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COMMENTARY



Citizens against pollution – how raising awareness can save the environment

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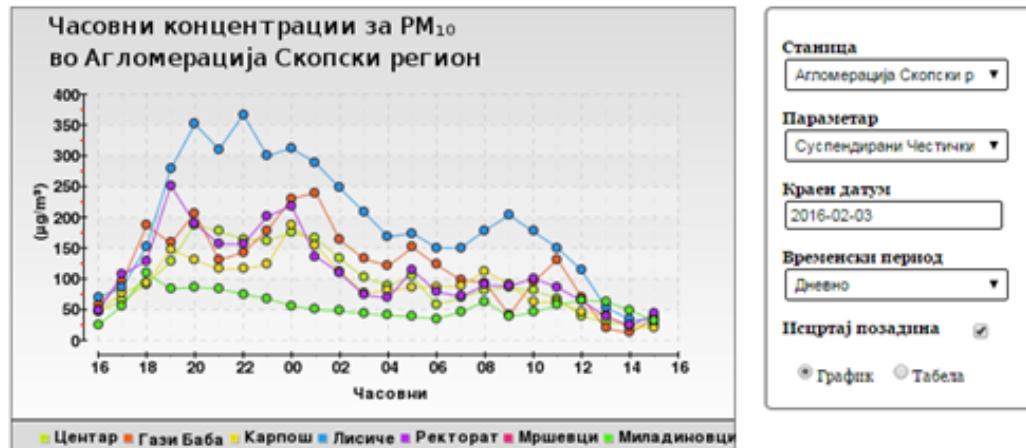
Change comes from within. It encompasses all areas of life, including the fight against pollution. Skopje, the most polluted capital in Europe¹, is struggling year after year with enormously high concentrations of PM10, PM2.5, CO, CO2 etc. Tetovo another city in Macedonia was ranked no. 1 in the world for being polluted!² This has severe consequences for the whole country and its citizens. Consequences range from deaths to lowered economic activity. According to the Macedonian Institute for Public Health there are 1350 death cases per year due to air pollution (non specified outdoor or indoor) and thousands of lost working days. The pollution, especially with particles (PM10 and PM2,5), cost the state 253 millions of Euros or 3.2% of the total GDP in 2011 which was the result of medical bills for the lower respiratory diseases, etc, lower productivity, and early deaths.

Particle matter (PM): very small particles of soot, dust, or other substances, including thin drops of liquid. PM10 particles are smaller than 10 µm, PM2.5 particles are smaller than 2.5 µm. Sources: industry, diesel engines, power plants, dust blown by the wind, wood/coal stoves, com-

bustion processes, etc. Health effects: respiratory diseases, lung damage, cancer, heavy metal poisoning, cardiovascular diseases, eye irritation, asthma, bronchitis, etc. The maximum upper limit for PM10 is 50 µg/m³ in the period of 24 hours, standard set by the EU institutions.

As an example, this is how pollution with PM10 looks like in Skopje on a calm, cold winter day:

Суспендирани честички (PM10), часовни концентрации, Скопски регион



Source: Ministry of Environment and Physical Planning of the Republic of Macedonia

One of the main issues why the pollution is so high is the rampant energy poverty in Macedonia. **Energy poverty is a specific and broad-affecting**

problem worsened by the recent energy transition processes. The estimation is that up to around 30-40% of the households in Macedonia are affected by energy poverty and cannot cover their daily energy needs. That means that they face problems such as providing enough energy for their daily activities and/or timely paying their electricity and heating bills and using old polluting vehicles. They often live in energy inefficient households and have high consumption of energy on a daily basis. Apart from the families that are on the edge of poverty or poor, energy

poor are also considered other families that are believed to fall into the category of vulnerable consumers, i.e. retired persons and families with young

children, because of the characteristics of their housing and limitations in the availability of energy sources. This staggering and wide-reaching issue of energy poverty can only be addressed with a sound, sustainable and system reforming process managed by the respective institutions in cooperation with other stakeholders such as civil society, companies, the academia, the citizens themselves, etc.

Introduction of energy efficiency (EE) and renewable energy sources (RES) measures will have multiple benefits on households first and then have an effect on the outdoor and indoor pollution happening due to the inefficient and cheap usage of dirty energy sources:

1. Social benefits – Reduced poverty, improved life standard as a result of reducing energy costs;

2. Economic benefits – domestic budget savings, decreasing the electricity and heat bills - savings that later on can be used for covering other family and personal expenditures;

3. Protection of the environment – decreasing the emission of greenhouse gases and improving the quality of the air, soil and water in the places where they live, and at the same time improving the environmental conditions for their children and the future generations;

4. Health benefits – reducing health risks of living in cold premises, and for people who use old, inefficient polluting stoves on wood/oil, improved air quality³.

However, authorities are not doing

¹ According to the pollution index rate Skopje is more polluted than any other capital city in Europe. <http://www.numbeo.com/pollution/rankings.jsp>

² Ibid.,

³ Unpublished research, Sonja Risteska, Ana Stojilvoska.

anything to tackle this problem. Another winter is passing where the pollution is only recognized as a serious issue without taking any concrete measures to finally put an end to it. Consequently it is up to citizens themselves to not only pressure through protests and demands the authorities to do something with the pollution and energy (fuel) poverty but also to take measures by themselves that will help alleviate the consequences from the pollution.

What can citizens do?

There are lots of cheap measures and practices that citizens themselves can implement in order not only to save energy and their money but help reduce emissions in their cities as well. Below are only few of those examples, ranging from measures in the home to gardening on your roof.

Energy wasting practices should be eliminated. Introducing simple energy efficiency practices in the homes can reduce the electricity, water and heating bills. For example when it comes to heating simple measures can be:

- **Cover all bare floors.** Carpeting or rugs add to comfort and heat retention, especially if there is little or no floor insulation.
- **Limit your use of portable heaters.** They're great for "spot" heating, but running a 1,500-watt heater 24/7 can be expensive.
- **Don't block heaters with drapes and furniture;** leave them free so they can disperse the heat throughout the room.
- **Heat your home with the sun's help.** Leave window shades or blinds open during the daytime. And consider using solar heat to supplement your normal heating source.⁴

• **Use radiator heat reflector foil behind the heaters that are directly on the outside wall.** In this way the heat will not be simply lost to the outside, especially if the walls are thin single skin walls and/or there is no outside and/or inside insulation. These reflectors are installed behind the radiator and help prevent that heat from being lost by reflecting it back into the room i.e. it will prevent it from 'escaping' outside.

Taking about transport modes, limiting the usage of single cars, especially old vehicles and the ones running on diesel can drastically improve the air in one city. Simple options for urban citizens can be:

Car sharing – people use cars in most inefficient ways, travelling alone from/to work, school etc. Sharing a car, with 3-4-5 people from the same neighborhood, work place or similar provide people with the needed transport but reduces the pollution and saves money.

Public transport – one of the most environmentally friendly ways to travel to and from in one city is its urban transportation. Money is saved on gas, parking, congestion is reduced as well as pollution.

Cycling - Cycling can be a lot quicker than public transport or a car as well as a very pleasant way of getting around, particularly if you can use cycle tracks for part or your entire journey.

Walking - Physical exercise is good for

www.progress-energy.com/carolinas/home/save-energy-money/energy-saving-tips-calculators/100-tips.page?

both the physical and mental health - it helps to reduce stress levels as well as toning muscles and burning calories.

When using your car - by driving economically - for example, accelerating gently and obeying speed limits - you use less petrol. Not only do you save money, you produce less pollution and reduce the likelihood having an accident. Also, consider leaving your car at home one day a week or fortnight. By using public transport, car sharing or a sustainable method of travel (walking or biking) to get to work and about, you can improve your level of fitness and the state of the environment.⁵

Another concept rarely used is the urban garden.

Urban gardening – a new trend in big cities where green spaces are on the decline do the urbanism and construction. Citizens on the roofs of their block of flats, shared spaces etc. can plant trees,

One tree can remove 12 kilograms of carbon dioxide from the atmosphere annually equaling 17700 kilometers of car emissions. One study showed that 100 m² of trees has the ability to remove 13 tons of particles and gases annually. 232 m² of turf absorbs

⁵ What can I do to reduce vehicle pollution? <https://www.croydon.gov.uk/transportandstreets/rhps/vpollution>

carbon dioxide from the atmosphere and releases enough oxygen for a family of four to breathe.

(More info at: <http://projectevergreen.org/resources/environmental-benefits-of-green-space/>)

flowers, vegetables, fruits. The benefits are not only fresh products but also: the plants filter the dust from air, they provide shades in summer, lower the temperatures in general and they reduce the energy consumption by this lowering of the temperatures.●



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⁴ 100 ways to save energy at home. <https://>