**PRESS RELEASE**

**Transforming polluted air into biodegradable material: Colombian innovator Mariana Pérez in top 10 innovators in the Young Inventors Prize 2025**

* **99.3% of Colombia’s population lives in areas where air pollution exceeds WHO guidelines, affecting public health, according to the Air Quality Life Index**
* **Mariana Pérez’s invention removes CO₂, nitrogen dioxide and sulfur dioxide from the air, converting pollutants into biodegradable materials**
* **Pérez is among the ten innovators of the Young Inventors Prize 2025, awarded by the European Patent Office (EPO) on 18 June 2025**

**Munich, 6 May 2025** – According to the [Air Quality Life Index](https://aqli.epic.uchicago.edu/wp-content/uploads/2024/08/Colombia-FactSheet_2024.pdf), 99.3% of Colombia’s population is exposed to air pollution exceeding WHO safety limits, with average particulate pollution increasing by 52.8% over the past two decades. **Colombian entrepreneur Mariana Pérez (27) has developed a system that not only removes CO₂ from the air but also captures nitrogen dioxide (NO₂) and sulfur dioxide (SO₂)**, which are pollutants linked to respiratory diseases. Her innovative solution has **secured her a place among the ten global innovators of the Young Inventors Prize 2025, known as Tomorrow Shapers,** selected from over 450 candidates by an independent jury.

**Mimicking the human respiratory system**

Fine particulate matter and harmful gases pose serious health risks, contributing to respiratory diseases and premature deaths. While existing carbon capture technologies primarily target CO₂, Pérez’s invention goes further, capturing additional pollutants. Ecol-Air’s technology is **designed to mimic the human respiratory system**, using mechanical bronchioles and alveoli to optimise pollutant absorption. It can be installed on chimneys to draw in and process polluted air or used as a free-standing unit to purify ambient air. The captured **pollutants are neutralised and processed into biodegradable polymers**, which can be used in eco-friendly packaging and industrial materials, like biodegradable bags or tiles.

**From childhood curiosity to real-world impact**

Pérez’s scientific interest began at the age of eight, when **she noticed how rain washed away the residue of vehicle emissions from her father’s car.** This curiosity later led her to develop early prototypes, refining them through science fairs and eventually securing investor support. Despite initial scepticism from industries, she installed her devices for free at large factories to prove their efficiency. *“There were moments in my journey when I doubted myself. But I believe all scientists need to realise that, while we can create incredible solutions for the planet, health and people, scaling our projects and turning them into businesses is what gives our inventions a real future. We can’t stop at just having an idea; we need to develop it further,”* Pérez explained.

Ecol-Air now collaborates with industrial and academic partners. Sumicol was the first to adopt the system commercially, followed by Incolmotos Yamaha. In 2021, the first air treatment plant using Ecol-Air technology opened in Girardota (Colombia), processing 70 tonnes of air daily with an 82% efficiency rate, according to the company estimations. The Air Innovation Center, set to open in Barbosa in 2025, is expected to process 497 tonnes of air per day and incorporate public awareness initiatives. To support the international expansion of her company, Pérez recently relocated to the United States.

**The Young Inventors Prize celebrates worldwide innovators 30 and under using technology to address global challenges posed by the United Nations Sustainable Development Goals (SDGs).** Pérez’s invention supports SDG 3 (Good Health and Well-being), SDG 11 (Sustainable Cities and Communities), and SDG 13 (Climate Action) by reducing harmful air pollutants and creating sustainable by-products.

**The prizes of the 2025 edition will be announced during a ceremony** [**livestreamed**](https://www.epo.org/en/news-events/young-inventors-prize/2025-event?mtm_camp=pressrelease&mtm_key=yip2025&mtm_med=press) **from Iceland on 18 June 2025.**

Find more information about the invention’s impact, the technology and the inventor’s story [here](https://www.epo.org/en/news-events/young-inventors-prize/mariana-perez?mtm_camp=pressrelease&mtm_key=yip2025&mtm_med=press).

**Media contacts European Patent Office**

**Luis Berenguer Giménez**Principal Director Communication / EPO spokesperson

**EPO press desk**

press@epo.org  
Tel.: +49 89 2399-1833  
  
**About the Young Inventors Prize**

Aimed at individuals 30 and under, the Young Inventors Prize showcases the transformative power of youth-driven solutions and recognises the remarkable young people paving the way to a more sustainable future. Established in 2022, trophies were first handed out during the European Inventor Award ceremony. From 2025 onwards, the Prize will move up a gear with its own dedicated event, held separately from the Award. Among the 10 Tomorrow Shapers selected for each edition, three will be awarded a special prize: World Builders, Community Healers, and Nature Guardians. In addition, a People’s Choice winner, voted by the public online, will be revealed. Each Tomorrow Shaper will receive EUR 5 000, the three special prize winners will each receive an extra EUR 15 000. The People’s Choice winner will be awarded an additional EUR 5 000. [Read more](https://new.epo.org/en/news-events/european-inventor-award?mtm_campaign=EIA2023&mtm_keyword=EIA-pressrelease&mtm_medium=press&mtm_group=press) on the Young Inventors Prize eligibility and selection criteria.

**About the EPO**

With 6,300 staff members, the [European Patent Office (EPO)](https://www.epo.org/?mtm_campaign=EIA2023&mtm_keyword=EIA-pressrelease&mtm_medium=press&mtm_group=press) is one of the largest public service institutions in Europe. Headquartered in Munich with offices in Berlin, Brussels, The Hague and Vienna, the EPO was founded with the aim of strengthening co-operation on patents in Europe. Through the EPO's centralised patent granting procedure, inventors are able to obtain high-quality patent protection in up to 46 countries, covering a market of some 700 million people. The EPO is also the world's leading authority in patent information and patent searching.