# Air purification quality monitoring system in the learning environment


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## Introduction

**The main problem we propose to solve thanks to our project is to ensure quality systematic ventilation of school facilities to comply with the "Sanitary Regulations for Secondary Education Institutions" from 25.09.2020 and measures to combat the Covid-19 pandemic while controlling the adequacy of ventilation and prevention of wasteful loss of heat energy and additional carbon dioxide emissions by the school building. Our project has signs of sustainability - because after its implementation there will be some Sustainable Development Goals, such as: Good Health (3), Quality Education (4), Gender Equality (5), Responsible Consumption (12), Combating Climate Change (13).**

## Tasks

- Equip public offices with air quality monitoring devices @Air-Home (10 pilot project offices);

- Create Telegram bot software to notify the participants of the educational process about the beginning and end of ventilation and continuous transparent monitoring of air quality in the school building;

- To prepare teams of sanitary energy managers - students of 7-10 classes, who will control ventilation on the basis of measuring the school air monitoring system;

- Consider the option of reducing the cost of air quality monitoring devices and their self-creation;

- Assess the effectiveness of the pilot project and develop a roadmap for the implementation of a full-scale system for monitoring air purification and air quality in the educational institution.

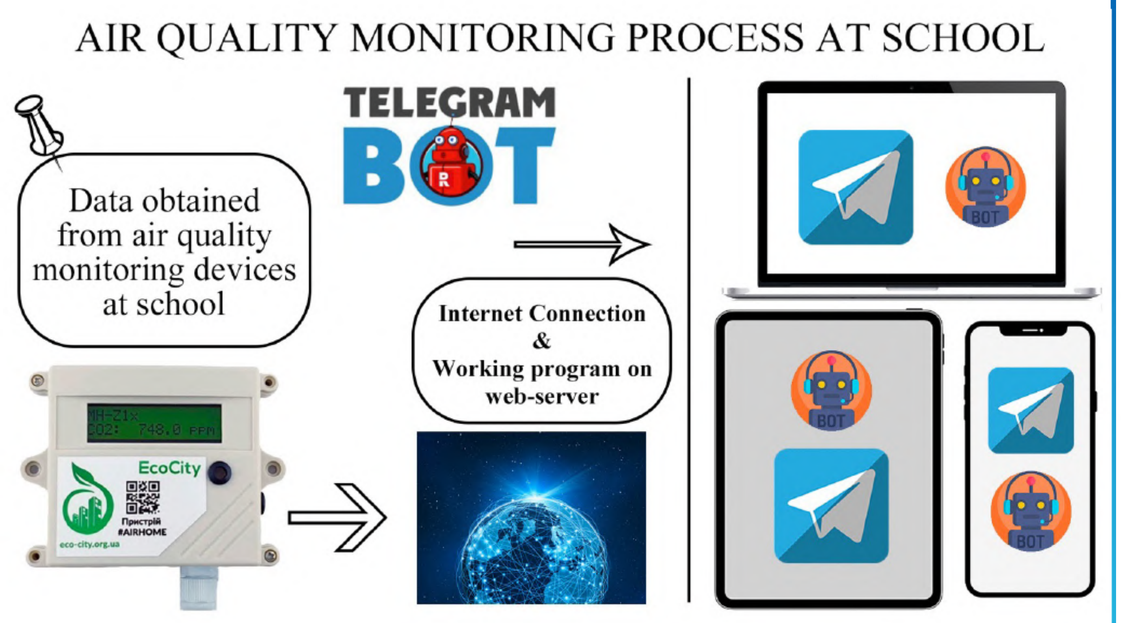
## Project`s main idea

The idea of air monitoring is already widely used in many sectors of the world. But in educational institutions - NO !!! Therefore, we consider the adaptation of the air quality monitoring system for the school and effective ventilation without wasted resources to be a novelty and the leading idea of our work. We will learn current data from classrooms using devices ... Software - Telegram Bot, written by me, will inform participants in the educational process about violations of air quality, advise to ventilate, and report comfortable, fresh air after the end of air purification. A team of students in grades 7-10 will monitor the process without the help of teachers, as they also need to do a lot of time during the break, and self-organization for students in such activities is the first step to responsibility.

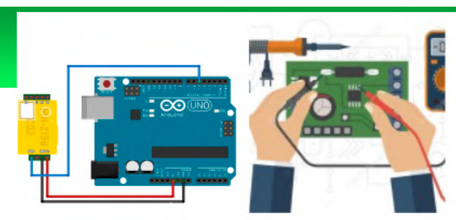
## Air monitoring devise


This device has all the necessary sensors for school use, namely: solids pilometers PM1, PM2.5, PM10; sensors for the determination of carbon dioxide in the air (carbon dioxide); as well as temperature, relative humidity and atmospheric pressure in the room.

## How does it works?




## Own development



We have an idea, that can help us use sensors at all school classrooms and economize much money for buying. We`re going to create it by ourselves. The functionality will be the same but they will cost much cheaper. CALCULATIONS: 1 arleady-made device = 2270UAH, our devise = 1157UAH. For the hole school: 1 var. = 90800UAH, 2 var. = 46320UAH. That is, ourselves made sensors is twice cheaper to equip the whole school than ready-made devices.

## Conclusions

**Following the pilot project, we will be able to provide 1,012 students and about 80 school staff with a digital school air quality monitoring and purification system and develop a full-scale SMOP project for the school and reduce the environmental footprint of the Covid-19 pandemic response.**