hand, and air pollution on the other. Therefore, differentiating between the energy transition, energy efficiency issues and the local measures against air pollution is important, since all of these topics deserve special attention, and this discussion is primarily related to the local measures and efforts.

With regards to evaluating the measures against the air pollution, in different cities throughout both countries, the consulted experts and environmental activists say they are functional to some extent. However, further expansion and inclusion of all parties is required. The example from the City of Tuzla, which collaborated with local activists from the Center for Ecology and Energy on raising awareness for the existing measures and subsidies, is a good model of combining forces. Nevertheless, not all NGOs and activists are supportive of and willing to cross a bridge and cooperate, having a legitimate fear that the local authorities would only do that to silence their voices without accepting any suggestion or moving forward with collaboration. Activists from Eco-Guerilla from Tetovo in North Macedonia, through their efforts and their model of activism<sup>1</sup>, based on years of activism, show that the way to win the battle for cleaner air in the case of Tetovo could be to make sure to educate the citizens, but also to criticize and point out mistakes.

Tetovo has been and remains one of the cities in the country notorious for its air pollution, which originates from its industry, the household heating solutions in winter months, the chaotic traffic, its geography, and a unique cause specific to the city: the landfill located only few hundred meters from the center of the city. Even now, at the beginning of November 2021, when the winter is barely at the door, the air is already highly polluted, with measurement stations showing more than 400 PM10 in some days<sup>2</sup>. Mrs. Julijana Peneva from the Municipality of Tetovo<sup>3</sup>, in charge of environmental protection and implementation of the air pollution measures, assures that the local

1 FES, 2021. *Activist Forum Tetovo: Grassroots Action for Green Change*. [online] Soe.fes.de. Available at: <https://soe.fes.de/news> [Accessed 23 September 2021].

2 Zh.N., 2021. *Скопје вечерва е петта најзагадена метропола во светот, Тетово како Делхи [Skopje is the 5th most polluted city in the world tonight, Tetovo like New Delhi]*. [online] Слободен печат. Available at: <https://www.slobodenpecat.mk/> [Accessed 23 November 2021].

3 Peneva, Julijana. *Personal Interview*. August 2021

officials are working relentlessly to improve the air quality. The measures that have been adopted in Tetovo are similar to the financial subsidies programme in Skopje, focused on replacement of old polluting furnaces, which started in 2020 on local level. According to the new public call from 2021<sup>4</sup>, the financial assistance has been budgeted for 89 households, each getting a maximum of MKD62.000 or EUR1.000 for replacing their old firewood or coal furnace with an inverter air conditioner.

Municipality representatives say that after the first call in 2020, they decided to continue the program as a result of a massive interest of the population. Nevertheless, activists criticize this and the previous public call, saying that the authorities have made the application process challenging and that the criteria should have been easier to fulfil. The core criteria for eligibility include:

- *proof of property ownership*
- *the applicant to have the address registered in his ID card*
- *no previous subsidies from this line granted*
- *the dwelling to be considered as completely built*

These conditions have been criticized because the number of families living in uncompleted houses, without a facade, is relatively high in Tetovo. Moreover, many low income households willing to apply for the subsidies are renting their homes, or do not have their address listed on their ID cards. The local authorities did not modify the conditions, and the criticism for the call is similar to the one in Sarajevo.

In spite of this, Peneva says these subsidies are still successful and the air pollution in the last two years has been decreased to certain extent due to the combination of the subsidies with other various measures. These include traffic modifications, more frequent inspections to the industrial facilities, encouragement to replace old furnaces, and use the new network of public transportation in the city<sup>5</sup> operating since August 2021. Still, activists from Eco-Guerilla, the Tetovo-based environmental NGO, say that air pollution will not disappear from the city unless the massive landfill is relocated and the waste is properly managed, instead of being illegally burnt. For several years now, they have been organizing protests and guerilla-actions, one being a concert held in 2016 in the middle of the landfill<sup>6</sup>. During this guerilla action in a form of a performance for protest, all the participants had masks to address the issue of the landfill, which is often set on fire and is a source of toxic air pollution.

Most of the locals agree that this is the biggest cause of air pollution in Tetovo, especially since they have all been smelling the burning waste for many years now, over many nights, and all over the city. Still, the Municipality of Tetovo officials claim that the problem with the air pollution is more complex and is a result of a number of sources<sup>7</sup>. Thus, the way forward for the city is first and foremost to find a solution to manage its waste properly. Then, in combination with the subsidies for replacing furnaces and rigorous inspections of polluting industrial facilities, air pollution would be reduced much more, as the locals hope.

4 Municipality of Tetovo, 2021. *Комуна е Tetoves - Општина Тетово - Municipality of Tetovo*. [online] Tetova.gov.mk. Available at: <https://tetova.gov.mk/> [Accessed 11 September 2021].

5 Skopje 24, 2021. *Тетово од понеделник добива градски превоз по 8 месеци чекање [After 8 months of waiting, Tetovo officially gets a public transportation]*. [online] Skopje24.mk. Available at: <https://skopje24.mk/> [Accessed 17 September 2021].

6 Okno Mk, 2021. *Протестен концерт на депонијата во Тетово [Concert as a protest in the landfill in Tetovo]*. [online] Okno.mk. Available at: <https://okno.mk/node/58993> [Accessed 29 August 2021].

7 Peneva





Figure 1: Concert in the middle of the landfill in Tetovo<sup>8</sup>

Another source of air pollution in Tetovo and its region was "Jugohrom", a major industrial facility with seven furnaces for production of ferro-silicon in Tetovo's village of Jegunovce, only tens of kilometers away from the city. The plant was closed in 2017 by inspectors demanding for proper and modern filters installment, after many years of protests requesting the factory to either stop operating or install appropriate filtering solutions<sup>9</sup>. The environmental activists that fought this battle considered the closure of the factory a victory. Yet, the thousands of workers left virtually unemployed were not happy with the decision. Nevertheless, air quality did improve by several percentiles, which proves that sometimes radical solutions are needed, and that they might leave some people unhappy. However, closure of a major industrial facility is not always the option, especially if the energy security depends on it, as in the example of Bitola and Tuzla, or the local economy, as in Zenica for instance.



Figure 2: The smoke from the burning landfill seen from the hills above Tetovo<sup>10</sup>

8 Okno Mk, 2021. Протестен концерт на депонијата во Тетово [Concert as a protest in the landfill in Tetovo]. [online] Okno.mk. Available at: <https://okno.mk/node/58993> [Accessed 29 August 2021].

9 Mikhaylova, M., 2021. Macedonia extends ban over Jugohrom Ferroalloys plant operations. [online] Seenews.com. Available at: <https://seenews.com/> [Accessed 13 September 2021].

10 Jaarsma, R., 2021. [online] twitter.com. at: <https://twitter.com/rjaarsma/> [Accessed 31 August 2021].

In Bosnia and Herzegovina, Zenica is another big city struggling with air pollution which finds its source in the city's industry. The steel plant in Zenica is one of the biggest BiH factories, employing many people and greatly contributing to the local and national economy, which is why Zenica's nickname is "the steel town". One of the biggest names in the steel industry and one of the richest people worldwide, Lakshmi Mittal, bought the factory in 2004, transforming it since then into a massive plant now known as "ArcelorMittal". The management has committed to make "all appropriate investment in the protection of the environment", and the documents submitted to the Federation Ministry in 2008 indeed show that the steel giant promised it would reduce emissions, and therefore, it would reduce air pollution in Zenica<sup>11</sup>.

However, little investments have been made to assure air quality protection. As a result, Zenica remains one of the most polluted cities in the world, not just in the country. Still today, the locals remain torn between the jobs the factory is bringing, the boost it gives to the local and national economy, and the air pollution it causes. Citizens say that during winter months the air can become so polluted that many avoid going out altogether unless they have to. Many have little hope the air quality will change for the better anytime soon, especially in a situation when the corporation is more powerful than the state<sup>12</sup>.



Figure 3: Air pollution in Zenica

Nevertheless, efforts to improve air quality are being made by the authorities in Zenica as Zenica-Doboj Canton adopted an air protection action plan<sup>13</sup> at the beginning of 2020. As a result, more proactive measures are expected to take place in the upcoming period, even though there is a lot of criticism in place for not including the public in the process of its adoption. Some skeptical Zenica locals are not too pleased with the plan, saying that in reality nothing would really be done, like it has not been done for years, when the authorities were going back and forth before they finally adopted some action plan, just to have it on paper. Still, as the second BiH city, after Sarajevo, to be part of the "Green Cities" programme by EBRD<sup>14</sup>, Zenica and its locals hope the situation would eventually improve. Measurement stations and statistics presented by "Eko

11 Geoghegan, P. and Ahmetasevic, N., 2017. *Zenica, Bosnia: the steel town where even taking a breath can be a struggle*. [online] theguardian.com. Available at: <https://www.theguardian.com/> [Accessed 8 September 2021].

12 *Personal Interview*. 01 Zenica. September 2021.

13 Eko Forum, 2020. *Sa 15 godina zakašnjenja, Vlada ZDK donijela plan zaštite zraka u ZDK [With a delay of 15 years, the Government of ZDK adopted air protection action plan]*. [online] ekoforumzenica.ba/. Available at: <https://www.ekoforumzenica.ba/> [Accessed 11 September 2021].

14 EBRD Green Cities, 2021. *Zenica is part of EBRD Green Cities*. [online] Ebrdgreencities.com. Available at: <https://www.ebrdgreencities.com/our-cities/zenica/> [Accessed 18 September 2021].



Akcija”, however, still show that the air in Zenica remains “unhealthy”<sup>15</sup>, while better solutions and measures are still pending.

While some cities from both countries are breaking records in air pollution, struggling to improve their air quality, others are more fortunate when faced with worsened air quality. Ohrid, for example, like other Macedonian and BiH cities, has only occasionally been on the lists of cities facing air pollution and it seems it is winning the battle for cleaner air, at least for the time being. In 2019, when Ohrid got on the lists of cities with bad air quality and severe air pollution<sup>16</sup>, the Ohrid-based environmental activists took actions through protests and campaigns. At the same time, the municipality presented some urgent measures that also included training for usage of smart technologies. All of these efforts resulted in improving the air quality relatively quickly. However, locals are convinced that the state and the municipality are only keeping the air quality in Ohrid decent due to the facts that Ohrid is part of the UNESCO world heritage sites, and that the region is important for the national tourism industry and the economy. Some say that if it were only to protect the health of the local people, perhaps the situation with the air quality in Ohrid would be much worse. However, there is silver lining in the case of Ohrid.

Strumica, located in the south of North Macedonia, is another Macedonian cities that have been affected by dramatic air pollution in recent years, especially during winter months. Sources from the local municipality say that the air pollution has not been present in the past, since Strumica and its region have traditionally been known for their agricultural activities and organic production of fruits and vegetables. However, the air pollution has been growing with the growth of the industry, along with the increase in population. This is mostly due to the fact that the city is geographically very well-positioned for business relations, as a regional center that is close to the borders with both Greece and Bulgaria. Air pollution statistics are hard to find and studies are rare, but officials from the City of Strumica<sup>17</sup> say the sources of pollution and the alarming presence of the PM10 and PM2.5 are predominantly household heating solutions using outdated furnaces, increased traffic, and some industrial capacities. A situation that is very similar to the other cities battling air pollution discussed during in this study.

However, it seems that Strumica and its locals tend to follow the recommendations of the authorities better than other regions, as the air pollution has diminished to a fair extent since 2018. Some of these measures have included recommendations to minimize the usage of vehicles, recommendations to switch to different heating solutions, and most importantly an ongoing project for expanding the network of gas pipelines throughout the city. The project started more than a decade ago and its ongoing expansions have made Strumica the first Macedonian city that is well covered with gas infrastructure. Today, the whole region has the ambition to become fully gasified<sup>18</sup>, as expansions to the gas network are still ongoing. Nevertheless, high air pollution is still present during some days throughout the year. The locals are hopeful that once all the areas of the city and the region start using natural gas, the battle for cleaner air would be over.

15 Eko Akcija, 2021. *Kvalitet zraka u Zenici [Air Quality in Zenica]*. [online] Zrak.ekoakcija.org. Available at: <https://zrak.ekoakcija.org/zenica> [Accessed 12 October 2021].

16 Ohrid Press, 2019. *Охрид меѓу градовите со загаден воздух, измерени од 112 до 351 Pm10 честички на м3 [Ohrid among the cities with the most polluted air]*. [online] Ohridpress. Available at: <https://ohridpress.com.mk/> [Accessed 1 November 2021].

17 *Personal Interview*. 02 Strumica. September 2021.

18 Faktor Mk, 2015. *“Струмица – гас” почна со проширување на гасоводната мрежа [«Strumica - gas» started expanding the gas pipelines network]*. [online] Фактор Портал. Available at: <https://faktor.mk/> [Accessed 13 September 2021].

# Ways forward

## A combination of measures against air pollution

When discussing the air pollution and the measures against it adopted at the local level in both BiH and North Macedonia, majority of experts, professors, municipalities' officials and activists point at a combined approach as an important solution. This means creating a local strategy that will combine a series of measures in a form of different recommendations, restrictions, and subsidies. A combination of various measures should simultaneously target the most common sources of air pollution:

- *Individual household heating solutions*
- *Industrial facilities*
- *Traffic*

During the discussions with Tikveša, Podić, Daneva, Kalem and Vidoeski, among others, the presented environmental activists' point of view is that the measures against the air pollution in both countries should represent a mutual effort of citizens and local authorities, through a well-formulated strategy combining multiple actions, instead of individual measures with low impact.

Subsidies and schemes for financial assistance, as in the example of Skopje and Sarajevo, would target the replacement of old household furnaces, major pollutants during the winter months. Furthermore, inspections and regulations will target the industrial pollutants as in the example of Strumica, whereas the traffic regulations, financial assistance for bicycles and scooters, and expanding the public transportation network and options would target the pollution caused by traffic. With all of these measures rolled together in a strategy that combines proper urban planning allowing for preserving and expanding urban greenery and preserving the airflow corridors, the battle for cleaner air should end with a good air quality in BiH and Macedonian cities. Nevertheless, the local officials should also show a higher level of collaboration with the citizens and the activists, as well as lessen the influence of politics and business when the air quality and the health of the people are at stake.

## Effective inspections

Effective inspection is another important recommendation and a tool to use in the battle for cleaner air. As the example of Strumica shows, in addition to the standard measures against the air pollution and the gas project, the city appears to have more effective inspections that have not been a subject of strong political influences as usually happens in the Western Balkans. This is definitely something other cities in BiH and North Macedonia could handle better. The inspectors from the Inspectorate for Environmental Protection from the City of Strumica have been making sure the air polluters are detected, charged and fined on a regular basis. For instance, as soon as the air pollution started to spike in the early winter of 2018, it only took a couple of weeks for the city to fine and close off 16 enterprises, among which some were taxi companies and other industrial facilities. The inspectors gave these businesses causing air pollution an order to install appropriate filtering solutions<sup>19</sup> if they wished to continue operating.

Often regarded as one of the best governed cities in North Macedonia, this unique example of how Strumica is fighting the battle for cleaner air demonstrates to other Macedonian and BiH cities that solutions and effective measures exist - if there is will-power. Political and other influence is something the inspectors should learn to fight off for battle for cleaner air to be successful. Activists from both Sarajevo and Skopje agree with this statement, saying that it would be much easier to fight air pollution if the inspections were more professional and effective, and not prone to influences. Mrs. Zijada Krvavac<sup>20</sup> from Canton Sarajevo agrees that the environmental inspections in combination with appropriate urban planning and preserving the air corridors in the cities are the winning combination that will guarantee a decent air quality in the big cities such as Sarajevo and Skopje.

## Industry to follow regulations

Discussing the industrial capacities that are keeping the national economies of BiH and North Macedonia alive and that are securing the energy supply in both countries, Professor Majda Tešanović<sup>21</sup> from the University of Tuzla says that solutions are not so easy to find as the people are caught between their livelihood and securing breathable air. Bitola, Tuzla, Zenica, Tetovo, are only few of the cities caught in this situation. Nevertheless, Prof. Tešanović<sup>22</sup> is firm in saying that a good start is simply complying with the existing regulations and providing appropriate filtering solutions. A more radical solution, as in the case of Tetovo, where a big industrial facility had to close, is not always needed if the industry follows regulations to the point from the very start. All of these regulations already exist in writing in both countries, and they are also included in many international and EU agreements the countries are bound to respect. Mr. Rijad Tikveša<sup>23</sup> from the Sarajevo-based "Ekotim" confirms the importance of respecting the national and international regulations for environmental protection. Having enterprises abiding to the legal frameworks, the battle for cleaner air will be easier to win.

19 Trajkov, V., 2018. *КАЗНЕТИ 16 ЗАГАДУВАЧИ НА ВОЗДУХОТ ЗА ПЕТ ДЕНА ВО СТРУМИЦА* [In five days sanctioned 16 air pollutants in Strumica]. [online] Сакам Да Кажам. Available at: <https://sdk.mk/> [Accessed 12 October 2021].

20 Krvavac, Zijada. *Personal Interview*. September 2021

21 Tešanović, Majda. *Personal Interview*. October 2021

22 Ibid.

23 Tikveša, Rijad. *Personal Interview*. August 2021

## Appropriate urban planning and preserving the greenery

Another important aspect for the air quality is preserving the greenery and the green belts in and around the cities in both countries. In spite of the fact that both BiH and North Macedonia are known for their rich nature and lush forests, recent policies have not been well focused on maximum protection of the forested areas around big cities, contributing to the worsened air quality. Mr. Jovan Paunovski<sup>24</sup> from Tetovo, a forestry professor, says the air pollution in the city of Tetovo definitely started with a more aggressive logging in nearby forests for the purpose of providing firewood, followed by the urbanization of green areas in the city without proper urban planning and replacement solutions.

Tetovo-based architect Bosško Vidoeski<sup>25</sup>, a specialist in urban planning and a local environmental activist, affirms this claim, saying that the air pollution is only part of the damage done to the region due to its unplanned expansion and neglecting green areas and forests. Green areas are today virtually nonexistent in the city centers, and the greenery in the surrounding region is also fragile, even though the nearby Šar Mountain has been declared a national park. Moreover, representatives of both Sarajevo and Skopje local authorities say the air pollution in the cities would be much worse if the greenery in the important areas was more compromised. Thus, proper urban planning in combination with preserving and expanding the green belts and the air corridors is an important aspect of protecting the air quality, while other measures should only be complementary.

## Technology, cooperation, and activism

Battling air pollution has an ally in technology and innovation, and the tools that technology can provide should be utilized to their full potential. From more sophisticated measurement stations, to apps that follow the level of PM10 and PM2.5 in the air, the support the technology provides will allow for a better screening of the situation at hand when it comes to the air pollution. Tech developers have created mobile phone applications widely used in BiH and North Macedonia that are mapping the air pollution using open-source data, relying on sensors and other internet data, which allows the citizens to avoid heavily polluted areas and high-pollution periods, thus protecting their health. Moreover, the Government of North Macedonia is implementing radically innovative policies that involve technology, by using drones to identify and, if necessary, sanction air polluters<sup>26</sup> on the territory of Skopje.

The idea of using drones to fight air pollution was announced in 2018 by the city's officials and is yet to be fully implemented. In addition to this, Skopje has announced a strategy for a more sophisticated interpretation of meteorological and air pollution data, with the purpose of creating mathematical models for predicting air pollution levels up to few days in advance, which might help reducing the pollution by up to 50%. These entrepreneurial and technology-based solutions supported by local official are good examples of how a wider cooperation between different local parties can result in the future "innovation ecosystems" that help achieve social and environmental goals<sup>27</sup>.

24 Paunovski, Jovan. *Personal Interview*. August 2021.

25 Vidoeski, Boško. *Personal Interview*. October 2021.

26 Kalabakova, S., 2019. *Дронови ќе бараат загадувачи [Drones will detect air pollutants]*. [online] Нова Македонија. Available at: <https://www.novamakedonija.com.mk/> [Accessed 10 August 2021].

27 ITU News, 2019. *How Skopje is using innovative tech to clean up air pollution*. [online] ITU News. Available at: <https://news.itu.int/> [Accessed 15 October 2021].

Krvavac<sup>28</sup> points out that the ideas from Skopje are a good learning opportunity, both in terms of usage of modern technology and the different ways in which Skopje has implemented measures similar to those in Sarajevo.

Representatives from various cities in North Macedonia agree that cooperation and exchange of experiences while fighting for cleaner air would be useful for both countries, including wider cooperation throughout the whole region of Western Balkans. The countries have a similar mentality and political complexities, and some good examples and measures that work locally in different areas could easily be transferred and useful in other cities in BiH, North Macedonia, or the region. Nevertheless, before establishing wider cooperation networks between the countries, the consulted experts and activists agree that local engagement and cooperation between different local counterparts, activists, experts, educators, and the policy-makers is absolutely necessary.

In this sense, Krvavac<sup>29</sup> points out that the air quality in the case of the wider region of Sarajevo would definitely improve more if both Canton Sarajevo from the FBiH and the Municipality of Istočno Sarajevo, which belongs to the Republika Srpska, would cooperate and fight air pollution together. For the time being, this is not the case, and the problem with the air pollution is a common one and does not recognize any borders between the two BiH entities. Finally, the activist Melina Kalem<sup>30</sup> from Sarajevo encourages media and activists to fight for a better urban planning and development of other urban centers aside from the capital cities that are being clustered, making the air pollution worse. Other activists agree and add that it is also important for the citizens and the youth to get informed about the environmental laws and to demand compliance, as well as more active media coverage on the air pollution issues and the current measures. A shared opinion of the environmental activists from both BiH and North Macedonia is that with better local measures against the air pollution and a clear strategy<sup>31</sup>, mutual efforts and cooperation, the battle for cleaner air will over time result in a victory.

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28 Krvavac, Zijada. *Personal Interview*. September 2021

29 Ibid.

30 Kalem, Melina. *Personal Interview*. September 2021

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