

AirQuality

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This edition is part of the Air Quality Program, designed by Millennium Foundation Kosovo (MFK) and funded by the Millennium Challenge Corporation (MCC) as part of the Threshold Program agreement between the Government of Kosovo and the MCC.

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MILLENNIUM
FOUNDATION
KOSOVO



MILLENNIUM
CHALLENGE CORPORATION
UNITED STATES OF AMERICA

Acronyms ↓

University of Prishtina

UP

Millennium Foundation Kosovo

MFK

Accessible Natural Greenspace Standard

ANGSt

Millennium Challenge Corporation

MCC

Japan International Cooperation Agency

JICA

Particulate Matter

PM

National Aeronautics and Space Administration

NASA

Inhalable particles, with diameters of 10 micrometers and smaller

PM10

Associated Landscape Contractors of America

ALCA

Urban Green Space

U.G.S.

Fine inhalable particles, with diameters of 2.5 micrometers and smaller

PM2.5

Kosovo Judicial Council

KJC

The European Environment Agency

EEA

Ministry of Education, Science and Technology

MEST

Organisation for Economic Cooperation and Development

OECD

Ministry of Environment and Spatial Planning

MESP

Hydrometeorological Institute of Kosovo

HIK

America Online

AOL

Information and Communications Technology

ICT

Application Programming Interface

API

Non-governmental organization

NGO

Kosovo Energy Corporation (Korporata Energjetike e Kosoves)

KEK

N95 A Mask That Meets The U.S. National Institute For Occupational Safety And Health (Niosh) N95 Classification Of Air Filtration. It Filters At Least 95% Of Airborne Particles.

N95

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The images and stories featured
in this book show the aspects of
our everyday lives prone
to change—unwillingly—due to
degradation of air quality;
the implication of air in both
individual and societal progress;
and how today's concerns ground
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SMELL OF WINTER IN PRISHTINA AND ACROSS THE COUNTRY

Millennium Foundation Kosovo CEO Petrit Selimi shares his thoughts on air pollution in Kosovo and MFK's role in changing the status quo.

Once we know the sources of pollution in Kosovo, we can focus on remedies. There are plenty of cities in Europe that have managed to successfully implement short-term measures and long-term policies to make winters smell like snow and pine and chestnuts—rather than smog.



On cold, snowy days when the air is clean, Kosovo cities and villages carry the delightful, crisp smell of winter. On days like these, hints of trees, leather, snow, and nature become more intense. But when the air is polluted, the only thing we seem to smell is the sour odor of burned solid fuel particulates. Unfortunately, polluted days have become far more common over the years.

Era Dimën constitutes a report on how to bring together science, open data, our personal experiences and behaviors, and our advocacy efforts into a new approach for raising awareness, changing behaviors, and advocating for sound policies that will help Kosovo clean up its act—and its air.

We bring together science, open data, our personal experiences and behaviors, and our advocacy efforts into a new approach for raising awareness, changing behaviors, and advocating for sound policies that will help Kosovo clean up its act—and its air.

What explains the smell of winter?

Winter smells differently than summer as slower moving cold air molecules ensure that only the most powerful smells (often the smell of pollutants) are noticed.

While we also pollute the air in summers, there is a natural balancing act as warmer, polluted air is whisked away after being heated by the warm surface and replaced by cleaner air. In wintertime the ground is cool and dense, and dirty air stays close to the ground. When November kicks in, it feels as if someone put a lid on Prishtina, which has the shape of a deep pan—a settlement surrounded by steep hills.

Nights and early mornings are the worst. People burn lots of solid fuel, but there is no sun to heat the ground and move the air, so the effect of pollution is amplified. By the time we wake up in the morning, we really do feel like we're inside a pan where

someone has been cooking something nasty and poisonous. The city is shrouded in a dense layer of pollutants.

Going back to the winter smell, the science behind olfactory winter experiences is quite sound. Researchers say that we are not as sensitive to odors in winter as many odors aren't as available to be smelled. That said, cold air also stimulates the irritant—sensitive trigeminal nerve. The trigeminal nerve is what makes you cry when you chop an onion and delivers a hit of spiciness when you inhale a whiff of strong mint. So, while we smell less stuff in the winter, some smells become more intense. Case in point: the polluted air of Prishtina on a bad winter day.

The next question you may have is: why now?

Some may say that "there was always pollution," so there is no need to panic. This statement is both wrong and right. There was always a degree of pollution in Kosovo, especially after the rapid industrialization period when big conglomerates began polluting the soil and air due to a lack of filters—and awareness.

While there is certainly less industrial pollution now, we have a far higher number of households and cars. Heck, in my childhood I used to play football on Goleshi street (now Rexhep Luci street), as there were very few passing cars. Nowadays, there's not an inch of free space from the hundreds of cars shuffling through this busy central street. It's similar across the city. In my childhood, Germia forest started at Taukbashqe park, and Taslixhe, Kodra e Trimave, Velania, and Arberia were far smaller neighborhoods. Now there are thousands of new houses, all burning carbon in one shape or another during the winter.

The Japanese development agency JICA has completed an inventory of pollutants in Prishtina, Fushë Kosovë and Obiliq. Indeed, households seem to be the greatest and gravest source of pollution in the region. So, times have changed, and with them—so have the smells. Which brings us to the last question: what can we do to enjoy the winter smells of yesteryears

Well, we hope that having a robust debate based on data is a good start. Very often our public discourse becomes overly politicized along partisan lines, but air quality is a concern for all; hazardous levels of pollutants increase rates of lung cancer for everyone. In fact, scientists have now established that "particulate matter air pollution contributes to lung cancer incidence in Europe."

Once we know the sources of pollution in Kosovo, we can focus on remedies. There are plenty of cities in Europe that have managed to successfully implement short-term measures and long-term policies to make winters smell like snow and pine and chestnuts—rather than smog. Changing the way we build and heat our houses, developing more efficient public transportation, using fewer old cars, planting more trees, creating better awareness about our own behaviors: these are all solid proposals which can be calibrated and developed to suit the needs of our Kosovar habitats. We hope this book in your hands will provide a spark of inspiration to take that first step.

WHY DOES DATA MATTER IN DEALING WITH AIR QUALITY?

The Millennium Challenge Corporation has invested resources in Kosovo to both help Kosovars obtain air quality data, and to propose the best policies and projects using this data to improve the current situation. Sarah Olmstead, MCC's Country Director for Kosovo, tells us her perspective on why data matters when we talk about air pollution.



Without quality data and information, you just have to go with your gut feeling or whatever is easiest to blame. But to create durable solutions to the pollution problem, we need to find out its exact causes.

If you go outside and it smells smokey, you are going to look for someone to blame. Maybe it's KEK. Maybe it's your neighbor burning their trash. Maybe it's the ancient, second hand buses belching out smoke on the street in front of you. Maybe it's wood smoke coming from your own chimney.

Without quality data and information, you just have to go with your gut feeling or whatever is easiest to blame. But to create durable solutions to the pollution problem, we need to find out its exact causes.

Data is important and it can change minds, depending on how it's presented. For instance, I have heard stories from earlier years in Kosovo when clean clothes left to dry outside would come back in dry, but dirty again from the polluted air.

That was data people observed, but were unable to quantify; they knew the air quality was poor, but it seemed like an unavoidable part of life. It wasn't until there was a number associated with it from the monitor installed in the U.S. Embassy

When MCC first started working in Kosovo, it was clear that pollution was a problem, but the magnitude of the issue and potential solutions were opaque. Without comprehensive information it is very hard to come up with policy approaches to fix the problem.

in Pristina, which could be compared to other countries and to health benchmarks, that it could easily be discussed and acted upon.

When MCC first started working in Kosovo, it was clear that pollution was a problem, but the magnitude of the issue and potential solutions were opaque. Without comprehensive information it is very hard to come up with policy approaches to fix the problem. Should Kosovo shut down coal-fired power? Should Kosovo invest in cleaner transportation? Should Kosovo encourage households to move away from burning wood and lignite, or help them burn more efficiently? And what is the impact of the pollution problem?

MCC decided to engage in two

ways: first, by making air quality data from all over Kosovo instantly available to anyone who wanted to see it, and second, to encourage decision-making based on that data. With access to real data, we expect that citizens can make better decisions about how to protect themselves from pollution; NGOs and civil society can conduct analyses and advocate for effective approaches to reduce pollution; and the government can adopt policies that address the fundamental causes of pollution and create a healthy and prosperous Kosovo.

While time will tell if data will help Kosovo's government and citizens make better data-driven decisions, evidence from other countries is promising. A 2012 study in San Diego shows that personalized air quality information helped people revise their prior beliefs about air pollution, including unexpected ways participants created air pollution themselves (e.g. burning incense or cooking without ventilation) and ways to avoid pollution (e.g. not opening windows near roadways).

That said, we must be wary of motivated reasoning and confirmation bias in understanding and acting on air quality data. The data may reveal that the solution to air pollution woes is politically and socially difficult to overcome. If the data indicates that households burning low-quality wood is a top polluter, how does the government tell poor people not to burn wood? Will lawmakers focus on data that show increased pollution along the roadways, because it's easier to just close the streets downtown some days than to make investments more costly to citizens and the state? And if research indicates that households are the biggest polluters, many citizens may be unwilling to accept that fact, despite the data—what happens then?

But citizens and the government can't wrestle with these difficult policy choices if they don't have data in the first place. While anyone can fabricate data to support their chosen policy solution, only solutions based on real data will have the desired effect at the end of the day. I hope that MCC's support with air quality data and analysis will help facilitate fruitful conversations and enable a cleaner, greener Kosovo.

MAPPING THE AIR POLLUTION

MFK has supported the Kosovo Hydro— Meteorological Institute (KHMI) to relocate three Air Quality Monitoring Stations in Gjilan, Prizren and Drenas, as well as to bring to life the monitoring station in Mitrovica in order to provide air quality data for better monitoring.

In addition, MFK assisted the KHMI in supplying and installing Air Quality Monitoring Stations with a communications network that feeds real time air quality data to the Air Quality Portal.

Now, for the first time ever, Air Quality data from all Air Quality Stations are transmitted wirelessly and continuously to the Kosovo Governmental server.

In cooperation with KEPA, the air emissions inventory was compiled for the whole of Kosovo, using inputs from a project by the Japan International Cooperation Agency (JICA).

The base year for the emissions database data was 2018, the year for which input data has the best availability. Modelling of those emissions has allowed calculation of outdoor pollutant levels across all of Kosovo as well as the creation of a 3—day forecast.

POLLUTION SOURCES IN EACH KOSOVO MUNICIPALITY

This map shows the breakdown of pollution sources for municipalities in Kosovo.



Small combustion (heating and cooking in domestic, public and business services)

Share of concentrations of small particles (PM_{2.5}) in urban area (%)

- Small combustion, heating and cooking in domestic, public and business services
- Transport
- Industry and other
- Agriculture
- Local background
- Regional background

PM_{2.5} POLLUTION IN KOSOVO

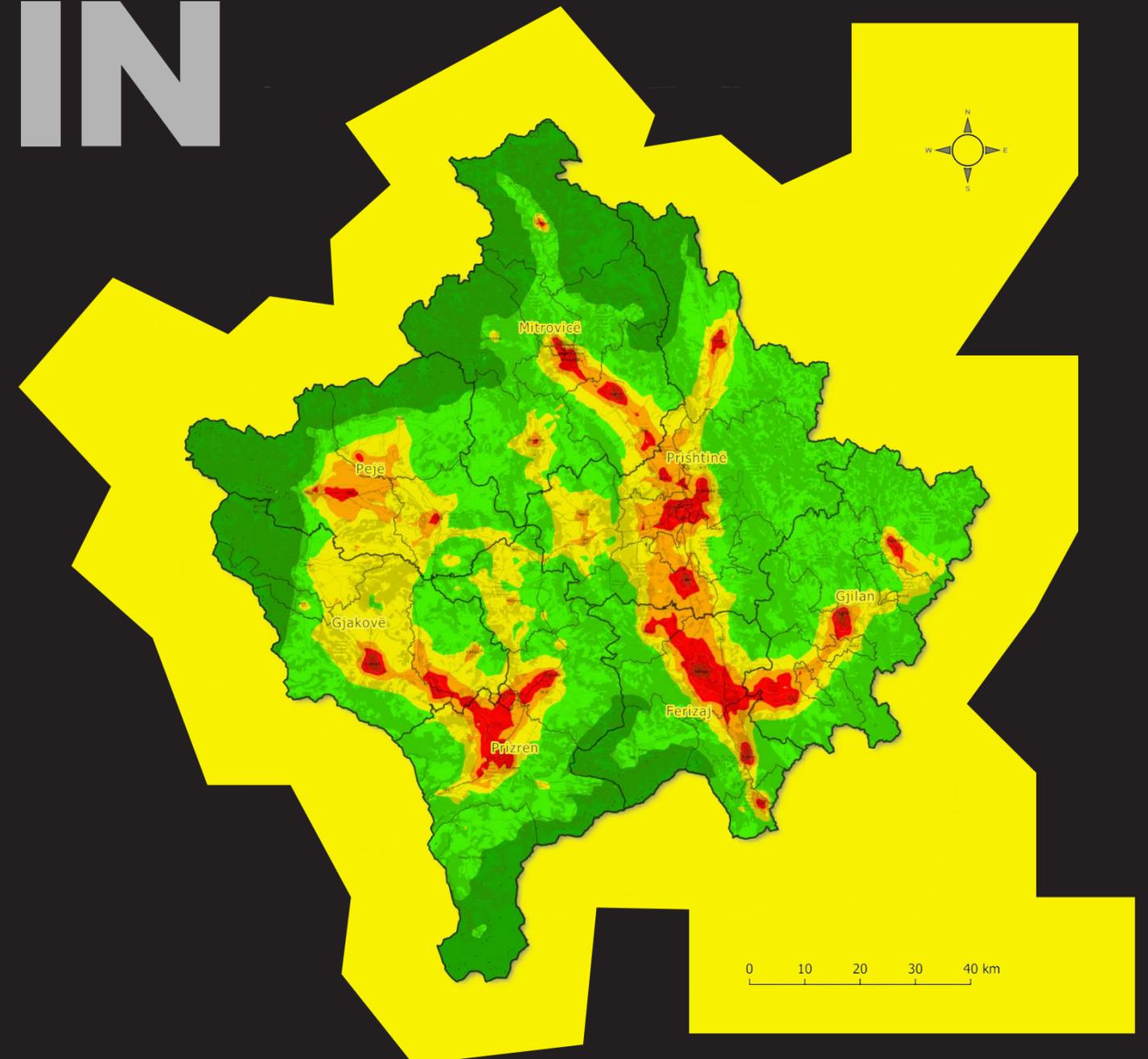
Particulate matter is formed of solid and liquid particles, both organic and inorganic, that are present in the atmosphere. PM_{2.5} is defined as particulate matter with a diameter of 2.5 microns or less. Exposure to high concentrations of PM_{2.5} can cause harmful cardiovascular and respiratory effects. This map shows modelled concentrations of PM_{2.5} across Kosovo, which comes from heating, cooking, industry and transport, amongst others.

Annual PM_{2.5} Concentration (µg/m³)

- 5–10
- 10–15
- 15–20
- 20–25
- 25–35
- 35–40
- 40–45

Administrative boundaries

- State boundary
- District boundary
- Municipality boundary



PM₁₀ POLLUTION IN PRISHTINA

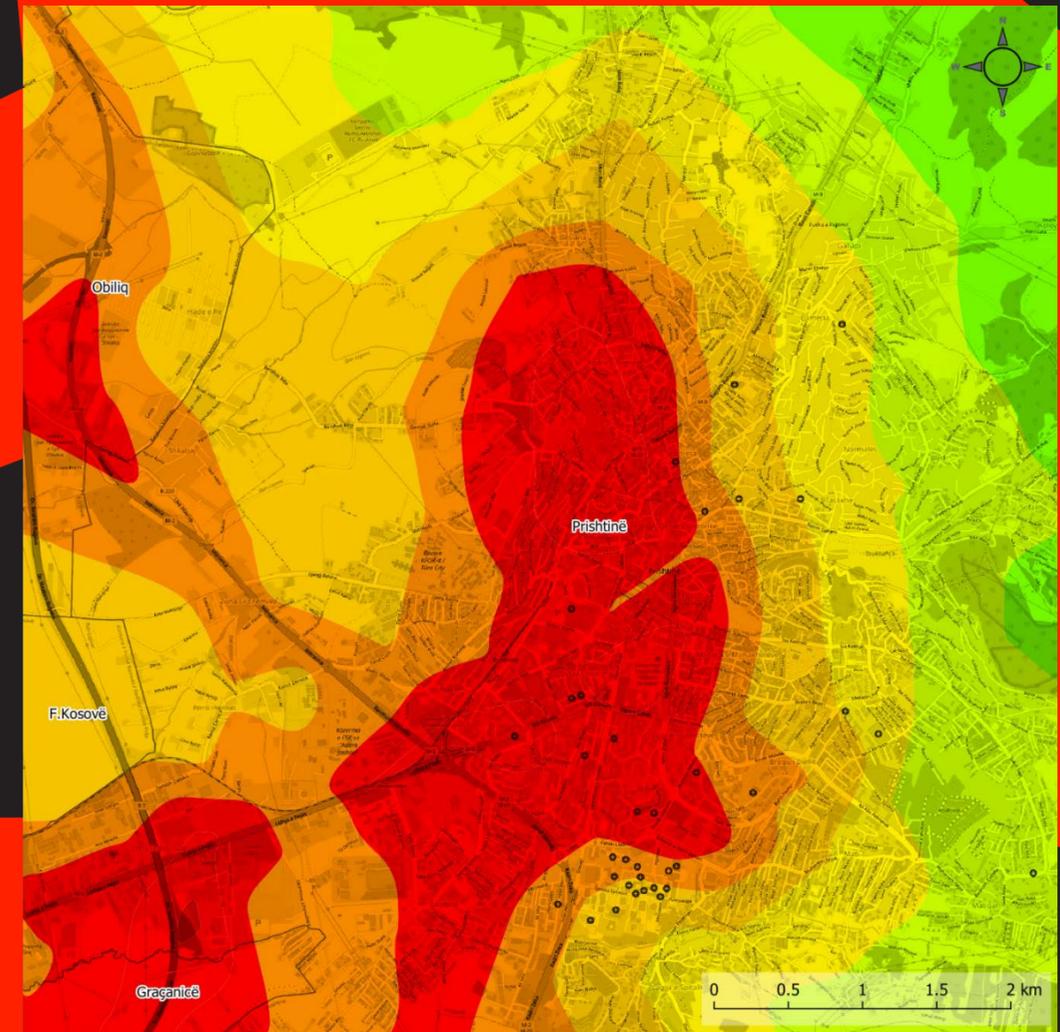
PM₁₀ is another form of particulate matter like PM_{2.5}, but defined as having a diameter of 10 microns or less. This map shows modelled concentrations of PM₁₀ in Prishtina. The sources of PM₁₀, and effects on human health are similar to PM_{2.5}

Annual PM₁₀ Concentration (µg/m³)

- 10–15
- 15–20
- 20–25
- 25–30
- 30–35
- 35–40
- 40–50
- 40–45

Administrative boundaries

- District boundary
- Municipality boundary



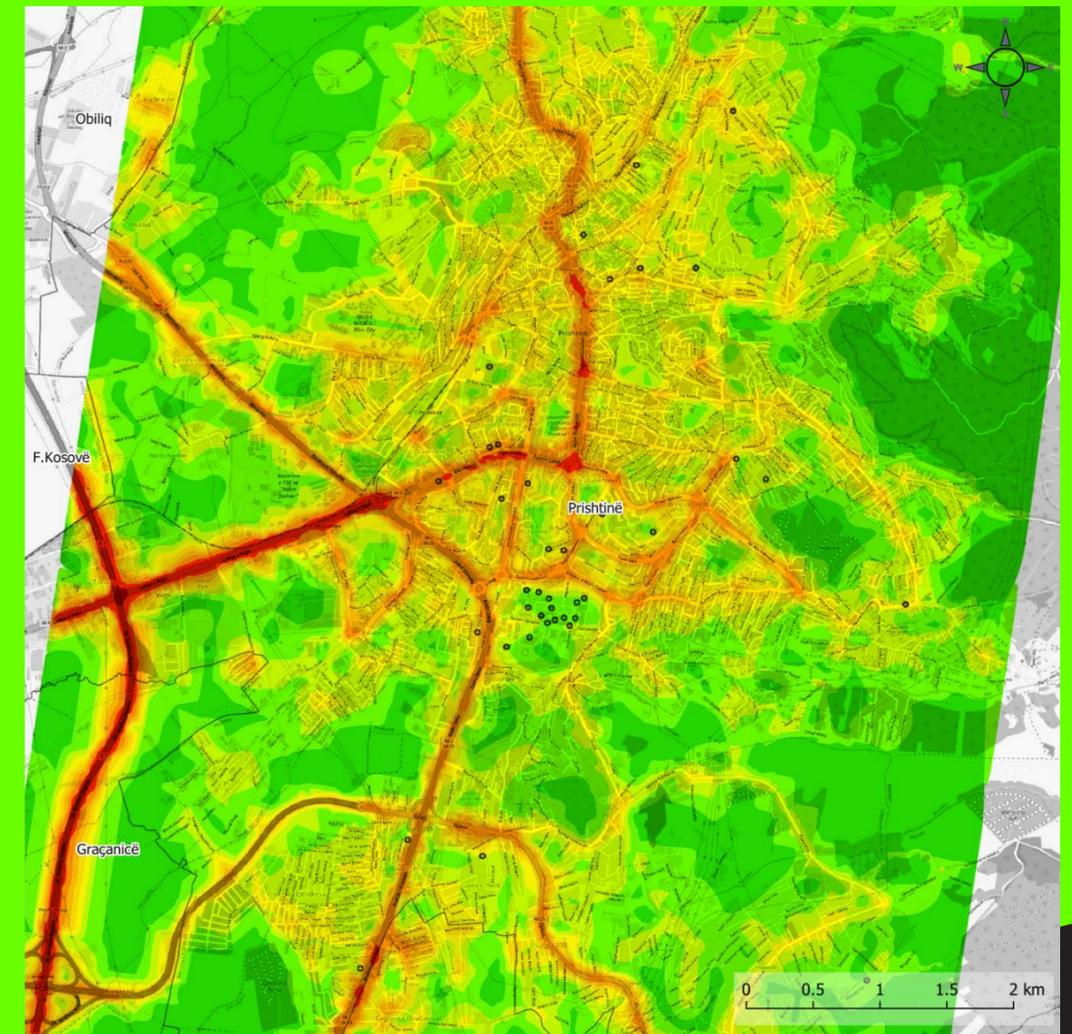
NO₂ POLLUTION IN PRISHTINA

Nitrogen dioxide is part of a group of gaseous air pollutants produced as a result of road traffic and other fossil fuel combustion processes. High levels of NO₂ can irritate airways in the human respiratory system and may contribute to the development of asthma and potentially increase susceptibility to respiratory infections. This map shows modelled concentrations of NO₂ in Prishtina.

NO₂ Concentration (µg/m³)

- 5–10
- 10–15
- 15–20
- 20–25
- 25–30
- 30–35
- 35–40
- 40–45
- 45–50

- District boundary
- Municipality boundary



DEMOCRATIZING DATA: ONE DIG DATA CHALLENGE AT A TIME

Millennium Challenge Corporation has supported open data solutions to drive change throughout Kosovo. Megi Pishtari, MFK's Dig Data Manager, discusses how MFK has integrated data as a key component of each of its projects, from the Reliable Energy Landscape Project to the Transparent and Accountable Governance Project.



The word “data” is often intimidating, and sometimes even frightening—especially in Kosovo. While data can be a catalyst for change, it can also perpetuate myths and misconceptions on pivotal issues related to economic growth and sustainable development if not used appropriately.

SO WHY DATA?

When used appropriately, data is the cornerstone of prudent decision-making.

Data is how we can debunk facile narratives; data is the initial step to revealing information in the most clear-eyed way.

With more data literacy, citizens can drive change and shift perceptions on the most important structures related to statebuilding and poverty reduction in Kosovo.

With a holistic approach, at MFK we aim to tackle fundamental issues such as: improving the judicial system and building citizen trust in government institutions, developing platforms to inform citizens about real-time air quality, and creating novel pathways to connect students to organizations and businesses who know precisely what kind of employees they are looking for. Open data underpins each of these efforts.

On these grounds, at MFK we integrate data as a fundamental component in all our efforts, from the Reliable Energy Landscape Project to the Transparent and Accountable Governance Project.

In fact, data lies at the heart of our Transparent and Accountable Governance project. MFK started this journey in 2018, focusing on Labor Force Data and financing eight projects that have been piloting novel solutions for problems related to labor force participation, from gender and social inclusion interventions to platforms that support the emerging ICT sector in Kosovo.

In the Open Data Challenge on Labor Force Data, we have achieved strong results by unlocking and

opening government data for public use and innovation, and by designing and funding interventions that create positive change in Kosovo’s labor market.

Based on the collected data, the NGO TOKA designed the Girl Power Up Project, which developed a training program in the most marginalized municipalities throughout Kosovo. With this program, 242 girls from grades nine to 11 were trained in problem-solving skills, critical thinking, and business communications to close the skill gap that prevents these young girls from joining the labor market. Moreover, 32 high school girls from rural areas had the opportunity to participate in one-month internships with different organizations and businesses in Kosovo.

Without data, TOKA’s ability to understand the national labor context and design an intervention that will change the lives of these young girls would not have been possible. Similarly, Open Data Kosovo, in collaboration with The Future Workplace, has developed a data-driven digital tool for the ICT market in Kosovo by gathering, analyzing, and generating data, while concurrently offering guidance on the educational and financial opportunities available in the ICT sector. As the Kosovo ICT sector expands, this digital tool will serve as a pathway for students and businesses, and consequently enhance data-based decision-making.

Through this approach, we have been able to identify constraints that inhibit sustainable economic growth and the reduction of poverty in Kosovo, while simultaneously breaking long-entrenched barriers. Throughout our journey, a main objective has been to induce more data literacy by educating Kosovo citizens on how to use data to create interventions that are both vital and viable. With more data literacy, citizens can drive change and shift perceptions on the most important structures related to statebuilding and poverty reduction in Kosovo.

As technological innovation remains a driving force behind economic growth, recent years have seen a proliferation of accessible

online data, a rising demand for data, and therefore an increased need for decisions well-informed by data. As we initiate a new plan to promote more transparent and accountable decision-making with our Air Quality Dig Data Challenge Grantees, we look forward to continue promoting the effective use of open data. Through our challenges we will ensure that data remains a salient consideration for decision-makers when designing interventions that improve public and private governance, while changing perceptions that pave the way for breakthroughs and revolutions in data for sustainable development.

OPEN DATA TOOLS TO ACCESS ACCURATE, RELIABLE AIR QUALITY INFORMATION

MFK’s Air Quality project ensures that all Kosovo citizens have access to accurate, reliable air quality information, which will help improve health outcomes and reduce pollution. The MFK Air Quality project has helped create a modern, durable system for air quality tracking in Kosovo. This platform enables citizens to easily access real-time air quality data. Different ways for the public to interact with this data include: the Air Quality Portal, the Smartphone Application, and a simplified visual system to help the public and the media accurately report on and better understand air quality.

These tools have been developed as part of the ‘Supply of Project Management, Air Quality Information Management, Behavior Change and Communication Services’ project, supported by Millennium Challenge Corporation (MCC). MFK is focused on working and supporting local institutions, including the National Institute of Public Health (NIPH) and the Kosovo Hydro-Meteorological Institute (KHMI), to improve the public availability of data on air quality, thus ensuring proactive communication with the public on air quality matters as well as promoting data-driven decision making.

**YES OPEN DATA,
BUT TO UNDERSTAND
AIR WE NEEDED
A LANGUAGE
WE COULD ALL
SPEAK**

MFK has created different tools that allow citizens and media stakeholders to more easily understand how daily air quality fluctuations affect their lives.

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**Let's protect our health from air pollution
by checking the air quality regularly via:
Air Quality in Kosovo**



By creating a standardized model that translates air quality information in an accessible way, MFK has made taking action possible for anyone with a smartphone or internet connection.

Each icon corresponds to a particular level of air pollution and contains best practices for staying safe for both the general population and sensitive groups.



Good

General population
The air quality is good. Enjoy your usual outdoor activities.

Sensitive groups
The air quality is good. Enjoy your usual outdoor activities.



Fair

General population
Enjoy your usual outdoor activities.

Sensitive groups
Enjoy your usual outdoor activities.



Moderate

General population
No need to modify your usual outdoor activities unless you experience symptoms such as coughing and throat irritation.

Sensitive groups
Adults and children with lung problems, and adults with heart problems, who experience symptoms, should consider reducing strenuous physical activity, particularly outdoors. Consult your physician.



Poor

General population
Anyone experiencing discomfort such as sore eyes, cough or sore throat should consider reducing activity, particularly outdoors.

Sensitive groups
Adults and children with lung problems, and adults with heart problems, should reduce strenuous physical activity, particularly outdoors, and particularly if they experience symptoms. Older people should also reduce physical exertion. Consult your physician.



Very Poor

General population
Reduce physical exertion, particularly outdoors, especially if you experience symptoms such as cough or sore throat.

Sensitive groups
Adults and children with lung problems, adults with heart problems, and older people, should avoid strenuous physical activity. Consult your physician.



Extremely Poor

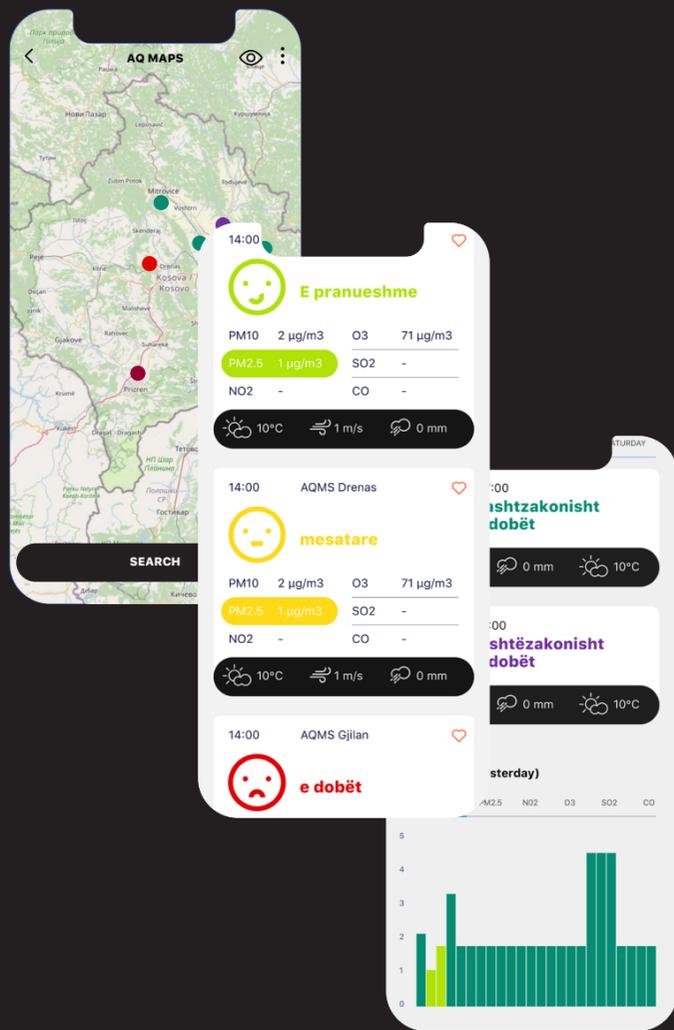
General population
Reduce physical exertion, particularly outdoors, especially if you experience symptoms such as cough or sore throat.

Sensitive groups
Adults and children with lung problems, adults with heart problems, and older people, should avoid strenuous physical activity. Consult your physician.

APP ↘

Air Quality in Kosovo

The Smartphone App provides accessible solutions for IOS and Android platforms by informing citizens on real-time air quality as well as a forecast for the next two days.



AirQuality

Welcome 😊
to the Official
App of 🤔 the
Air Quality 🙄
in Kosovo 🙄

♥♥♥

Both the Air Quality Platform as well as the Air Quality Portal are responsive to all devices, including mobile phones.



Cleaner air for safer health!

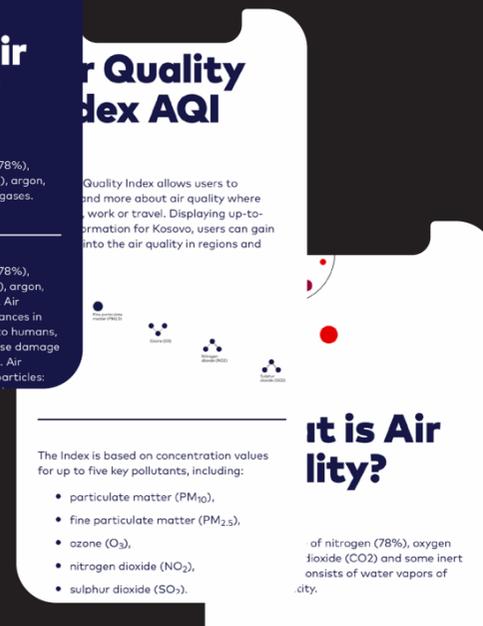
Good air quality is a requirement for preserving the exquisite balance of life on earth for humans, plants, animals and natural resources.



Real-time

PLATFORM ↘ ajri.niph-rks.org

The AirQuality Data Platform and Open Data Service provides to the government and the public recommended actions protect public health. Open Data Service uses real-time and historical air quality data and provides access to raw data, simple mapping, charts, dashboards and API functionality with configurable user/role access model.



PORTAL

airqualitykosova.rks-gov.net

The Air Quality Portal is a public service providing real-time and historic air quality information as well as a 3-day air quality forecast information, visualized on maps powered by Terra Map. It is designed and developed to help citizens get information about the pollution levels and to advise how to reduce the impact of pollution on citizen's health.

Monitoring stations

Brezovica	O3	92.0 µg/m3
Dardhishtë	PM2.5	40.2 µg/m3
Drenas	PM2.5	43.2 µg/m3
Gjilan	PM2.5	53.6 µg/m3
Hani i Elezit	PM2.5	37.1 µg/m3
Mitrovica	PM2.5	41.1 µg/m3
Mobile	PM2.5	67.5 µg/m3
Obiliq	PM2.5	33.9 µg/m3

Data section

Air quality from the last 24 hours for monitoring stations

Station	24h	30d	365d
Brezovica	24h	30d	365d
Dardhishtë	24h	30d	365d
Drenas	24h	30d	365d
Gjilan	24h	30d	365d
Hani i Elezit	24h	30d	365d
Mitrovica	24h	30d	365d
Mobile	24h	30d	365d
Obiliq	24h	30d	365d
Palaj	24h	30d	365d
Peja	24h	30d	365d
Pristina, KHMI	24h	30d	365d
Pristina, Rilindja	24h	30d	365d

National Network for Air quality Monitoring

Responsible Instituti
body: Hidrometeorologjik i Kosovës
Network country
type: Str. "Lidhja e Pejes", no number, Prishtine, Kosovo

Prishtina, Rilindja
2021-02-26 15

Index: Poor

PM10	100 µg/m3
PM2.5	50 µg/m3
NO2	30 µg/m3
O3	43 µg/m3
SO2	9 µg/m3
CO	13 mg/m3

General population
Anyone experiencing discomfort such as sore eyes, cough or sore throat should consider reducing

Data section

Air quality from the last 24 hours for monitoring stations

Station	24h	30d	365d
Brezovica	24h	30d	365d
Dardhishtë	24h	30d	365d
Drenas	24h	30d	365d
Gjilan	24h	30d	365d
Hani i Elezit	24h	30d	365d
Mitrovica	24h	30d	365d
Mobile	24h	30d	365d
Obiliq	24h	30d	365d
Palaj	24h	30d	365d
Peja	24h	30d	365d
Pristina, KHMI	24h	30d	365d
Pristina, Rilindja	24h	30d	365d

National Network for Air quality Monitoring

Responsible Instituti
body: Hidrometeorologjik i Kosovës
Network country
type: Str. "Lidhja e Pejes", no number, Prishtine, Kosovo

Information about air pollution consists of two elements: current air quality based on measurements in 12 Kosovo official monitoring stations and air quality forecast based on mathematical models.

Prishtina Agglomeration

Air quality from the last 24 hours for monitoring stations

Station	24h	30d	365d
Brezovica	24h	30d	365d
Dardhishtë	24h	30d	365d
Drenas	24h	30d	365d
Gjilan	24h	30d	365d
Hani i Elezit	24h	30d	365d
Mitrovica	24h	30d	365d
Mobile	24h	30d	365d
Obiliq	24h	30d	365d
Palaj	24h	30d	365d
Peja	24h	30d	365d
Pristina, KHMI	24h	30d	365d
Pristina, Rilindja	24h	30d	365d

National Network for Air quality Monitoring

Responsible Instituti
body: Hidrometeorologjik i Kosovës
Network country
type: Str. "Lidhja e Pejes", no number, Prishtine, Kosovo

Data from monitoring stations

Provisional data.
It is possible that there are missing data points for some parameters at interspersed periods of time. This situation may be caused by a hardware or software failure.

Parameters: 7 selected items
Stations: 13 selected items
Time resolution: hourly, daily, monthly, 8h, 24h, 48h
Time range: Select date, Apply

PM10 µg/m3 :

PM2.5 µg/m3 :

NO2 µg/m3 :

Thousands of posters and brochures containing information about the importance of the quality of air as well as the illustrated health recommendations were developed in Albanian, Serbian and English.

Cleaner air for safer health

Air pollution

Air pollution is a complex mix of particles and gases released in the atmosphere that are harmful to humans and living environment.

The main sources of air pollution in Kosovo are caused by human activities such as domestic heating, road transport, combustion of fuels in power generation, industrial processes and municipal and agricultural waste.

Air pollution affects your health

Microscopic air pollutants enter your body, finding their way deep into the lungs and bloodstream, affecting your respiratory and cardiovascular systems increasing the risk of heart attacks and stroke.

Sensitive groups to air pollution

Children, pregnant women, older people and people with existing respiratory and cardiovascular disease are more sensitive.

Reduce air pollution

Try to avoid using coal or wood for heating, and if you use a wood stove make sure you are burning dry untreated wood.

Try to reduce the number of car trips and consider cycling and walking as alternatives for short trips, away from busy roads.

Dispose of waste through regulated waste collection services or at official disposal sites. Avoid burning waste.

Discuss air pollution with your friends and neighbours and share your knowledge and ideas on how to reduce air pollution in your daily activities.

Protect your health from air pollution

Check regularly on the level of air pollution by visiting airqualitykosova.rks.gov.net and ihmk-rks.net/ajri, and for health related recommendations visit ajri.niph-rks.org

The Air Quality Index (AQI) helps you to understand what the quality of the air around you means for your health, enabling you to change your behavior to reduce your exposure to poor air quality.

Install the free smartphone application **Air Quality in Kosovo** to find out the air quality in your area.



Download the free smartphone app for real-time information on air pollution.



Cleaner air for safer health!

Check on the level of air pollution by visiting airqualitykosova.rks.gov.net and ihmk-rks.net/ajri and for health related recommendations visit ajri.niph-rks.org

What air quality means?
Air quality is a measure of how clean or polluted the air is. Good air quality refers to air which is clean, clear and free from pollutants such as smoke, dust and smog among other gaseous impurities. Air quality is determined by assessing a variety of pollution indicators.

What is air pollution?
Air pollution is a complex mix of tiny particles and gases of both natural and human origin. It refers to the release of substances in the atmosphere that are harmful to humans, wildlife, vegetation, water and soil.

Sources of air pollution
The main sources of air pollution in Kosovo are caused by human activities such as domestic heating, road transport, combustion of fuels in power generation, industrial processes and municipal and agricultural waste.

Particulate matter (PM) and nitrogen dioxide (NO₂) are both major components of urban air pollution. Particulate matter levels vary over short distances; in general, the closer you are to the sources, the more you breathe in.

Behaviour Advisory for General population
The air quality is good. Enjoy your usual outdoor activities.

Behaviour Advisory for Sensitive groups
The air quality is good. Enjoy your usual outdoor activities.

Behaviour Advisory for General population
Enjoy your usual outdoor activities.

Behaviour Advisory for Sensitive groups
Enjoy your usual outdoor activities.

Good **Fair**

How can you help to reduce air pollution?
Reduce your personal contribution to air pollution whenever you can.

- Heating:** Try to avoid using coal or wood for heating. Where solid fuel-burners are used, we recommend low emission or energy efficient models. Think about what you burn and if you use a wood stove make sure you are burning dry untreated wood.
- Transport:** Try to reduce the number of car trips and consider cycling or walking as alternatives for short trips, away from busy roads. Take opportunities to turn off the car engine while you are waiting at traffic lights or for someone to join you in the car.
- Behavior:** Dispose of waste through regulated waste collection services or at official disposal sites. Avoid burning waste.
- Conversation:** Discuss air pollution with your friends and neighbors and share your knowledge and ideas on how to reduce air pollution in your daily activities.

Information on air quality can be found by visiting airqualitykosova.rks.gov.net and ihmk-rks.net/ajri with health related advices at ajri.niph-rks.org

Download the free smartphone app for real-time information on air pollution.

Detailed recommendations targeting pregnant women, children, and the elderly are provided in public health centres across the country.

Fact Sheet for people with chronic diseases and the elderly

Key Facts
Air pollution is the single largest environmental health risk in Europe. Every year, air pollution causes nearly 500,000 premature deaths. Approximately 290,000 of these deaths occur in high-income countries, and 190,000 in middle-and low-income countries.¹

WHO estimates that in 2016, some 58% of outdoor air pollution-related premature deaths were due to ischemic heart disease and strokes, while 18% of deaths were due to chronic obstructive pulmonary disease and acute lower respiratory infections respectively, and 6% of deaths were due to lung cancer.²

Symptoms like coughing, phlegm, wheezing, chest tightness, chest pain, palpitations, shortness of breath and unusual fatigue are the most common symptoms among the people affected by the air pollution.

People with lung disease (Chronic obstructive pulmonary disease—COPD, asthma, lung cancer) or **heart disease** (heart attack, congestive heart failure, coronary artery disease) and **diabetics** are more sensitive to air pollution.

Health? If the AQI is poor, it is recommended to wear a mask and avoid being outdoors for long periods of time. If the AQI is very poor, it is recommended to stay indoors and avoid strenuous activities.

Fact Sheet for health risks to pregnant women

Key Facts
When a pregnant woman breathes polluted air, the harmful particulate matter can reach the placenta and harm the fetus which is particularly susceptible to environmental pollutants.

Studies have shown that chronic exposure to high levels of PM_{2.5} (particulate matter with a median diameter of less than 2.5 microns, approximately 1/30th the width of a human hair) can increase the risk of miscarriage, premature birth and low birthweight, exposure to air pollution for a pregnant woman and her baby can lead to long-term consequences.

Beside increasing the risk of miscarriage, premature birth and low birthweight, exposure to air pollution for a pregnant woman and her baby can lead to long-term consequences.

Studies have shown that exposure to high levels of air pollution can adversely affect children's brain development, cognitive development and IQ levels.^{3,4}

Health? If the AQI is poor, it is recommended to wear a mask and avoid being outdoors for long periods of time. If the AQI is very poor, it is recommended to stay indoors and avoid strenuous activities.

Fact Sheet Air Pollution and Children's Health

The physiology of children makes them uniquely vulnerable to the type and degree of their exposure to air pollution.

Key Facts
Clean air is of special importance for children, since they breathe a greater volume of air relative to their body than adults, putting them at a greater risk of accumulating higher concentrations of pollutants in their bodies.

Around 300 million children currently live in areas where outdoor air pollution exceeds international guidelines by at least six times.

In total, around 2 billion children live in areas that exceed the World Health Organization annual limit of 10 µg/m³. Almost one million children die from pneumonia each year, more than half of which are directly related to air pollution.

Millions more suffer from respiratory diseases that diminish their resilience and affect their physical and cognitive development.

Effects to children health
Air pollution is known to cause breathing problems, lung and heart diseases, such as asthma. Studies have shown that children are up to four times more likely to have significantly reduced lung function in adulthood if they live in highly polluted areas.⁵ Because of their size, children inhale more air per kilogram of body weight than adults. When air pollutants enter their body, they can:

- Have effects on various organs and systems.
- Make it harder to breathe, irritate lungs and airways.
- Make them cough, splutter, wheeze, sneeze, dizzy and can make eyes itch.
- Affect their immune system, so that they can catch infections more easily.
- Early life exposure to PM_{2.5} was associated with a reduction in fundamental cognitive abilities, including working memory and attention disorders.

What can you and your children do to protect their health?

- Check the Air Quality Index (AQI) in your area on airqualitykosova.rks.gov.net and ihmk-rks.net/ajri or download the **Air Quality in Kosovo** smartphone app by scanning the QR code below.
- Parents can play an important role in protecting their children from exposure to air pollution.
- Encourage a reduction in car use, especially for short distances.
- Teachers can choose not to go outside for physical education classes on smoggy days.
- Select the route to and from school wisely to avoid polluted areas.
- When air quality is good, walk or cycle to school; it is good exercise and reduces exposure to air pollution.
- Use public transport when possible to do so.
- Stay at home when air quality outside is poor.
- Improve & maintain good health and strengthen your immune system. Maintain a healthy diet with lots of fruit and vegetables.

For health related recommendations visit ajri.niph-rks.org

Health? If the AQI is poor, it is recommended to wear a mask and avoid being outdoors for long periods of time. If the AQI is very poor, it is recommended to stay indoors and avoid strenuous activities.

ABOUT THE FIFTH DAY OF LOCK—DOWN, THE AIR GOT BETTER

"The heavy, polluted air we breathe everyday worsened slowly and throughout a lifetime. None of us remember the specific day when we woke up and realized how bad it got, but each and every person in Prishtina remembers day five of the first lockdown, and how good the air felt then..."

Uta Ibrahim, the first Kosovar woman to climb Mount Everest, writes about her evolution as an environmentalist and mountain athlete.

In 2011, city life had little to offer to me, so I headed for the mountains. Peak after peak, the Kosovo mountains connected me with the wider world, with mountains stretching across the globe and ideas surpassing the wildest of my imagination. In 2017, I became the first Albanian woman to climb Mount Everest; it was the most challenging climb. At the time, I was one of only around 30 European women to have done so. Now there are over 600 who have conquered the world's highest peak. Before Everest I climbed a few other peaks, including Mont Blanc. Now, as I write this piece my mind is traveling back to the five Himalayan peaks I have summited, while knowing that the nine others that were waiting for me this year are to rest, for a seemingly infinite amount of time.

I started writing this several years ago with the hopes of making an environmental point by sharing my concern with you about the air we breathe every day—especially throughout winter. It was wintertime when I first sat down to give this point an audience. I started sketching my thoughts one day after my usual 20-kilometer run through thick smog, hour-long swim, and two hours of crossfit. Back then I did this routine every day; I did it to be able to call myself an athlete and allow myself to dream bigger than the mountains of my country.

I had thought of writing this for a very long time, but I feared words would lessen the weight of the issue, and that my lack of skill in writing would undermine my true ambition for this message. I feared that in the context of my people rebuilding their lives, the demand for a slowdown to better our air, so that I can breathe better air and be a better athlete, would make me sound like a hypocrite and someone who has lost touch.

AND IT PROBABLY WOULD.

But not today. I sat down again after 40 kilometers of cycling around Prishtina with 10 other people. I did this after my daily 20 km run in Germia Park, early in the morning, where I met several other fellow citizens. Walking down the street towards my apartment, I could smell the greenery; it rained a little, but the sky is blue again. I am back to writing this piece and the contrast to the context of how it started feels worlds apart. It is the end of 2020, and Prishtina is now in partial lockdown. In the first part of 2020 it was in full lockdown for almost three months.

The heavy, polluted air we breathe everyday worsened slowly and throughout a lifetime. None of us remember the specific day when we woke up and realized how bad it got, but each and every person in Prishtina remembers day five of the first lockdown, and how good the air felt then. It hit us all at the same time—and then we had about three months to reflect on it.



WE WOULD TAKE PICTURES OF THE SKIES FROM OUR WINDOWS.

We appreciated the limited time we had outside, smelling spring in the air. We felt the environmental benefits of our absence with utmost pleasure and almost unconsciously began shaping new plans for our new lives. We had three months to figure out how to be better citizens, create places for nature and exercise, and think about ways we could engage with nature, burn less fuel, and introduce others to these ideas.

Today, I didn't run for the two peaks in Nepal or Pakistan. The Annarpurna massif in the Himalayas rests quietly in the deepness of my secondary plans. The fifth day of lockdown and the three months of thought and reflection taught me the humble lesson of dreaming big in my own little place.

The walks to the market for daily purchases taught us we can use the same pair of legs to walk to work in good weather. The list of teachings is long, but everyone in lockdown Prishtina knows every bit of it by heart. And so this piece is suddenly not as hard to write and not as conflicting as before. The nature that I give myself to every day helped me—helped all of us—understand our impact. It showed us our responsibilities. It taught us sense.

Today, I didn't run for the two peaks in Nepal or Pakistan. The Annarpurna massif in the Himalayas rests quietly in the deepness of my secondary plans. The fifth day of lockdown and the three months of thought and reflection taught me the humble lesson of dreaming big in my own little place. So, as I happily dispatch this message to the team behind Era Dimen, I make room for final planning and arrangements to start my first hikes with children and parents in the Kosovo mountains.

I figured that planting the seeds of curiosity and appreciation for nature at a very early age would help my environmental aims live, stretch wider, and become human aims. And I feel like this is the right time for that for knowledge and decisions based on these human ideals.

'UTA E MALEVE' (UTA AND THE MOUNTAINS)

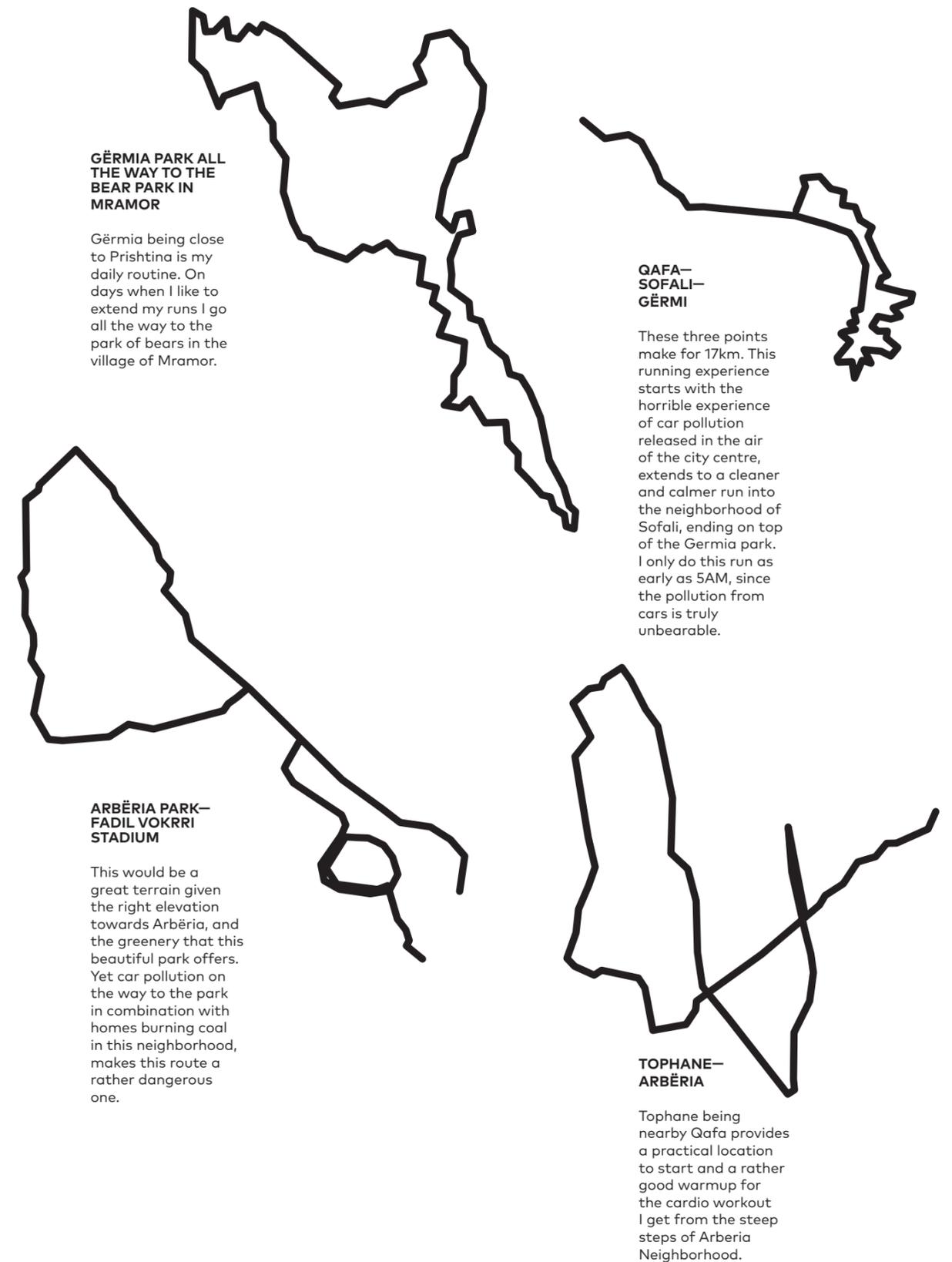
is the illustrated biographical story of Uta. The book was written by Tefta Kelmendi Merran, illustrated by Katarina Nikovola, and published in 2020 through her foundation: The UTALAYA Foundation. Through this foundation Uta aims to inspire and influence children and young people to consider nature in their dreams for success.

RUN FOR SHARR

is Uta's first documentary aiming to raise awareness for protecting the Sharr Mountains in Kosovo.

UTA ONLY STARTED TO HIKE AND CLIMB PROFESSIONALLY IN 2011

Five years later she was the first Albanian woman to climb Everest. Other important climbs include: Everest, Lhotse, Manaslu, Cho Ouy, Gasherbrum 1, and Annapurna.



GREEN SPACES IN PRISHTINA

One sure way to improve our air quality is to incorporate more greenery in our cities and towns. We spoke to Bardha Meta, an environmental architect, about her ideas on how to make our air breathable again:

"Out of 22 neighborhoods, only six in Prishtina have common green spaces or parks. The Pejton and Lakrishte residential neighborhoods closest to the city center do not have any common green areas to 'get away' from the city noise and air pollution."

As a Prishtina citizen, seeing our city topping the lists on global air pollution rankings is saddening. It makes you wonder if air quality was always so low in the previous decades before we became aware of it through real-time online data.

With big polluters on the outskirts of the city, we always imagined that air quality was poor. The Thermo Power Plants Kosova A and Kosova B provide Prishtina residents electricity and heating using coal. Adding on emissions from hundreds of thousands of vehicles that continuously cross the city and a lack of green space, we can start understanding how this pollution level came to be.

On both a global and city level, air pollution is a challenge, but one that we can fight. This article outlines ways to deal with pollution from an urban perspective, and aims to raise awareness about one of the factors contributing to air pollution in Prishtina: a lack of Urban Green space. According to various recommendations by the World Health Organization, the required Urban Green Space (U.G.S.) in cities is nine square meters per person.

This research aims to analyze the situation in Prishtina, identify existing greenery, and compare real statistics with the ideal amount of green space.

RECOMMENDATIONS FROM AN ARCHITECTURAL AND URBAN DESIGN VIEW

Solving the problem of air pollution in Prishtina requires a multi-sector strategy on both the municipal and national levels. Two important strategies are improving public transportation to encourage its wider use and pushing the Government to produce clean energy for electricity and heating. Furthermore, in the UK, government research shows that deterring polluting vehicles from city and town centers is currently the quickest, most cost effective way to cut levels of nitrogen dioxide pollution.

Another urban intervention that could be useful is the addition of new urban green ecosystems, which help reduce air pollution in different ways. One important way that green

ecosystems reduce air pollution is by mitigating the urban heat island (UHI) phenomenon. The UHI effect refers to cities being one to three degrees hotter than rural areas because of heat being reflected from buildings, machines, and materials like concrete. This increased temperature leads to more energy used for heating and cooling systems, and thus increases air pollution and greenhouse gas emissions.

To mitigate this effect, urban green areas provide two things: shade and moisture. Large trees and rooftop greenery provide shade from sunlight, which decreases city temperature. The other process that trees undergo is called transpiration, during which moisture travels from the roots to the leaves and into the atmosphere.

Releasing moisture into the air helps reduce high temperatures. An experiment conducted from July 2012 to June 2013 in Strasburg, France showed that adding public trees reduced PM10 pollution in the city atmosphere by seven percent. This clearly demonstrates how useful urban green spaces are in the fight against pollution.

THE PRISHTINA CONTEXT

In a Prishtina-specific context, a possible solution for cleaner air could be providing reachable parks for all residents of the city.

The European Environment Agency (EEA) recommends that people should have access to green space within 15 walking minutes (Stanners Band Bourdeau, 1995), and the English standard ANGSt (Accessible Natural GreenSpace Standard, Natural England, 2010) recommends that urban populations should have an accessible green space no more than 300 meters from home.

By enforcing these standards and creating more green spaces, Prishtina residents would be able to enjoy their own neighborhood park and cleaner air. As not every neighborhood in Prishtina has enough free space to create brand-new parks, we mapped unused barren fields throughout the city which could be transformed into green landscapes.

PLANTING AVENUE TREES

Environmental studies suggest that depending on the way they are arranged, avenue trees can serve as a strong barrier for winds and air polluting particles. Furthermore, if tall trees are planted close to each other on narrow streets, they can act as green roofs. These green roofs create barriers to emissions from vehicles and reduce air pollution. If avenue trees are combined with low hedgerows along the roadside, they reduce pedestrian exposure to particulate matter pollution by 14 percent.

Cities were created all around the world out of people's need to be closer to trade, resources, and social life. However, uncontrolled urban growth has many downsides, including the destruction of green areas and natural ecosystems.

WHAT TYPE OF GREEN SPACE?

The types of green space that were considered for this study are dense green spaces or tall greenery. The urban green space calculated were tree-filled, high oxygen producing urban parks. Prishtina does have other "open" green areas and fields, which were not calculated as existing UGS for this study. However, many of them have potential to be turned into dense green areas as well,

Prishtina's Neighborhoods
Map of current and needed green

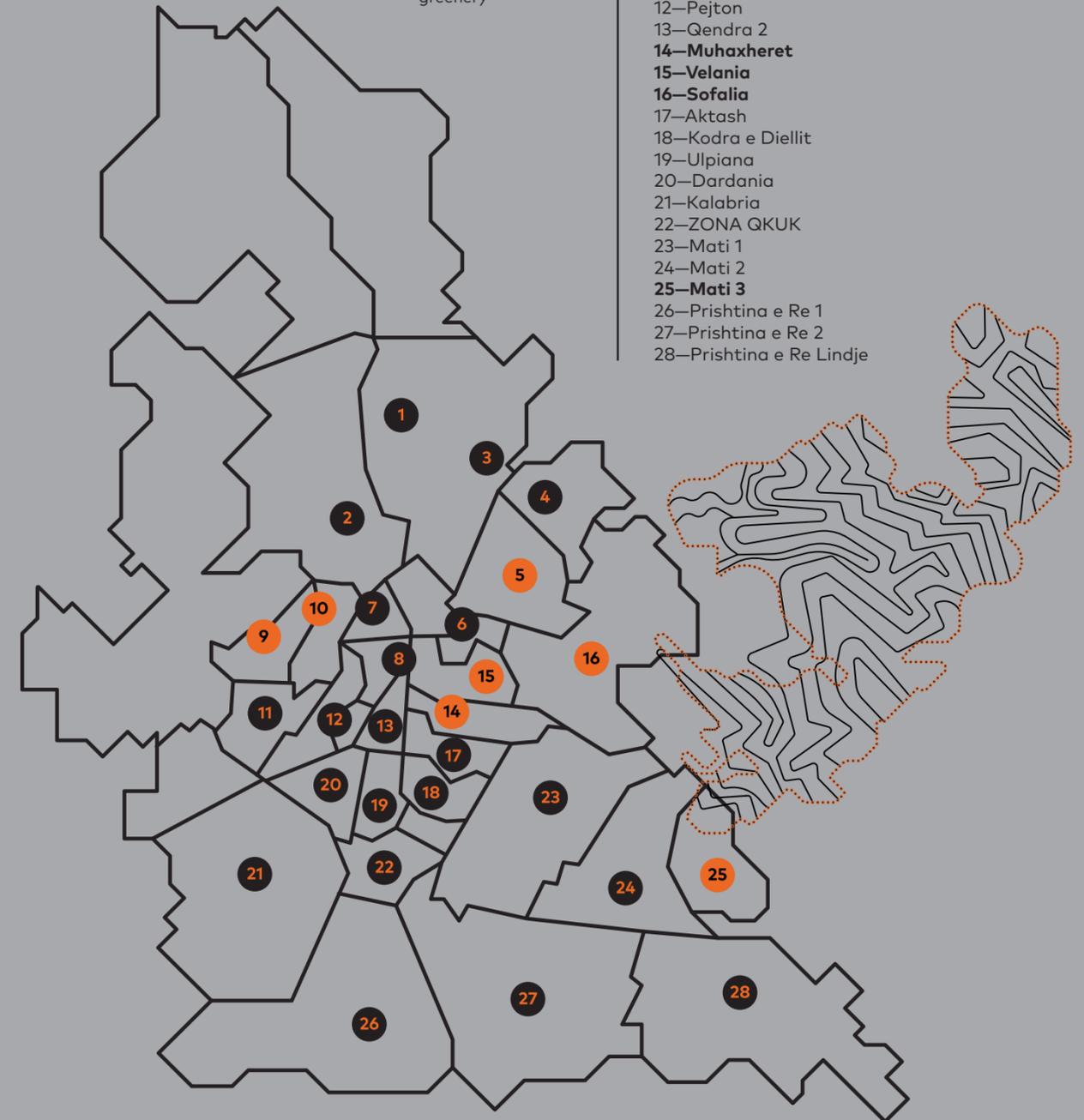


Neighborhood with greenery.



Neighborhood without greenery

- 1—Kodra e trimave 2
- 2—Kodra e trimave
- 3—Medrese
- 4—Vreshtat
- 5—Taslixhe
- 6—Vellusha
- Qyteti i vjeter
- 7—Tophane
- 8—Qendra 1
- 9—Arberia 1
- 10—Arberia 2
- 11—Arberia 3
- 12—Pejton
- 13—Qendra 2
- 14—Muhaxheret
- 15—Velania
- 16—Sofalia
- 17—Aktash
- 18—Kodra e Diellit
- 19—Ulpiana
- 20—Dardania
- 21—Kalabria
- 22—ZONA QKUK
- 23—Mati 1
- 24—Mati 2
- 25—Mati 3
- 26—Prishtina e Re 1
- 27—Prishtina e Re 2
- 28—Prishtina e Re Lindje



DOES EVERY NEIGHBORHOOD IN PRISHTINA HAVE A GREEN SPACE?

The optimal green area per neighborhood was calculated by taking into account the area of each neighborhood and the population of Prishtina, with a density of 380 people per square kilometer. By multiplying the area of the neighborhood by the population density of Prishtina, we can estimate the number of residents and the ideal corresponding green space for each neighborhood (nine square meters per person).

Within its municipal limits, Prishtina is surrounded by the Germia nature protected area on the east;

Out of 22 neighborhoods, only six have a common green space or park. In fact, the Pejton and Lakrishte residential neighborhoods closest to the city center do not have any common green area.

Existing parks in Prishtina comprise 24 hectares. According to the calculations set by European standards, the required total green area for Prishtina is 184.2 hectares. As such, Prishtina is lacking 160.2 hectares of urban green space.

The most common types of green spaces around the city are private green gardens (which are inaccessible) and avenue trees. So, what the city is lacking is dense urban public green space for its citizens.

TYPES OF EXISTING PUBLIC SPACES

According to the official list published by the Municipality of Prishtina on public spaces, 61% of existing public spaces are "green spaces." Parks make up the bulk of the public spaces, yet within the city there is still a lack of sufficient green space. This shows the general lack of public spaces in the city.

BESIDES PARKS, WHAT ELSE?

Proximity to nature and greenery has been associated with health benefits like increased sense of wellbeing and peace. In the summer season plants also affect the microclimate by shading and cooling spaces around streets and buildings, mitigating the heating effects of concrete.

Since the city is already densely built in its limits, the addition of new parks could require demolishing some of the built spaces; this is both politically and practically challenging. Luckily, there are novel solutions. Vertical greenery, such as green walls and climbing plants can be used as a solution for cooling buildings and affecting the microclimate. Planting more avenue trees, shared urban gardens, and green roofs can also be integrated into the urban fabric.

Vertical greenery, such as green walls and climbing plants can be used as a solution for cooling buildings and affecting the microclimate. Planting more avenue trees, shared urban gardens, and green roofs can also be integrated into the urban fabric.

Germia connects with the Gollak mountains and many agricultural fields outside of the urbanized center. Our study considers only the metropolitan urban center of the city and excludes rural areas and nearby settlements. The calculations are focused on the need for new greenery only within the urban built limits.

From the graphs we can see that with Prishtina's main parks (City Park, Germia Park (protected area), Arberia Park and Taukbahqe park), their respective neighborhoods fulfill the required green area conditions. However, the rest of the neighborhoods in Prishtina lack sufficient green spaces.

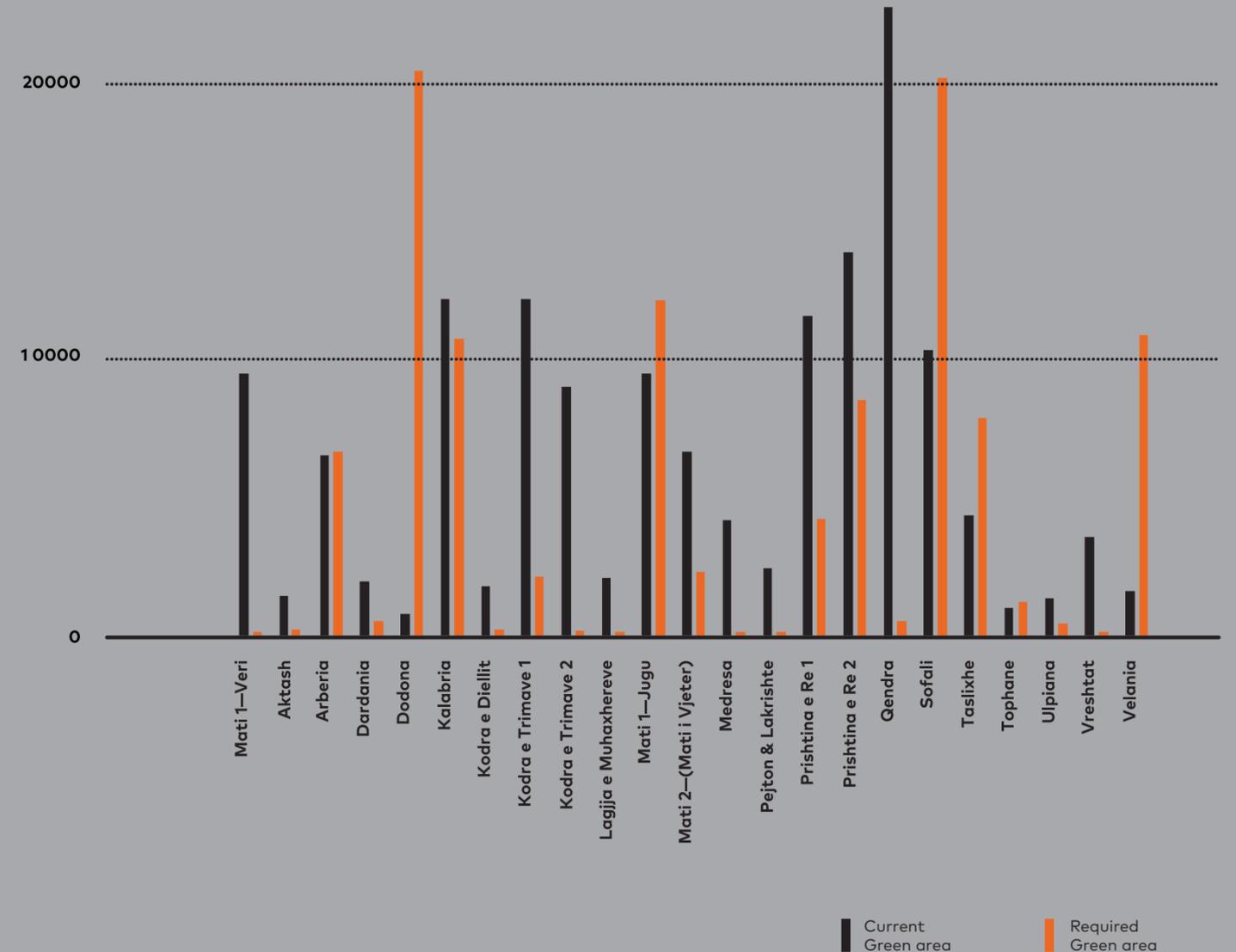
WHAT GREENER CITIES CAN WE LOOK UP TO?

The European ranking of capitals by greenery places Prishtina squarely in the middle. The greenest cities include Sarajevo, Vaduz, and Ljubljana.

The bigger metropolitans with populations above two million are Kiev, Berlin and Rome. When examining the most sustainable cities index, the cities on top of the list are also the greenest ones.

Cities were created all around the world out of people's need to be closer to trade, resources, and social life. However, uncontrolled urban growth has many downsides, including the destruction of green areas and natural ecosystems.

Learning to live in harmony with nature is an admirable goal that promises a hopeful future for our cities.



A FUTURISTIC MINDSET TO SAVE US FROM HISTORICAL DEGRADATION

Over the last few years in Kosovo, there has been a growing debate about air pollution and climate change. Philosopher Shkelzen Maliqi talks with us about the political history of environmentalism in Kosovo, pessimism and activism, and his hope for a futurist world.



It is true that reactions against air pollution usually come during critical days, mostly in the winter, when pollution is at its worst and truly puts public health at risk. That is when people are most motivated to react and join debates; after the fact, the majority of citizens becomes passive.

For a long time, Kosovo lacked a complete awareness about the consequences of environmental degradation and air pollution, despite having many reasons for concern beginning in the '60s, when intensive industrialization began taking place in Kosovo. Prior to that, Kosovo was an underdeveloped, agricultural region. During the industrialization period, investments were mostly focused on the construction of Kosova A and B Thermo Power Plants, the Trepca mines and metallurgic complexes, the Feronikeli mines and foundries, and the SharrCem cement factory. All of these heavy industries utilized polluting technology that contaminated water and air. While experts discussed the consequences among themselves, there were no debates or social dialogues.

Only recently, reactions to air pollution which were not sporadic and followed only by ad hoc actions have become more frequent in Prishtina and some other cities. These movements have mobilized many people who now aim to hold institutions accountable for reducing pollution throughout Kosovo. Social media is also contributing to this phenomenon, as environmental activists use digital channels to publish news about pollution and argue for intervention. Social media is much more effective than both traditional media outlets and internet-based portals, which usually do not employ journalists who are professional in the field of environmental issues.

It is true that reactions against air pollution usually come during critical days, mostly in the winter, when pollution is at its worst and truly puts public health at risk. That is when people are most motivated to react and join debates; after the fact, the majority of citizens becomes passive. The reason is perhaps because reactions to air pollution do not provide immediate, satisfactory results. However, as the measures that need to be enacted to guarantee cleaner air must be structural and long-term, so should the engagement from activists and citizens.

The difference in the intensity of mobilization can be seen in cases

The educational system in Kosovo has become absolutely inert; there is no will or capability to adapt it to contemporary realities. I have often lobbied over the past few years to integrate SchoolMe, a digital educational platform for elementary schools, in Kosovo and Albania.

when there is a possibility for the government to implement immediate corrective measures. For example, some time ago it was revealed that an investor was granted approval to build a housing complex near the shores of Lake Badovc, which is a drinking water source for Prishtina residents. About 30 thousand people supported the initiative to annul the permission, and it was ultimately suspended. Hopefully, this and other similar "victories" against active and potential polluters encourages people to think about the importance of more substantial reactions, debates, and actions. Sustained vigilance can mitigate the tendency to hold the defeatist and fatalist beliefs of most citizens; this is crucial, as all citizens are ultimately subject to the decision-making that affects the environment and society.

You rightfully mentioned the political crises that kept Kosovo at a standstill, and I think that these crises also reflect the overarching defeatist mentality and mood in Kosovar society. This means that social and political processes that occur here are accepted as fatalities that are caused externally, and people do not understand that we all participate in these processes, and that our actions—and inactions—contribute to these "fatalities."

Naturally, there are always civil society groups and experts that are committed and attuned to the necessity of awareness, but unfortunately their impact is

marginalized and minimized. A reluctance to focus on global issues like pollution and the environment was instilled by those considered to be the "fathers of the nation," who measured every process based on narrow and local interests and considered Kosovo as separate from global processes. A well-known academic and professor of Rexhep Qosja's caliber issued a stern reaction in Koha Ditore in the '90s against Al Gore's book that shed light on the dangers that our planet could be subject to as a result of global warming. He argued that Kosovars should not deal with global issues, because we should focus all of our efforts on national liberation.

I think that this book was a timely initiative that raises awareness about air quality in Prishtina; now we have measurements from other cities, too.

This project has brought a new standard regarding the accuracy of pollution measurements, which has a practical side because one can plan outdoor activities based on the quality of the air at any given time. This does not only help people who suffer from diseases that render them sensitive to air pollution, but it also helps citizens and activists who now have cumulative data about average values and the long-term risk that is posed to Kosovo residents.

I have followed media and portals lately to see whether they update their information about air pollution readings, and I have noticed that they do not do this anywhere—not even on the weather forecast sections. The US Embassy monitoring only shows up on the most critical days, and citizens are left to find information through the application.

How does education relate to this debate? How can we create a platform that would help reflect air quality information from scientific studies and other environmental issues in curricula, in order to initiate civic activism among the younger generations?

The education system in Kosovo has become absolutely inert; there is no will or capability to adapt it to

contemporary realities. I have often lobbied over the past few years about the integration of SchoolMe, a digital educational platform for elementary schools, in Kosovo and Albania. It was developed by a private company in London owned by Iris Gjinovci; it was previously piloted in Kosovo and Albania, and it has been shown to be very successful. However, conservative ministerial officials have hesitated to do experimental trials with this platform, which has been built to line up with the current curricula. It seems that last year, the Ministry of

that is not very suitable for, say, bicycles. Its narrow roads offer few possibilities for the creation of bike lanes. Prishtina can only be salvaged by macro planning for mobility and transportation. The planners would have to employ imagination and try to solve problems that seem "unsolvable" by turning the premises of the problem over. Only a futurist mindset can save Prishtina from suffocation and frequent traffic collapse. While all of us can do something individually, like choosing to walk when in town, this in turn exposes us to more pollution than

The Prishtina that I live in is not very friendly to alternative and environmentally friendly modes of transportation, because it has elevated areas and chaotic traffic that is not very suitable for, say, bicycles. Its narrow roads offer few possibilities for the creation of bike lanes. Prishtina can only be salvaged by macro planning for mobility and transportation.

Education, Science and Technology agreed to test this platform out, but the resignation of the Haradinaj government made it impossible. I am mentioning this project because it pertains to the new generation, which is growing up with computers and smartphones and does not care much about ex cathedra teaching, but seek interactive methods. I think that if schools would become digitized, students would have the possibility to learn about air pollution readings on displays wherever they go to school.

You do not use a car on a daily basis. What would you suggest to fellow citizens who want to help the reduction of air pollution?

The Prishtina that I live in is not very friendly to alternative and environmentally friendly modes of transportation, because it has elevated areas and chaotic traffic

people who drive or take the bus.

I once read that in Caracas, Venezuela, chaotic traffic was solved by building cable cars between the city's hills in order to facilitate urban transportation. Prishtina also lies between a few hills that could be used to bypass travel through the center of the city. Another project that I proposed is to build a new political capital somewhere in Dukagjin (near Klina, Gjakova) or the Malisheva plateau, similar to what happened with Ankara and Brasilia, but leave Prishtina as an educational, cultural and economic center.



PRISHTINA
BREATHING
KILLS

Nga
mushkëta
e femijëve
në

A
I PA
ESH
DR
N



HELM

TRAIN
PËR NDOITJE
TË MJEDISIT



“We are choking,” “Prishtina takes my breath away,” “Help me, I can’t breathe:” these are a few of the many slogans on the banners held by hundreds of Kosovars who united several times to protest against air pollution in recent years. In order to call on institutions to take action as well as raise awareness on the health implications of poor air, massive protests against air pollution have been organized over the past few years.

In December 2016, Civil Society activists organized their first protest in Prishtina under the slogan ‘Protect Your Children From the Invisible Killer.’ This protest aimed to raise awareness regarding the risk of air pollution as well as call on institutions for more transparency and accountability about the dangerous levels of air pollution.

As a response, Prishtina leadership took some measures like banning cars from entering the city center; however, these were considered too slow and insufficient by activists. The partial response led them to organize another protest on January 31, 2018 under the name ‘Hazardous’. This protest was joined by hundreds of people in efforts to put pressure on the government and municipalities to take more sweeping action in response to pollution.

Local and international media supported this initiative by providing major coverage of the protest.



Montagesystem
und Automation
www.hochrain...

NIXEN FRYMEN



HAZARDOUS

-rrezikshmëri e lartë





THE EFFECTS OF AIR POLLUTION IN THE KOSOVO ECONOMY

Economist Besa Zogaj writes about the interrelationship between air pollution, sickness, and economic productivity.



It is important that we remember that air pollution has a very direct negative impact on the economy. The cost of air pollution is high, and on a global level, it's increasing almost exponentially. The same is true for Kosovo.

It is clear that more hospital admissions, health expenditures and sick or restricted activity days leads to labor productivity losses at the annual level of tens of millions of euros.

I run a local think tank dedicated to economic analysis, and formerly served as a Deputy Minister for Trade and Industry in the Government of Kosovo. When media and the public speak of air pollution, it is normal that we usually think of all the negative health consequences, the pulmonary diseases, the effects on people who have asthma. We all have families, children, parents, and are worried about them breathing air we know is polluted. But it is important that we also remember that air pollution has a very direct negative impact on the economy.

The cost of air pollution is high, and on a global level, it's increasing almost exponentially. The same is true for Kosovo.

Experts warn of the negative impacts on the economy, either through the cost of increased healthcare expenditures, losses of days of work, or simply the reduced workforce. It's clear that more hospital admissions, health expenditures, and sick or restricted activity days will lead to massive labor productivity losses.

How exactly does the air pollution impact our economy?

The most disturbing impact of air pollution is the large number of premature deaths. According to the OECD, the number of premature deaths due to outdoor air pollution is projected to increase from three million people globally in 2010 to a total of six to nine million people in 2060. In Kosovo, there are no firm data on air pollution, but a number of civil society organizations recently reported 3,700 recorded deaths from air pollution and smoking related illnesses in Kosovo in one year. If we look at the global trajectory, the

number of these deaths in Kosovo may double to a shocking count of seven or eight thousand terminal cases.

Experts warn of the negative impacts on the economy, either through the cost of increased healthcare expenditures, losses of days of work, or simply the reduced workforce. It's clear that more hospital admissions, health expenditures, and sick or restricted activity days will lead to massive labor productivity losses. According to the OECD report on air pollution, the number of cases of bronchitis is projected to increase substantially, tripling for both children and adults. This again has a direct impact on health expenditures and productivity.

On the other hand, high levels of concentration of pollutants in the air also reduce crop yields and thus negatively affect agricultural productivity. Kosovars have become acutely aware of the negative consequences of air pollution and for many of them, it impacts not only their long-term health but also immediate economic situation. Real estate prices in areas severely affected by pollution are dropping compared to those which are situated in zones with cleaner air. Massive losses of hundreds of millions of euros will be recorded and a forceful stratification of society will unfold, with poorer people being disproportionately hard-hit, if measures are not taken to analyze and gather quality data and to commit to implementing solutions for fixing the air pollution problem.

While there are costs to decreasing air pollution, there are certainly also untold business opportunities and clear economic benefits associated with policies such as energy diversification, energy efficiency for households, reducing coal usage for household heating, reduction of old car imports, and investing in solar and other clean technologies.

In recent years, Millennium Foundation Kosovo and other donors have started looking with keen eyes on properly understanding the causes and effects of air pollution. That's a very good step. The next step must be a society-wide discussion and government decisions that will take into consideration the enormous economic and societal impact of air pollution.

DAY TO DAY, AND FORWARD TO THE FUTURE, AIR, WE ALL NEED CLEAN AIR.

Poor air quality threatens everyone's health, but the young and the elderly are particularly at risk from pollution. In this section, fifth grader Flatra shares her perspective on air pollution in Prishtina. Xhylije, writing as a 79-year old in Prishtina, shares about the ways that pollution affected her life.

Since writing this piece, Xhylije passed away; we hope that her testimonial plays a small part in furthering her legacy.



Dear friends,

I have asthma and clean air for me means the difference between having a good day and a bad day. Breathing easy or fearing for my life. Being able to go outside and have a walk, or being stuck inside and watching the gray sky from the inside of my house and avoiding my beautiful garden where I tend to my flowers. I like to think of them as a product of cooperation between nature and me.

I was always a walker. I came to Prishtina with experience and education as a seamstress and I walked from our house to my job every day. I walked around the markets and shops to check for the latest materials so I could sew skirts and shirts for my kids. Our house was in the city center so I used to walk from Dubrovnik street, which reminded people of TV scenes from San Francisco with its steep slope, all the way to the green market to get groceries. Prishtina was always muddy and dusty, but I didn't mind getting a bit dirty to catch fresh air.

In the 1980's I started working at the "Kosovarja" cooperative of handicraft producers. I used to visit women in villages to pick their handmade objects made from textile, wood and wool. I was always moving and that suited me fine; I had never been able to sit still.

I just hope we can also have the same colors for the actions taken by government and others responsible for improving air quality. Like, if it's red, you're doing bad and will be voted out, if it's green—good for all, things are changing for the better. If it's yellow, you know... "hurry up, people are waiting."

Prishtina is still kind of dirty and muddy and dusty, one has to admit. Too many construction sites, too many cars. My problem, at this age, is that Prishtina now has dirty air as well. I learned how to read the air quality app on my phone and I dread when the color is red or orange. It means hazardous. I have a smile on my face when I see the green color, but I'm always confused by the yellow. I know that it means for people with lung problems or asthma not to go out, but I'm always thinking maybe yellow is not that bad, maybe it's like the traffic lights on the streets when the yellow light means "hurry up." Maybe, I think, when it's yellow I have to go out but hurry up before the air quality becomes red on my phone.

My daughter Violeta told me the colors and the signs on air quality are important. I agree. They help me and my friends understand and plan our lives.

I just hope we can also have the same colors for the actions taken by government and others responsible for improving air quality. Like, if it's red, you're doing bad and will be voted out, if it's green—good for all, things are changing for the better. If it's yellow, you know... "hurry up, people are waiting."



Ne marrim frymë pa ndaluar. Njerëzit, kafshët dhe bimët. Pa ajër nuk mund të jetojmë.

Ujti dimrit në qytetin tim ajri është i ndotur.

Kur dal prej shtëpisë për të shkuar në shkollë, nëna më thotë të vendos maskën. Maska më mbrojt prej ajrit të keq. Por mua maska nuk më pëlqen shumë.

Ajri është i ndotur sepse ka shumë ndërtesa dhe makina. Njerëzit nuk duhet të ndërtojnë shumë ndërtesa dhe nuk duhet të vozisin shumë makina. Njerëzit mund të ngasin bicikleta sepse ato nuk lëshojnë tym.

Ajri i ndotur ka tym, mjegull, pluhur dhe erë të keqe. Kur ajrin e ndotur e shikojmë me mikroskop duhet me cubla të vogla që fluturojnë. Kur marrim frymë cublat e vogla na hyjnë në mushkëri dhe në hollitë -mi e shpërsem.

Mua më pëlqen ajri i pastër. Prandaj me familje shkojmë në Gërmë sepse atje ajri është i pastër. Por unë e dua ajrin e pastër edhe në Prishtinë.

Unë dua të dal dhe të luaj pa maskë.

Unë dua që në familjet të jemi të shëndetshëm dhe të luajmë në ajër të pastër.

Flatra Perani
Klasa e dytë
Shkolla "Ismail Qemali"

We breathe all the time.
Humans, animals and plants.
We cannot live without air.

During the winter the air in my city is polluted. When I leave home and go to school, my mom tells me to put on the mask. This mask protects me from the bad air. But I don't like the mask that much.

The air is polluted because there are a lot of buildings and cars. People should not build that many buildings and should not drive all those cars. People could ride bicycles since they don't release any smoke.

When air it's polluted its filled with fog and smoke, and it smells bad. When we look at the polluted air through microscope it seems filled with moths flying. And when we breathe, these moths get in our lungs and make us cough a lot.

I enjoy the clean air. Therefore, me and my family visit Gërmë where the air is clean. But I would like to have clean air in Prishtina too. I want to go out and play without the mask.

I wish all the kids to be healthy and play in clean air.

THE STORY OF AIR POLLUTION IN KOSOVO

Environmental expert Nezakete Hakaj spoke with the MFK team about her experience working with businesses, civil society, and government to shape environmental policy in Kosovo. She shared her personal history and hopes for the future of Kosovo.



Is Kosovo on the road to fighting its air pollution? Why did you decide to deal with environmental issues?

It is said that air is the source of life, for us and for the whole ecosystem. But we are increasingly burdening the air with pollution from various activities. By not being able to carry this burden, the air is causing us diseases and is also facilitating the degradation of the environment.

We pay the greatest attention to personal health, but our well-being depends not only on our personal care but also on external factors like environmental pollution. Specifically, air pollution is one of the most pressing issues we must face today.

It is difficult to determine how long it will take to create a clean environment, especially to eliminate the threat of air pollution to our health and the environment, but I will be committed to this issue and I will never stop.

The question arises... how can we act?

On the one hand we want to create a life as comfortable as possible through technological means; economic development improves quality of life. However, technological development (currently) cannot be accomplished without any negative impact on air pollution. We have chosen the path that enables us to have the most comfortable lives possible, even though we know that the status quo is harming both our health and the environment.

How did you become interested in environmental issues?

Environmental issues started to interest me when I moved from Gilan to Prishtina. In Gilan, where I was born and spent my childhood, air pollution was not a serious issue. However, when we moved to Prishtina the pollution from KEK occasionally gave

me headaches. This was the reason I started thinking about environmental pollution. After completing my studies as an engineer of technology I continued with my postgraduate studies at the Faculty of Technology in Zagreb in the field of environmental protection.

My professional journey has been quite diverse. During my many years of experience I started with work in education, then I moved to work in Trepça; later, when I started working at the Institute for Pb and Zn, my work in the field of environmental pollution began. At this Institute, various studies have been conducted to improve the technology of the factories at Trepça, and emission measurements have been conducted to monitor the environmental pollution caused by the activities at Trepça.

After the last war in Kosovo I started working in the Ministry of Environment and Spatial Planning as the Head of the Division for Environmental Protection.

The work has been both satisfying and challenging, especially in the beginning, as it was necessary to create the institutional framework for the Environmental Protection System from scratch.

Initially we had a very small number of staff, but our motivation for work has always been very high. Over time the number of staff has increased and today we have managed to create a sturdy environmental protection system. At the same time we are committed to informing different communities about environmental pollution and raising awareness.

My work in the Ministry has been mainly focused on environmental impact assessment and strategic environmental assessment, air protection, industrial pollution, climate change, noise protection and disaster risk reduction from accidents.

Environmental issues are multi-sectorial and affect all fields, so you have to work with different sectors to achieve results and improve the state of the environment. Only through cross-sectorial cooperation have we managed to build an Environmental Protection Strategy, Air Quality Strategy and Action Plan, and a Climate Change

Strategy and Action Plan, including a large number of laws and bylaws for specific areas and many studies and projects.

The support that has come to us from various international donors has been very useful to walk the right path and not make mistakes in the implementation of various activities. This has helped us to shorten the path to achieving our goals for a cleaner environment and not repeat the mistakes that have happened in developed countries.

From the beginning we have cooperated with existing industries to focus on environmental issues; we support them to create departments for environmental protection at their firms, and also to take concrete steps to improve their technologies and reduce the pollution caused by their activities.

As we know, Kosovo is a member of the Energy Community Treaty, although the obligations which emerge from it are quite challenging for Kosovo. I have been the focal point for the Environmental Task Force which has the task of "improving the environmental situation in relation to energy supply in the region and fostering the use of renewable energy and energy efficiency." We are also obliged to prepare the National Emission Reduction Plan, by which we have undertaken to meet EU standards for our existing power plants by 2027. I have also been a member of the Energy and Climate Committee, where we have started to prepare the National Plan for Energy and Climate, the implementation of which will be a great challenge for Kosovo.

Unfortunately we are not yet signatories of international conventions and other agreements on environmental and climate issues, which prevents progress and precludes us from receiving many types of funding.

That said, donor support has played a special role in creating a sustainable framework for environmental protection. In addition to human capacity building, infrastructure, expert support,

projects, training and study visits abroad, the lessons learned from these activities have helped us learn about the best approaches to environmental management.

Do we need even more commitment as a society?

Yes, first of all it is important for the government to enforce legislation, which it still does not do sufficiently. We have seen improvement, but enforcement is still far from where it should be.

Consulting with civil society and relevant stakeholders is an important part of Government efforts to implement legislation and change policies.

Now in Kosovo the situation is much better. The public reactions in recent years are a sign of progress in the government's understanding of how they should act to mitigate these extreme air pollution conditions, especially in the winter season.

What are you planning to do in the next five years?

The field of air pollution is quite complex. To fully understand air pollution it is important to study the atmospheric processes that regulate air pollution such as emissions, atmospheric distribution, chemical transformations, surface deposits and ecosystems. Studies should include air pollutant emission control technologies, environmental and health impacts, policies and legislation, and interactions between air pollution and climate change.

Research and data collection and fostering the path of policy improvement to influence citizens in a comprehensive and sustainable way will be the goal of my further work.

It is difficult to determine how long it will take to create a clean environment, especially to eliminate the threat of air pollution to our health and the environment, but I will be committed to this issue and I will never stop.

All together, we need to continue to work with the central and local Government to reduce air pollution and the damage that it causes.

THE HISTORICAL TIMELINE OF THE ENVIRONMENT AND AIR POLLUTION

**'Cease for a moment
to admire the smoke, the wealth,
the noise of Rome...'**

—Horace 8 BC

In Rome, air pollution was known as *gravioris caeli* (heavy heaven) or *infamis aer* (infamous air); it could be both a blessing and a curse. As the Roman poet Horace wrote:

**'Cease for a moment
to admire the smoke,
the wealth,
the noise of Rome..'**

Urban air pollution problems have existed for centuries and result from the burning of wood, vegetation, coal, natural gas, oil, gasoline, kerosene, diesel, waste, and chemicals. Two general types of urban-scale pollution were identified in the twentieth century: London type smog, and photochemical smog. The former results from the burning of coal and other raw materials in the presence of a fog or strong inversion, and the latter results from the emission of hydrocarbons and nitrogen oxides in the presence of sunlight. In most places, urban pollution consists of a combination of the two. In this chapter, gas-phase urban air pollution is discussed in terms of its early history, early regulation, and chemistry.

Before the twentieth century, air pollution was not treated as a science but as a regulatory or legal problem. Because regulations were often weak or not enforced and health problems associated with air pollution were not well understood, pollution problems were rarely mitigated.

However, in ancient Greece, town leaders were responsible for keeping sources of odors outside of town. In ancient Rome, air pollution resulted in civil lawsuits. The Roman poet Horace noted thousands of wood-burning fires (Hughes, 1994) and the blackening of buildings (Brimblecombe, 1999). Air pollution events caused by emissions under strong inversions in Rome were called heavy heavens (Hughes, 1994). The Environmental History Timeline presented here is a work by Bill Kovarnik, a veteran journalist, teacher, and historian who has spent nearly 30 years writing about energy and the environment.

Smelting began in about 5,000 BC and increased sharply over thousands of years. For Romans, lead was used for everything from pipes (like those feeding water to the famous baths in Bath, England) to coins and even as a sweetener of wine. Ice cores show lead in the environment increased ten-fold during this time.

**01
LEAD SMELTING
PRODUCES NOXIOUS
FUMES**

The statesman and philosopher Seneca (4BC—65AD) wrote about how leaving Rome improved his health: "No sooner had I left behind the oppressive atmosphere of the city and that reek of smoking cookers which pour out, along with clouds of ashes, all the poisonous fumes they've accumulated in their interiors whenever they're started up, than I noticed the change in my condition at once."

**02
A STATESMAN FLEES
BAD AIR**

King Edward I passed legislation banning the burning of sea-coal after his mother got so sick from the smoke surrounding Nottingham Castle that she had to leave the town. The first offender caught was summarily put to death. That deterred no one. With no alternative, coal burning continued.

**03
FIRST CLEAN AIR ACT
ATTEMPT FAILS**

John Evelyn wrote his anticoal treatise "FUMIFUNGIUM: or the Inconvenience of the Aer and Smoake of London Dissipated" calling for action to stop the smoke: "And what is all this, but that Hellish and dismall Cloud of SEACOALE?" he wrote, "so universally mixed with the otherwise wholesome and excellent Aer, that her Inhabitants breathe nothing but an impure and thick Mist accompanied with a fuliginous and filthy vapour..."

**04
THE FIRST
ENVIRONMENTAL
SCREED**

The first anti-smoke groups formed in Britain, including the Committee for the Consumption of Smoke at Leeds and the Manchester Association for the Prevention of Smoke. Education was thought to be the key to adopt cleaner practices.

**05
ANTI-SMOKE GROUP
FORMS**

Manchester scientist Robert Angus Smith coins the term "acid rain," writing in "The Air of Towns: "It has often been observed that the stones and bricks of buildings, especially under projecting parts, crumble more readily in large towns where much coal is burnt than elsewhere... I was led to attribute this effect to the slow but constant action of the acid rain ... it is not to be expected that calcareous substances will resist it long, and one of the greatest evils in old buildings in Manchester is the deterioration of the mortar. It generally swells out, becomes very porous, and falls to pieces on the slightest touch."

**06
ACID RAIN GETS A
NAME**

1862

Anthony Trollope, the British novelist, wrote: "Pittsburgh without exception is the blackest place which I ever saw, the site is picturesque, even the filth and wondrous blackness are picturesque.... I was never more in love with smoke and dirt than when I stood and watched the darkness of night close in upon the floating soot which hovered over the city."

**07
FOR THE LOVE OF
SMOKE**

1870-'80

The first smoke ordinances are passed in cities like Chicago, Cincinnati, Cleveland, Pittsburgh, and St. Louis, but they are not rigorously enforced.

**08
THE BACKLASH
BEGINS**

1905

Dr. Harold Des Voeux of the Londonbased Coal Smoke Abatement Society, coins the term "smog" to describe the fusion of smoke and fog bedeviling cities.

**09
SMOG: A WORD
IS BORN**

1943

A fog descends on Los Angeles. Residents think it may be a Japanese chemical attack, but it's a combination of pollution and the inversion layer over the city.

**10
AIR
ATTACK**

1948

Twenty people die when smog settles over the small mill town of Donora, PA. Those trying to flee were unable to see through the fog to leave, even in daylight with the town's lights turned on. The town's zinc works and steel mill were soon shut down, but the smog didn't abate until a storm rolled in four days later. All the dead were older than 52 with a history of health problems.

**11
DEATH IN
DONORA**

1952

About 4,000 people, perhaps more, perish from the worst smog in a long-smoggy city.

**12
THE GREAT SMOG
IN LONDON**

1970

The Clean Air Act is not the first passed, but it is the most comprehensive, outlining the US national pollution standards and establishing the Environmental Protection Agency.

13
THE CLEAN AIR ACT OF 1970

General Motors president Edward Cole promises "pollution free" cars by 1980 and urges the elimination of lead additives from gasoline in order to allow the use of catalytic converters.

14
POLLUTION FREE CARS

April 22: The First Earth Day was organized by Sen. Gaylord Nelson and Dennis Hayes; it creates a national political presence for environmental concerns. Millions of Americans demonstrate for air and water cleanup and preservation of nature.

15
FIRST EARTH DAY

1977

Federal Clean Air Act Amendments require review of all National Ambient Air Quality Standards by 1980. Congress also adds additional protection for Class I National Park and Wilderness air quality.

16
PROTECTION FOR NATIONAL PARKS AND WILDERNESS

1990

Clean Air Act amendments strengthen rules on SOx and NOx emissions from electric power plants helping reduce acid rain.

17
ACT TO HELP REDUCE ACID RAIN

2003

Bush administration proposes "Clear Skies" legislation to Congress amending the Clean Air Act (the primary federal law governing air quality). New, weaker targets would be set for emissions of sulfur dioxide, mercury, and nitrogen oxides from U.S. power plants. According to the NRDC, "the Clear Skies plan would allow three times more toxic mercury emissions, 50 percent more sulfur emissions, and hundreds of thousands more tons of smog-forming nitrogen oxides. It would also delay cleaning up this pollution by up to a decade compared to current law and force residents of heavily-polluted areas to wait years longer for clean air compared to the existing Clean Air Act."

18
CLEAR SKIES

2013

Air pollution in northern China from unrestricted use of coal caused 500 million residents of Northern China to lose more than 2.5 billion life years of life expectancy, or an average of five years each, compared to residents of southern China, where coal is not used for heating, according to aPNAS paper by Yuyu Chen and colleagues.

**19
MORE THAN 2.5
BILLION LIFE YEARS
OF LIFE EXPECTANCY
LOST**

2015

President Obama notes environmental history of air pollution in announcing plans to fight climate change through EPA's Clean Power Plan. The plan essentially puts limits on emissions from oil and coal plants, encourages a shift to natural gas, and greatly encourages a shift to renewable energy, which it says has "lower cost and greater availability" than in the past. The clean power plan will not give nuclear power the favorable economic treatment it would need to survive in the US market, according to former NRC commissioner Peter A. Bradford.

**20
LIMITS ON
EMISSIONS**

India's government says air pollution killed 35,000 people over the past nine years. Epidemiologists say coal is cutting the average person's life in India by about three years, but this has not yet led to any meaningful action. Pressure to take steps against climate change may help. In contrast, China is creating a "war on pollution" after epidemiological studies showed that coal was cutting off an average of 5 years per person in the country's north.

**21
COAL IS CUTTING THE
AVERAGE PERSON'S
LIFE IN INDIA BY ABOUT
THREE YEARS**

2017

March 28: Donald Trump signs an executive order pushing back air pollution regulations and greenhouse gas regulations.

**22
TRUMP
PUSHES BACK**

April 27: Trump's EPA halting a challenge by states and industry groups to an Obama administration rule aimed at reducing toxic emissions from power stations. Pruitt, in his previous role as attorney general of Oklahoma, had sued the EPA to stop the rule, which is known as MATS.

**23
MATS**

2021

On Day One, President Biden fulfilled his promise to rejoin the Paris Agreement and set a course for the United States to tackle the climate crisis at home and abroad, reaching net zero emissions economy-wide by no later than 2050. As part of re-entering the Paris Agreement, he also launched a whole-of-government process, organized through his National Climate Task Force, to establish this new 2030 emissions target—known as the "nationally determined contribution" or "NDC," a formal submission to the United Nations Framework Convention on Climate Change (UNFCCC).

**24
PRESIDENT BIDEN'S
DAY ONE**

KOSOVO'S STRATEGIC DOCUMENTS AND LEGISLATION FOR AIR

In 2013, the Government of Kosovo passed its National Strategy on Air Quality, determining the objectives for air quality and alternative policies to further improve air quality, provide important benefits for quality of life, and contribute to environmental protection and sustainable development. As articulated in the introduction of this strategic material, the vision of the 'Strategy on Air Quality' is to achieve and maintain air quality in order to increase the welfare of the population, to protect human health as well as the environment. In addition to the Government's commitment, Kosovo has also been supported by MCC/MFK and JICA to help achieve the goal of improving air quality. JICA's involvement ensured that Kosovo develops capacities for sound air pollution control and air quality management based on technical evidence, while the MCC/MFK project through the Environment Data Collection Activity supports the Kosovo Government to effectively monitor and report on select environmental indicators to the public and its stakeholders. The activity includes: the rehabilitation of seven air quality monitoring stations, including the meteorological station; the establishment of an Air Quality Portal that presents data from 13 air quality monitoring stations, as well as the modelling and forecasting system; a short-term forecasting system for Kosovo for O₃, NO₂, PM₁₀ and PM_{2.5}; and an app that provides real-time data on the level of air pollution using the EU Air Quality Index (AQI) for both iOS and Android.



STRATEGY ON AIR QUALITY 2013–2022

The Strategy shall determine the objectives for air quality and alternative policies for further improvement of air quality, to provide important benefits for quality of life and contribute to environment protection and sustainable development.

- Capacity building among government partners for effective implementation
- Building a good and wider partnership

<https://kryeministri-ks.net/en/documents/strategy-on-air-quality-2013-2022/>



ACTION PLAN ON AIR QUALITY 2019–2021

The main aim of the Action Plan for Air Quality is to submit a priority list in compliance with the state priority aimed at achieving the objectives of environmental policy as defined in the Air Quality Strategy Action Plan for Air Quality sets out actions that contribute to the realization of the goals set in the Strategy for Air Quality.

Adopted by the Government of Republic of Kosovo on 5 June 2018



NATIONAL EMISSION REDUCTION PLAN 2018–2027

Kosovo is a signatory of the Energy Community Treaty (ECT) for Eastern Europe, which entered into force on July 1, 2006.

The preparation of the NERP for Kosovo have essential importance to meet the emission limit values for SO₂, NO_x and dust, by gradual reduction of the specific emissions and quantity emissions of pollutants, discharged from large combustion plants and concerns emission reduction targets for existing combustion plants with a rated thermal input of 50 MW or more.



LAW ON AIR PROTECTION FROM POLLUTION NR. 03/L-160

This law aims to regulate and ensure the right of citizens to live in a clean air environment, protecting human health, fauna, flora and natural and cultural values of the environment from air pollution.

This law determines the competences and responsibilities to protect the air, protection of the ozone layer, reducing the level of greenhouse gas emissions and adaptation to climate change, strategic documents, monitoring and assessment of air quality, measures to prevent and reduce air pollution, reporting air quality and exchange of information, activities of monitoring of air quality, emissions into air and substances that damage the ozone layer, the information system of air, financing of the air protection, inspection management and supervision.

<https://gzk.rks-gov.net/ActDetail.aspx>



ADMINISTRATIVE INSTRUCTION NO. 02/2011 ON AIR QUALITY ASSESSMENT

The objectives of the Instruction are the following: 1.1. define and establish objectives for environmental air quality designed to avoid, prevent or reduce harmful effects on human health and the environment as a whole;

Obtain information on environmental air quality in order to help combat air pollution and nuisance and to monitor long-term trends and improvements resulting from national measures;

Ensure that such information on environmental air quality is made available to the public;

Maintain air quality where it is good and improve it in other cases;

<https://gzk.rks-gov.net/ActsByCategoryInst.aspx>



ADMINISTRATIVE INSTRUCTION (GRK)—NO. 21/2013 FOR ARSENIC, CADMIUM, MERCURY, NICKEL AND POLYCYCLIC AROMATIC HYDROCARBONS IN AIR

The purpose of this administrative instruction is to: 1.1. Create target value for the concentration of arsenic, cadmium, nickel and benzo (a) pyrene in the air to avoid, prevent or reduce harmful effects of arsenic, cadmium, nickel and polycyclic aromatic hydrocarbons to the environment and human health;

Ensure that air quality be maintained and improved in case of the presence of arsenic, cadmium, nickel and polycyclic aromatic hydrocarbons;

Determine the methods and criteria for assessing the concentrations of arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in air as well as deposition of arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons;

Ensure that information on concentrations and deposition of arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in air is available to the public.

<https://gzk.rks-gov.net/ActsByCategoryInst.aspx>



ADMINISTRATIVE INSTRUCTION NO. 08/2016 ON THE ALLOWED NORMS OF DISCHARGES IN AIR FROM MOBILE SOURCES

This Administrative Instruction will determine the allowed norms of the discharges in air by mobile ground sources — roads vehicles, and measures for their implementation.

The purpose of this Administrative Instruction is to prevent and minimize the discharge of harmful gasses by mobile sources of pollution with continually tendency for approximation of local provisions with those European in this field.

<https://gzk.rks-gov.net/ActsByCategoryInst.aspx>



ADMINISTRATIVE INSTRUCTION NO.06/2007 LIMITATION OF EMISSIONS OF POLLUTANTS INTO THE AIR FROM STATIONARY POLLUTION SOURCES

This A.I. regulates the criteria for preventing and reducing air pollution from stationary sources of pollution.

With this A.I will be determined:

The intervals, the method and the conditions for periodic and continuous monitoring of emissions of pollutants into the air by measurement and calculation, the method of evaluation of the results of monitoring;

General emission limit values, specific emission limit values, method of calculation of emission ceilings and technical requirements on the operation of stationary sources and method of assessing compliance; requirements related to the reduction of emissions of volatile organic compounds from installations using organic solvents;

Requirements related to the reduction of emissions of volatile organic compounds during storage and distribution of petrol;

Requirements for products containing volatile organic compounds; requirements on reporting of emissions by operators of stationary sources;

<https://gzk.rks-gov.net/ActDetail.aspx>



ADMINISTRATIVE INSTRUCTION NO.04/2009 ON THE CONTROL OF VOLATILE ORGANIC COMPOUNDS EMISSIONS DURING THE STORAGE, FILLING, DISCHARGING, AND TRANSFER OF FUELS

The purpose of this A.I is controlling of volatile organic compounds emissions during the storage, filling, and discharging packaging and transfer of fuels;

This A.I shall be applied on installation and operations that are being used the storage of fuel, filling and transfer from one terminal to other or from a terminal to serving station.

<https://gzk.rks-gov.net/ActsByCategoryInst.aspx>



ADMINISTRATIVE INSTRUCTION GRK— NO.16/2013 FOR SUBSTANCES THAT DEplete THE OZONE LAYER AND FLUORINATED GREENHOUSE GASES

This Administrative Instruction provides the gradual reduction and phasing out the use of controlled and new substances, as well as the reduction of fluorinated greenhouse emissions.

The production of controlled substances shall be prohibited. The production of controlled substances and equipment containing or relying on controlled substances specified in Annex 4, Group A of this Administrative Instruction shall be prohibited.

The import and export of controlled and new substances without permission shall be prohibited.

The controlled substances, new substances and fluorinated greenhouse gases shall be prohibited to be released into the air:

<https://gzk.rks-gov.net/ActsByCategoryInst.aspx>



ADMINISTRATIVE INSTRUCTION NO. 01 /2017 ON QUALITY OF PETROLEUM DERIVED LIQUID FUELS;

This Administrative Instruction sets out the permissible values of components and indicators of quality of petroleum-derived liquid fuels, method of testing, method of surveillance and monitoring of the quality of petroleum-derived liquid fuels in customs point and in internal market, the procedure of conformity assessment, obligations of reporting of the conformity assessment bodies and economic operators of petroleum-derived liquid fuels, and preparation of overall quality assessment through the development of quality statistics.

<https://mti.rks-gov.net/desk/inc/media/EDB342B8-7748-4E4A-861E-9B1017D7FF9A.pdf>



ADMINISTRATIVE INSTRUCTION

on criteria for defining of air quality monitoring points, number and frequency of measurements, classification of pollutants which are monitored, the methodology of work, form and timing of data reporting.

During winter, the sky is full of colors and light. But the danger to our health is always there, in the backdrop, present.

MFK's Communications Specialist Rina Meta curates photography, graphics, illustrations and stories to bring captivating narratives about our shared heritage to life. In this section she brings together documentary photography, novel proposals for a greener indoors in Prishtina, and an exploration of the complex relationship between air and the historical artifacts at the National Museum of Kosovo.

PHOTO— GRAPHY IN EXPIRED FILM

Prishtina and Zagreb—based photographer Flutura Limani inspected the condition of film exposed in heavy pollutants through a novel journey of documenting landscapes and portraits of people that belong to the groups affected the most by poor air quality.

In the 1850s, the British Photographic Society's Fading Committee was investigating the reasons why photographic prints were fading. Among other things, the committee found that prints exposed to moist air polluted with hydrogen sulfide are fading, especially if the photo prints are not rinsed or toned properly, and that gold toning could improve durability.

Around 1960, the appearance of red spots on microfilms, the so called micro bubbles, was particularly noticeable. This aroused attention to the effect of air pollution on them. Other sources of pollution such as: vehicle exhaust gases, pollution from nearby factories, pollution from gases emitted from furniture processing, fresh paints, and the photographic material itself is a source of pollution for photographic films, while still undeveloped .

Prishtina and Zagreb based photographer Flutura Limani inspected the condition of film exposed in heavy pollutants through a curious journey of documenting landscapes and portraits of people that belong to the groups affected the most by low air quality. Besides providing us with fantastic aesthetics, she contributes to the discourse of air quality by exploring how multifaceted the impact of air quality is, and just how this impact can be visually present while documenting the less tangible, more insidious impact of polluted air in humans.

In the following pages, you will find three photos part of her photographic work aiming to inspect pollution on polluted film.

Lola Sylaj artist, performer

At the time this portrait was taken Lola was seven months pregnant. Throughout her pregnancy she tried to stay at home, worrying that the polluted air would harm her unborn baby. However, she agreed to this portrait; being an artist herself she wanted to do her part in showing the dangers of air pollution in Kosovo. I love that she showed herself exactly how she was, fragile and in danger, on this white and beautiful snowy day.

Rron and grandpa

This grandpa was my father. He taught the whole family how to ski. It was always a joy to go out with him in the snow. On this night, we went out together. While taking these photos, I imagined the danger lurking in the air. He died from lung cancer a year later. Rron, my nephew, is now three years old. A cough is part of his winter life.

Prishtina

The city is so beautiful in the winter. The sky is full of colors and light. But the danger to our health is always there, in the backdrop, present.

Reference: Ellen McCrady
'The History of Microfilm Blemishes', Restaurator, International Journal for the Preservation of Library and Archival Material.







NASA CLEAN AIR STUDY YEAR 1989

In 1989 the National Aeronautics and Space Administration (NASA) launched and spearheaded the NASA Clean Air Study, in collaboration with the Associated Landscape Contractors of America (ALCA), to research ways to clean the air in space stations. Its results suggested that, in addition to absorbing carbon dioxide and releasing oxygen through photosynthesis, certain common indoor plants may also provide a natural way of removing volatile organic pollutants like benzene, formaldehyde, and trichloroethylene.

It was found that the best plants for helping remove pollutants are from tropical forests, where they can only capture light filtered through the branches of taller trees. As such, their leaf composition lets them photosynthesize and move air efficiently in the low—light conditions of the average home.

Soil and roots also remove airborne pollution, and bacteria and fungi in soil use pollutants as a food source to feed plant roots. Given that the study aimed at researching ways to clean air in a space station, the tests were conducted in sealed spaces where efficient air cleaning was accomplished with one plant per 9.3 square meters. But in our homes, we open doors and windows, we use cleaning agents and perfumes, and we move around, constantly transferring pollutants from one space to another. As such, more plants than one per 9 square meters are needed.

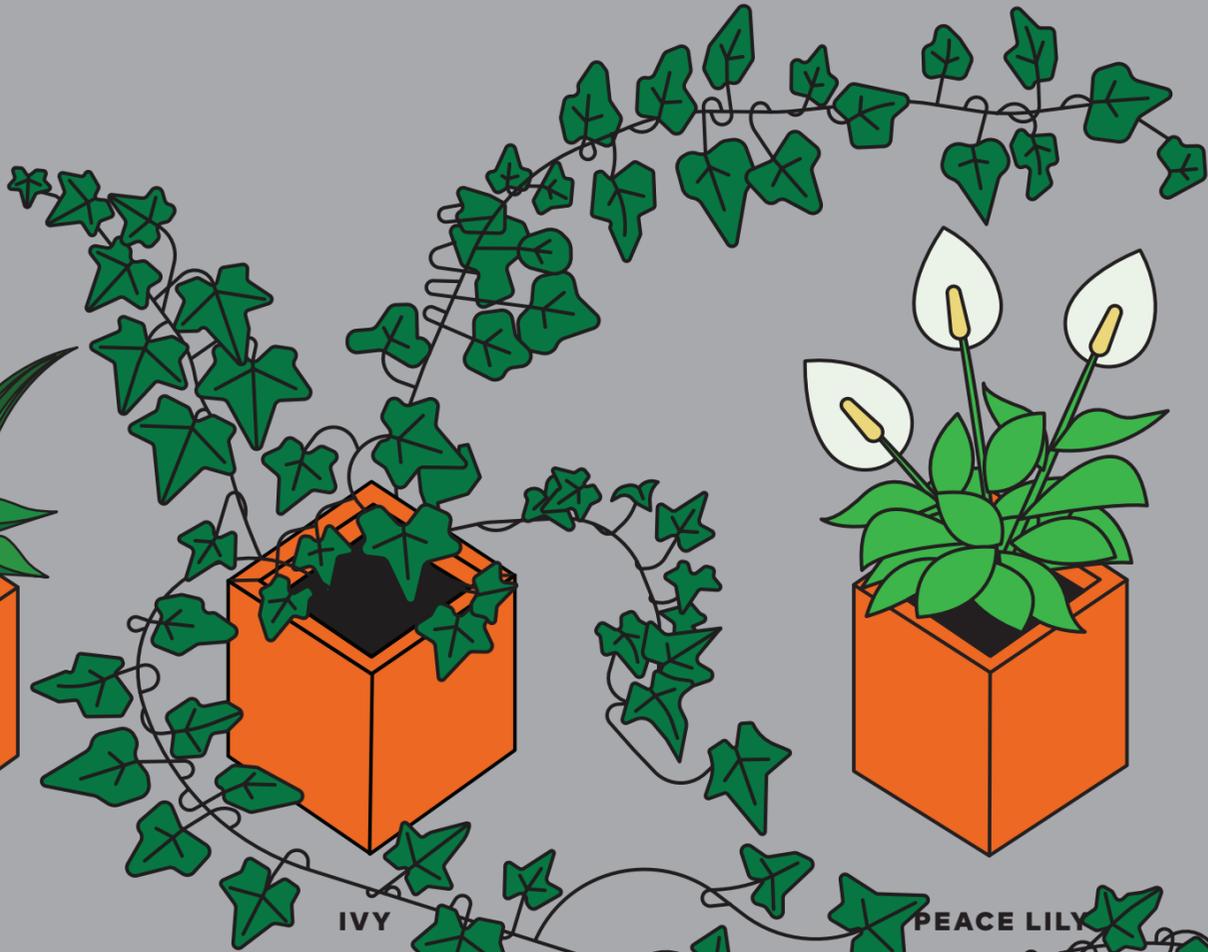
We've consulted a number of online platforms for gardeners around the world; most of them base their suggestions for plants on the NASA list, adding or taking out some of the flowers in respect to the geographical context.

The plants that made our list are NASA's suggestions available in the Kosovo market.

FLOWERS FOR GOOD INDOOR AIR
8 types of plants have been identified as the plants that are able to provide the most oxygen.



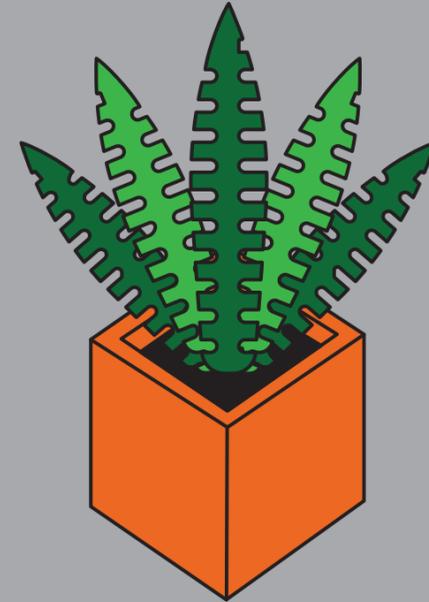
SANSEVERIA



IVY



PEACE LILY



BOSTON FERN



DRACENA



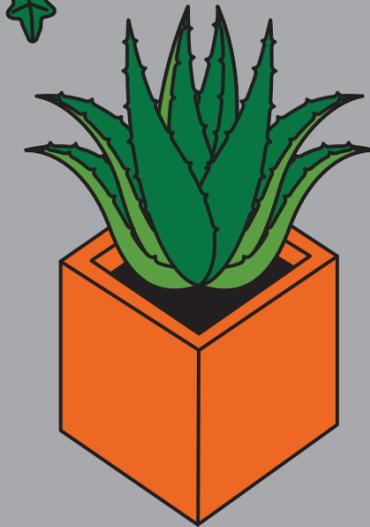
SPIDER PLANT



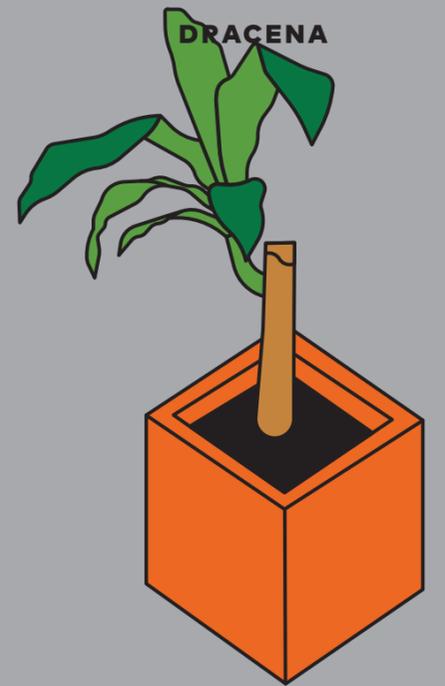
CHINESE EVERGREEN



SPIDER PLANT



ALOE VERA



CORN PLANT

NOT JUST THE LIVING, THE ARTIFACTS TOO

Air, with its variability in quality, presents a major problem and a great threat to the very existence of these artifacts.

The earliest prehistoric musical instrument ever found in Kosovo is the Ocarina of Runik. A handcrafted creation of baked clay eight centimeters in height, the Ocarina is a Neolithic flute-like wind instrument with two holes in the axles and a mouthpiece on the highest ax. It produces warm, vibrant sounds, transmitting vivid reflections of the spiritual wealth of the Neolithic humans of our region. The warm and humid climate of the Holocene, which came soon after the last ice melted from the last glacial period, brought changes in nature which were reflected in humans as well in the flora and fauna of the broader environment. This climatic change influenced developments in the lives and activities of human beings.

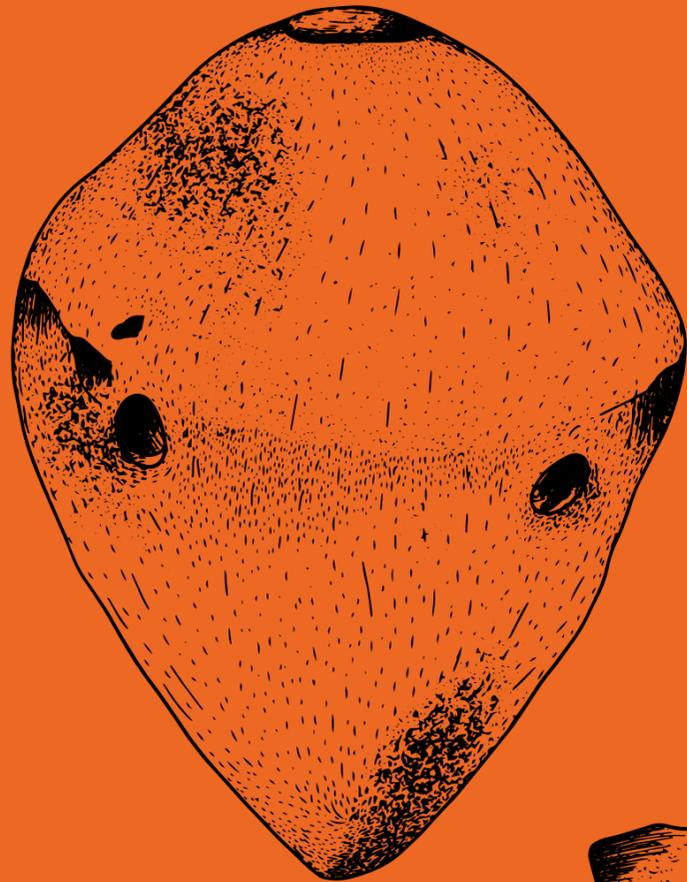
Neolithic people, mainly women—as the period is known for its matriarchy, mastered stone and tools, and used stone for their architecture attempts. During this period, pottery production emerged with other supporting professions that lead to the development of civilization. Some of the pottery dating back to this period that can be found at the National Museum of Kosovo includes: pottery fragments with painted geometrical lines, a flint knife, human-shaped collection of figurines from baked clay, a baked clay ornamented figurine in the shape of a bull, Neolithic vases, and many other ocarinas. While these artifacts create a compelling reason

to visit our National Museum, Kemajl Luci, an Archaeologist and a Senior Cultural Manager at the Kosovo Museum, shares with us his worries about the conditions in which these artifacts are stored.

Air, with its variability in quality, presents a major problem and a great threat to the very existence of these artifacts. A good museum environment for artifacts is one that slows the pace of aging for each specific artifact. Any thorough museum document listing dangerous elements to artifacts must include both humans and air. Humans can damage sensitive objects with their careless handling as well as with sweat and other body compounds transferred to objects through touch. Air can be harmful due to pollutants; high humidity levels encourage pests and mold growth in paper and textiles, and rust on metal. Furthermore, dry air can cause brittleness and cracks.

According to Luci, historical memorabilia should be placed in spaces that have climate-control systems for heating and air conditioning, not in the sheds or basements where many Kosovo artifacts rest.

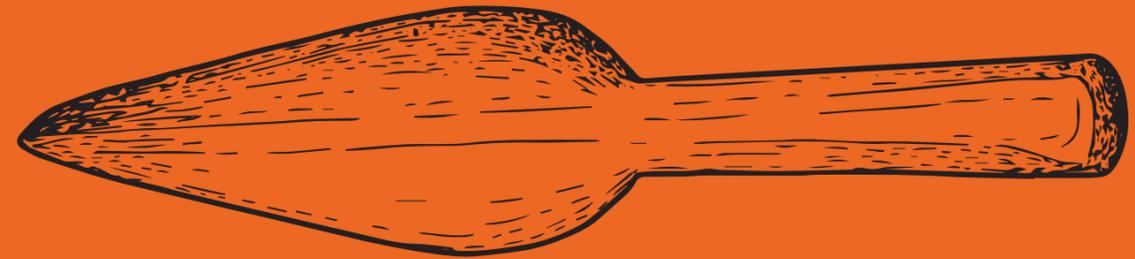
Flip ahead to see the artifacts threatened due to the absence of the climate-control systems necessary to neutralize the polluted Prishtina air.



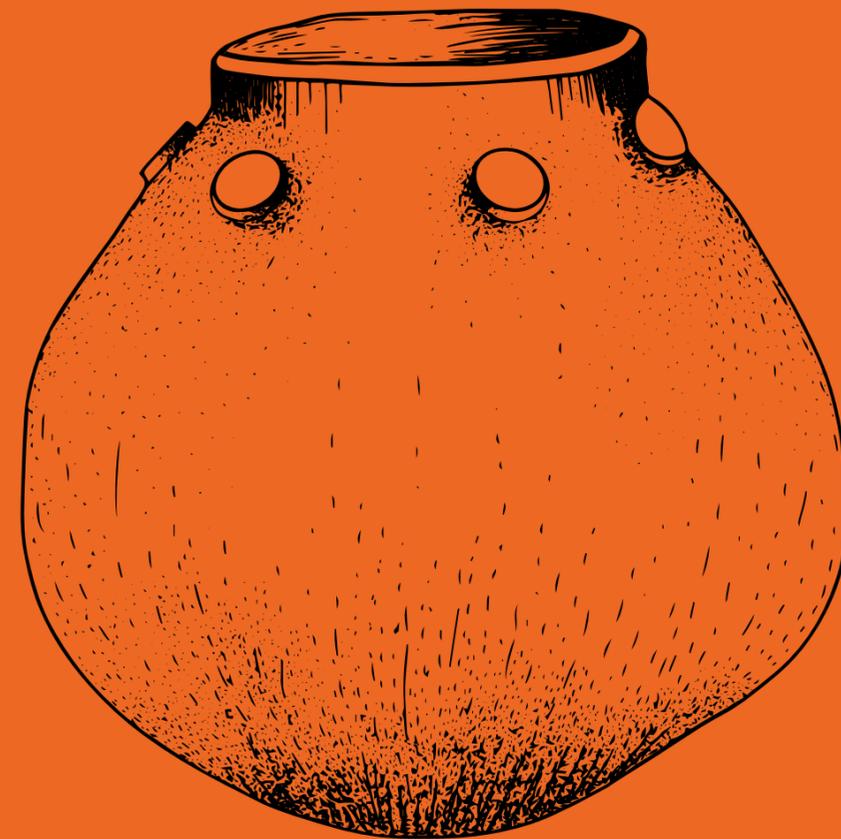
1
OCARINA
The ocarina is a Neolithic flute-like wind instrument and was named Runik Ocarina, the earliest pre-historic musical instrument ever recorded in Kosovo



2
ULPIANA
Fragment of a Roman terra sigillata from Ulpiana



3
BRONZE PERIOD
The spear head, discovered inside the central part of the burial mound number 1. Late Bronze Period (1500–1100 BC)



4
SPHERICAL
Spherical earthenware vessel, decorated with the impresso technique, discovered in Runik of Skenderaj (Kosovo Museum)

How might we use outdoor air quality data—possibly in combination with health, economic, transportation, construction, or other data sets—to empower Kosovo's citizens to make data—informed decisions and to take constructive personal and civic action?

Between June 21st to September 6th, 2019, forty applicants addressed this question posed by the Dig Data Challenge on Air Quality.

A dedicated fund of 200,000 Euros was shared by four winners of this challenge. In their ongoing work, they bring to surface innovation in data use and analysis around air quality data, giving the civil society, private sector, start-ups, academia, and individuals the right tools to creatively address the Air Quality Challenge in Kosovo. Flip to meet the teams and learn more about their projects.

INTERNEWS KOSOVA

SOLUTION

Using media to raise awareness about the main causes of air pollution in Kosovo. Increasing awareness about the causes, effects, risks and prevention of air pollution to the general public, with a focus on: adults with respiratory and other health issues, pregnant women, the elderly, children, students, journalists, and other media stakeholders.

BUDGET

41,500 Euros

IMPLEMENTATION TIME

18 months



The biggest impact that we are planning to achieve is raising citizen awareness about reducing air pollution starting with their own actions; for example, reducing the use of private vehicles.

TELL US MORE ABOUT YOUR PROJECT?

Internews Kosova (I/KS) is an organization which fights corruption, nepotism, and other institutional irregularities and its main solution regarding this challenge is raising awareness of the causes, effects, risks and prevention of air pollution to the general public with a focus on adults with respiratory and other health issues, pregnant women, the elderly, children, students, journalists and other media outlets.

In order to accomplish this goal, Internews Kosova plans to:

1. Publish daily short articles each morning regarding the level of air pollution;
2. Publish eighteen (18) in-depth investigative articles regarding the findings related to air pollution, including the actions that responsible institutions are taking and/ or should take;
3. Produce six (6) informative videos/ animations;
4. Organize one training session where experts from the Kosovo Environmental Protection Agency will train Internews Kosova's journalists on how to use and read their open data; and
5. Follow-ups/ Recommendations to responsible institutions depending on the findings.

All articles and videos will be published on the Internews Kosova's anti-corruption platform KALLXO.com, which has an audience of more than 230,000 Facebook fans and more than 120,000 daily web views to date.

HOW IS THIS PROJECT GOING TO IMPACT THE COMMUNITY?

The audience will be informed every morning about the level of air pollution, its causes and its effects on health, environment, agriculture, and economy.

Our daily audience will help promote our work, which will encourage citizens to both follow the recommendations given in our articles and also participate in a broader campaign on reducing the air pollution. Our other media products will help this movement sustain momentum.

WHAT DO YOU ENVISION TO BE THE BIGGEST IMPACT OF YOUR PROPOSED SOLUTION IN THE LONG TERM?

The biggest impact that we are planning to achieve is raising citizen awareness about reducing air pollution starting with their own actions; for example, reducing the use of private vehicles. We will also send recommendations to relevant institutions and hold them accountable regarding actions that they should take in order to reduce air pollution levels.

DO YOU FORESEE ANY OBSTACLES OR DIFFICULTIES THAT YOU MIGHT STUMBLE UPON ALONG THE WAY?

The only barriers would be inaccessible government data. To minimize this risk, our team of journalists and the office of legal advice will hold the responsible institutions accountable and will send them recommendation on actions to be taken to minimize the air pollution in Kosovo.

HOW DO YOU THINK YOUR PROPOSED INTERVENTION WILL HELP COLLABORATION BETWEEN GOVERNMENT AND CIVIL SOCIETY/ PRIVATE SECTOR?

Throughout the years, Internews Kosova created a successful relationship and cooperation with public and governmental institutions. Some of the current partnerships include: The State Prosecutor, the Kosovo Judicial Council, the Ministry of Education, Science and Technology, the Ministry of Environment and Spatial Planning, and all municipalities of Kosovo. We are confident that these partners will promote our work.

On the other hand, civil society and the private sector can use our daily findings for their own research and monitoring. We hope that the public institutions will work continuously with civil society and the private sector in order to improve air quality in Kosovo.

GIVE US A PERSONAL TAKE—A STORY OF HOW YOU OR YOUR FAMILY ARE BEING IMPACTED BY AIR POLLUTION?

High levels of air pollution can have negative effects on our families, including infants, children, pregnant women, and the elders. The families that live in cities with high exposure to air pollutants are at increased risk of developing asthma, pneumonia and other lower respiratory infections. In this case, the capital of Kosovo, Prishtina, is the most populated and the most polluted city in the country. Some of the main reasons for Prishtina's air pollution is coal mining and coal-fired power plants. In addition, the diesel-spitting car traffic contributes to the pollution of air, along with the wood and coal household heating system and central coal-heating company Termokos.

REA APP

RE in Albanian means clouds. Clouds play an important role in both warming and cooling our planet.

SOLUTION

Creating an app that will report on air quality in Kosovo through visualisations and maps.

BUDGET

47,350 Euros

IMPLEMENTATION TIME

15 months

CREATIVE



REA will help people make data-driven decisions and will hopefully incentivize people to think and act against air pollution on a daily basis.

TELL US MORE ABOUT YOUR PROJECT?

REA is a mobile application that gives real time air pollution information in Prishtina, Kosovo. The app is programmed to give customized up-to-date information on how real-time air quality affects personal health; it will also provide recommendations to help users stay safe.

The mission of the app is to make air quality data information accessible and as easy to understand as checking the weather forecast. To make the general public interested and engaged, the app leverages a simple visual language, while the recommendations will be delivered at a personal level. We believe that the most effective way to incentivize people to think and act against the problem on a daily basis is by making an app that informs people on how the current air quality affects their health and how they can address the problem in a simple way.

HOW IS THIS PROJECT GOING TO IMPACT THE COMMUNITY?

The app will be easily accessible, since based on the "Usage Survey Results on Information Technology and Communication 2018" report written by the Statistics Agency in Kosovo, 75.1% of people in Kosovo have a smartphone with connection to the internet. Each user will customize their profile based on their exact location, age, and health condition. In turn, the app will use the personal data to give health information and action recommendations based on the air quality.

The large number of old cars in Prishtina is one of the main causes of air pollution. Therefore, to try and reduce the number of cars in the streets of Prishtina, application users will be encouraged to use public transport. On days when the air is most polluted, the users will be directed toward the bus schedule section of the app. In that section, the users will be able to check the city bus route and schedule.

The heating sector is a big contributor to air pollution. The REA Store component of the app will provide users with a list of stores that sell heating alternatives. The REA store will

also contain other products that will help users make the best air quality choices, such as face masks and air purifiers.

Users will be encouraged to buy certain products from the stores listed in the REA Store based on their customized health and the up to date air quality. The REA Blog will contain articles regarding air quality and pollution, which will help educate the population on the topic. Since the app will be user friendly, it will be easy to use and understand by people of all ages.

WHAT DO YOU ENVISION TO BE THE BIGGEST IMPACT OF YOUR PROPOSED SOLUTION IN THE LONG TERM?

By being aware and following the recommendations of the app, individuals can minimize their contribution to air pollution and dramatically improve their personal health. In the long term, this will result in cleaner air and a healthier population.

DO YOU FORESEE ANY OBSTACLES OR DIFFICULTIES THAT YOU MIGHT STUMBLE UPON ALONG THE WAY?

After developing the app, getting insights and opinions from organized focus groups, and launching the final product to the public, we might encounter several barriers. The first barrier that we might encounter is the lack of interest from the potential users towards downloading the app. The barrier will be addressed through additional focus groups, where we will obtain detailed insights from citizens. The second barrier we might encounter is the lack of interest from the store suppliers. The barrier will be addressed by persuading store managers about the benefits that they will reap as the app will offer them greater visibility for their business.

HOW DO YOU THINK YOUR PROPOSED INTERVENTION WILL HELP COLLABORATION BETWEEN GOVERNMENT AND CIVIL SOCIETY/ PRIVATE SECTOR?

REA will work with the Government of Kosovo to extract and incorporate the air quality data that undergirds the app REA will create partnerships with the private sector in the REA Store. The Store will provide users with the list of stores that contain products that help citizens make the best air quality choices such as: air purifiers, heating alternatives, and N95 face masks. Initially, each potential vendor will be presented with an opportunity to market their products with prices in the Store (for which they have to pay a certain fee to REA). On the other end of the bargain, consumers will have the chance to buy these products with discounts by applying the coupons which will be generated by the app. For each purchase, REA will get a minor share of the revenue. The result will help people make data-driven decisions and will hopefully incentivize people to think and act against air pollution on a daily basis.

GIVE US A PERSONAL TAKE—A STORY OF HOW YOU OR YOUR FAMILY ARE BEING IMPACTED BY AIR POLLUTION.

My mother is 59 and she was always one of the healthiest people I knew. She used to brag about not having to go to the doctor since she gave birth to me 25 years ago. She is a pescatarian and her diet is healthy. As a form of exercise, she used to walk daily either while commuting to work or taking a stroll.

This changed quickly when in November 2018 she started coughing intensely. A couple of months passed, and the coughing only worsened. By the end of December, she decided to visit the doctor, and was diagnosed with Bronchiectasis. This long-term condition abnormally widens the airways of the lungs and makes them more vulnerable to infection. The severity of symptoms can vary widely. The symptoms tend to get worse if a lung infection is developed.

No obvious causes of the condition have yet been found;

however, air pollution increases the risk of infection in bronchiectasis. She was given some antibiotics and she had to stop her daily commutes to work to avoid the pollution. In a span of a month her coughing diminished. Since then, she regularly checks the ministry's Kosovo AIR Quality app, and she bought a N95 mask as a means of protection. She no longer walks on polluted days and goes out only with a mask. She hasn't coughed since, but unfortunately, she had to change her lifestyle to adapt to her condition and prevent infections.

BONEVET FOUNDATION

SOLUTION

Creating an educational platform for high school students to build small scale air quality sensors.

BUDGET

49,317 Euros

IMPLEMENTATION

TIME

12 months



The project will educate around 150 students on data generation and air quality in Kosovo. In addition, it will provide them with soft and technical skills to present this data to the community at a local and national level. The students will be encouraged to organize initiatives on raising awareness in their communities, which translates into a more informed school staff, student body, and citizens throughout the community.

TELL US MORE ABOUT YOUR PROJECT

The Creative Challenge: Breathe Data is a project where high school students and teachers will be involved to provide solutions for the air quality situation in Kosovo. The project is a combination of education, awareness and technology. The students will participate in Creative Challenges throughout the year where they will build air quality sensors using Arduino & IoT Technology kits, conduct research, and collect data. The learning process will be supported by BONEVET centers through trainings, workshops and technical assistance. By participating in the project, students will understand the impact that air pollution has on all citizens, especially on pregnant women, children, elderly and other sensitive groups.

Ultimately, students will generate an online platform that offers insights and readings from more than 30 sensors built by high school students and set up in multiple locations around Kosovo. An algorithm which processes the readings from sensors will translate data into a simplified educational version that is easily understandable by the masses. The platform will send automatic messages to various public institutions and users suggesting actions that citizens, local institutions, ministries and the government can take.

HOW IS THIS PROJECT GOING TO IMPACT THE COMMUNITY?

Since the project is a combination of education, awareness and technology the impact in the community can be seen on many levels.

Firstly, the project will educate around 150 students on data generation and air quality in Kosovo. In addition, it will provide them with soft and technical skills to present this data to the community at a local and national level.

The students will be encouraged to organize initiatives on raising awareness in their communities, which translates into a more informed school staff, student body, and citizens throughout the community.

Lastly, the platform will reach a wide range of people who will be able to make data-informed decisions regarding air quality.

WHAT DO YOU ENVISION TO BE THE BIGGEST IMPACT OF YOUR PROPOSED SOLUTION IN THE LONG TERM?

The uniqueness of this project is the involvement of students in the decision-making and the creation of the online informative platform. The students will be the primary beneficiaries as they will be the ones who will be learning the most in this process.

For a year, the students will be continuously conducting research and analysing data on the air quality, as well as communicating with the public. This will improve air quality outcomes and also create a cohort of well-educated students who will continue working in the environmental space.

DO YOU FORESEE ANY OBSTACLES OR DIFFICULTIES THAT YOU MIGHT STUMBLE UPON ALONG THE WAY?

The main challenge will be to involve the elderly on the platform, as the solution is digitalized. We aim to solve this challenge by encouraging students to organize local informative events for the audience who might not access the information through the online platform.

HOW DO YOU THINK YOUR PROPOSED INTERVENTION WILL HELP COLLABORATION BETWEEN GOVERNMENT AND CIVIL SOCIETY / PRIVATE SECTOR?

Since the students will be conducting research and building air quality sensors on their own they will develop a deeper understanding about air quality. Additionally, they will be able to propose well-informed solutions and recognize government institutions who can be potential partners for their projects. On the other hand, government institutions will also have a group of active, well informed citizens who can easily be involved

in decision-making. Another form of connecting the two parties is the online platform, which will directly link the schools and the government institutions as they will be accepting daily and monthly reports on the local and national situation.

GIVE US A PERSONAL TAKE—A STORY OF HOW YOU OR YOUR FAMILY ARE BEING IMPACTED BY AIR POLLUTION.

All of my work experiences have involved working with children. As my daily work experience was focused mostly in child development (cognitive, social, emotional and physical), through the years I've become more aware and have a better understanding of how environmental factors can affect their whole development process.

On the other hand, in recent years I have been quite preoccupied with environmental issues, specifically with our air quality situation in Kosovo. Each of us can sense how air pollution is affecting our day-to-day activities.

Air pollution affects all of us, but children are among the most at risk. Once we are aware of the risk and better informed, we can take actions that will help create a better life for everyone.

LLOGARITE— AIRBOT

SOLUTION

Translating air quality data into an understandable format for the public by implementing Machine Learning and AI.

BUDGET

46,800

IMPLEMENTATION TIME

12 months



By giving a clear picture through gathered and processed data, stakeholders from government, civil society, and the private sector will have a firm understanding of the problems that polluted air creates. This shared understanding will help them tackle this issue with a more unified strategy

TELL US MORE ABOUT YOUR PROJECT?

The current form and availability of data is very opaque. Furthermore, air quality data is scattered and not in a form or format that is understandable for the public; we aim to translate all the data in a format that will be beneficial for public use. We aim to use existing infrastructure with open data and implement Machine Learning in order to do the necessary data calculations and generate predictions. Machine Learning and AI will help us translate open data into meaningful results.

HOW IS THIS PROJECT GOING TO IMPACT THE COMMUNITY?

We will use our bot (AIRBOT) to present results and advice on air quality for the public. This will create vast awareness on the quality of the air that the public breathes. The bot will tweet or post on social media when air quality values exceed the acceptable threshold. AIRBOT will periodically share tips and advice on how to deal with polluted air.

WHAT DO YOU ENVISION TO BE THE BIGGEST IMPACT OF YOUR PROPOSED SOLUTION IN THE LONG TERM?

We believe that our biggest impact will be the continuous awareness raising campaign; in the long term this will create vast social awareness which will lead to a more sustainable and greener Kosovo. This will be done through creating a better understanding of the danger that polluted air creates for our health and our nature.

Through this understating the ultimate goal is to create more meaningful preventative measures.

DO YOU FORESEE ANY OBSTACLES OR DIFFICULTIES THAT YOU MIGHT STUMBLE UPON ALONG THE WAY?

Yes, in gathering the data from the national agencies due to their bureaucratic procedures. However, we will be persistent and guarantee that we will use this data to serve the public.

HOW DO YOU THINK YOUR PROPOSED INTERVENTION WILL HELP COLLABORATION BETWEEN GOVERNMENT AND CIVIL SOCIETY/ PRIVATE SECTOR?

By giving a clear picture through gathered and processed data, stakeholders from government, civil society, and the private sector will have a firm understanding of the problems that polluted air creates. This shared understanding will help them tackle this issue with a more unified strategy

GIVE US A PERSONAL TAKE—A STORY OF HOW YOU OR YOUR FAMILY ARE BEING IMPACTED BY AIR POLLUTION.

As a young parent, it is very difficult to lead a normal healthy lifestyle. One has to think about the air that we breathe while we commute; at home we cannot open the windows for fresh air because it doesn't exist anymore, and we have to worry about the food that we eat and the places we visit on a daily basis. All of this is caused by severe air pollution.

COLOPHONE

REFERENCES

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COVER PHOTO

by Dren Maliq featuring Uta Ibrahim, Kosovo alpinist. The first Albanian woman to climb Mount Everest, the highest peak in the world.

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PHOTOGRAPHY ESSAY

featuring Prishtina in protest demanding better air quality is by Armend Nimani and Valdrin Xhemaj

Maps showing pollution of all sources in Kosovo with a focus in Prishtina, are retrieved from the AQ Modelling Report prepared by Atmoterm and Niras as implementing contractors for the Air Quality Program of Millennium Foundation Kosovo (MFK), funded by the Millennium Challenge Corporation (MCC).

ILLUSTRATIONS

present in the book, as well as the visual language developed to aid the understanding of air quality as part of the Air Quality Program are developed by Permanent Studio—Urtina Hoxha and Elvira Thaqi

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Prishtina, Kosovo
2021

The authors of this book used the following sources as references to articles, commentaries, opinions and illustrations.

1
Smithsonian

2
Research report by Pamela Dalton, an olfactory scientist at the Monell Chemical Senses Center in Philadelphia.

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Millennium Foundation Kosovo (MFK) is an independent foundation set up in 2018 to implement the Threshold Agreement between the Republic of Kosovo and the Millennium Challenge Corporation (MCC) worth 49 million USD.

Kosovo Threshold Agreement addresses two key constraints to Kosovo's economic growth: an unreliable supply of electricity; and real and perceived weakness in rule of law, government accountability and transparency. Thus, MFK's mission is "accelerating Kosovo's transition to energy independence and good governance" and we do this by "pursuing innovative solutions for a sustainable energy landscape, transparent governance and inclusive society."

Our air quality activities are based on our mission for a more transparent government and better data—driven policies and solutions for cleaner air. All our projects support Kosovo's commitment to fight the climate crisis.

MFK's investments are designed to strengthen the power sector by fostering a market—driven approach to lowering energy costs for households and businesses, encouraging energy efficiency, and developing new sources of electricity generation. The program also supports the Government of Kosovo's efforts to improve decision—making and accountability by increasing the accessibility and use of judicial, environmental, and labor force data.

ERA DIMËN—THE SMELL OF WINTER—MIRIS ZIME

This book provides in—depth understanding of the importance of air quality, how it is regulated at the local and national level, and the role academia and scientists play in shaping the many ways in which air quality issues affect us. The book is also a report of the activities implemented by Millennium Foundation Kosovo with the support of Millennium Challenge Corporation and local stakeholders in the field of air quality. Era Dimën takes notes of how civil society organizes itself to demand environmental change and how data can be transformed into civic action. The project underscores the importance of utilizing data and science when striving for impact. The images and stories featured in this book show the aspects of our everyday lives prone to change—unwillingly—due to degradation of air quality; the importance of air quality in both individual and societal progress; and how today's concerns ground questions, behaviours and actions we must change now, to ensure a cleaner (air) living tomorrow.