



**Tehran University of Medical sciences
Institute for Environmental Research
Center for Air Pollution Research**

Strategic Plan of Center for Air Pollution Research 2023-2027

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1. An Introduction to Air Pollution and Its Health Effects

Air pollution is a major factor influencing health and is considered the most significant environmental risk factor for health. Studies have shown that air pollution contributes substantially to the burden of non-communicable diseases (NCDs). It is the second leading cause of deaths from NCDs, following tobacco use, and is associated with an increased risk of both acute and chronic diseases, as well as mortality. According to the latest air quality data released by the World Health Organization (WHO) in 2018, more than 90% of the global population lives in areas where the annual average of at least one ambient air pollutant exceeds the WHO's guideline limits. As air quality decreases, the risk of stroke, cardiovascular diseases, lung cancer, and acute and chronic respiratory diseases increases.

In addition to ambient air pollution, indoor air pollution is also a serious health risk for approximately 3 billion people worldwide who use solid fuels for cooking and heating their homes.

In our country, as in many others, air pollution poses one of the most significant challenges for policymakers, leading to substantial health and economic impacts due to public exposure. According to the latest study conducted by researchers at this center in collaboration with several international scientists, the burden of disease attributable to PM_{2.5}—the most critical ambient air pollutant—in 429 cities in Iran was estimated based on ground-based monitoring and satellite data. The findings indicate that PM_{2.5} was responsible for around 50,000 deaths among individuals over 25 years of age (equivalent to approximately 12% of all deaths per year), with an economic cost of roughly 12 billion dollars in 2018. Therefore, like many countries worldwide, air pollution is a serious health risk in Iran, ranking as the fifth leading risk factor for mortality in the country.

2. About the program

Program Title: Strategic Plan of Center for Air Pollution Research

Program time frame: 2023-2027

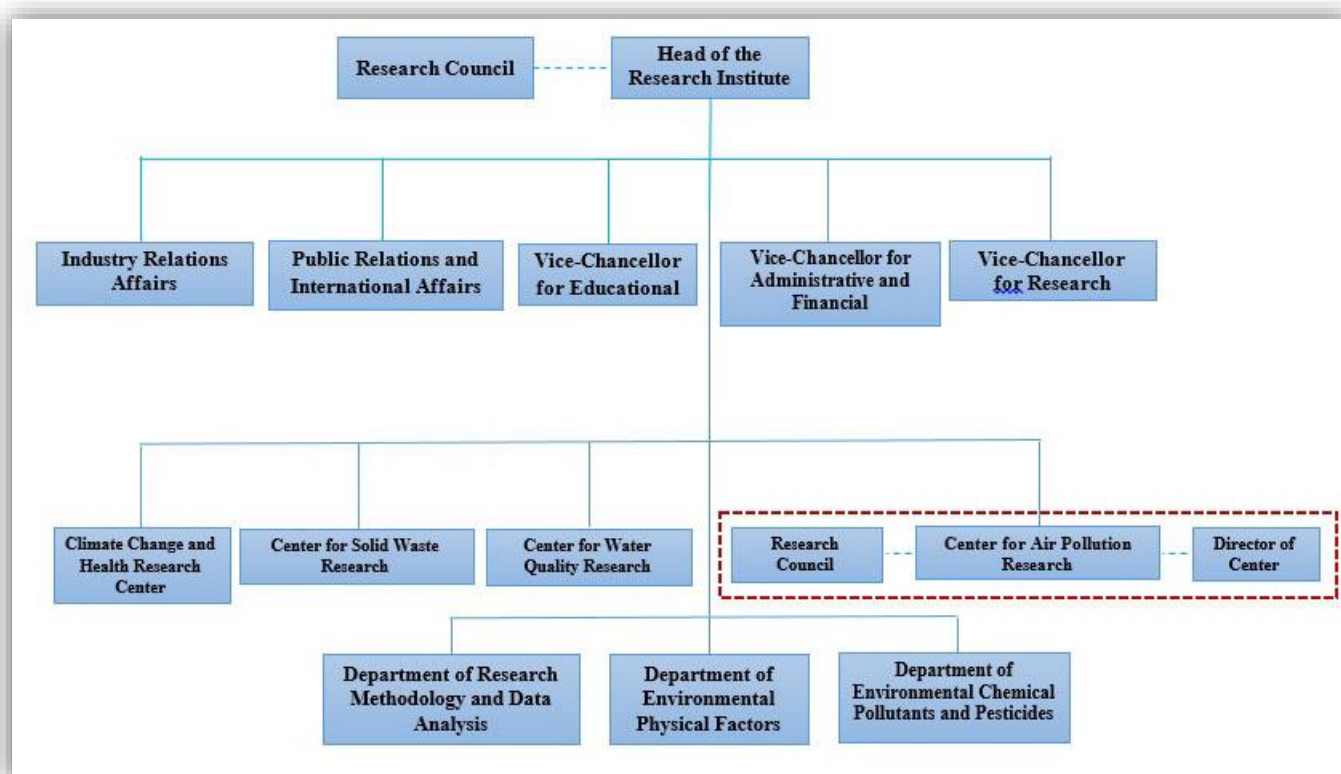
3. Producers of the program

Dr. kazem Naddafi	
Head of Institute for Environmental Research, Member of Research Council	
knadafi@tums.ac.ir	
Dr. Masud Yunesian	
Member of Research Council	
yunesian@tums.ac.ir	
Dr. Mohammad Sadegh Hasanvand	
Director of Center, Member of Research Council	
hassanvand@tums.ac.ir	
Dr. Sasan Faridi	
Faculty member of IER, Member of Research Council	
Sfaridi@sina.tums.ac.ir	
Eng. Faezeh Izadpanah	
Master of Applied physics	
CAPR-ier@tums.ac.ir	

4. About the center

4-1. History and Objectives of the Center

Recognizing the country's need for research on air pollution and its impact on human health, the Institute for Environmental Research of Tehran University of Medical Sciences established the Center for Air Pollution Research in 2010, with the aim of producing, developing, and advancing knowledge and technology in the field of air pollution and its health effects. This center is the first of its kind in the country, receiving initial approval from the Ministry of Health in 2010 and final approval in 2014. The organizational structure of the Institute for Environmental Research and the Center for Air Pollution Research is illustrated in the figure below.



5. Vision

The Center for Air Pollution Research, with a participatory management approach, utilizes a team of dedicated, skilled, and passionate professionals, as well as appropriate laboratory facilities and independent financial resources. It serves as a scientific and technical arm of the health system, providing guidance for decision-making and policy development on air pollution and related issues. The center also collaborates with the World Health Organization (WHO) and other reputable international organizations as one of the leading scientific-research hubs in the country.

6. Mission

At the Center for Air Pollution Research, we aim to produce the scientific evidence needed by researchers and policymakers in the field of air pollution and health. We achieve this through scientific collaboration with educational and research centers of other universities in the country and reputable international organizations.

7. Research Priorities of the Center for Air Pollution Research

- Measurement of air pollutants
- Evaluation and development of innovative technologies for air pollutant measurement
- Assessment of indoor air quality
- Air pollutant modeling
- Estimation of individual exposure levels to air pollutants
- Estimation of the health effects of air pollution
- Air quality management
- Assessment of the short-term and long-term health effects of air pollution
- Analysis of the physical and chemical composition of particulate matter
- Source apportionment of air pollutant emissions
- Biomonitoring of air pollutants
- Design of air pollution control equipment
- Development of strategies to reduce air pollutant emissions
- Evaluation of the performance of air pollution control equipment
- Assessment of the effectiveness of strategies for reducing exposure to ambient and indoor air pollutants
- Health impact assessment of large-scale development projects

8. Research Line

- Measurement of air pollutants
- Investigation of the health effects of air pollutants
- Evaluation of the effectiveness of strategies for reducing exposure to ambient and indoor air pollutants to improve community and individual health
- Exploration and development of air quality management strategies
- Control and modeling of air pollutants from stationary and mobile sources

9. Overall Objective of the Center for Air Pollution Research

- To provide essential scientific evidence and actively contribute to strengthening and reinforcing the country's health system policies regarding air pollution and related issues.

10. Related Strategies to Achieve the Center's Overall Objectives

- Conducting research and disseminating results for the benefit of policymakers, scientists, industry, and the community.

11. Specific Objectives

- Enhancing the quantity and quality of scientific outputs and research achievements
- Establishing connections with national, regional, and international organizations
- Engaging with policymakers in the field of air pollution and health
- Improving the specialized skills of stakeholders, faculty members, and experts at the center
- Raising public awareness regarding environmental pollutants and their effects

12. Activities Related to Specific Objectives

1. Enhancing the Quantity and Quality of Scientific Outputs and Research Achievements

- Holding research council meetings to review research proposals submitted to the center
- Presenting research proposals at the institute/university level
- Publishing ISI papers and scientific-research articles in reputable national and international journals
- Presenting papers and participating in national and international conferences
- Authoring and translating books or guidelines
- Reviewing and preparing manuscripts for publication in scientific-research journals

2. Engaging with National, Regional, and International Organizations

- Defining and implementing projects in collaboration with the industry, both governmental and non-governmental
 - Collaborating with international organizations (such as the World Health Organization and its offices)
 - Partnering with national organizations (such as the Ministry of Health and the Academy of Medical Sciences)
3. **Engaging with Policymakers in the Field of Air Pollution and Health**
- Providing the center's key reports to relevant authorities and organizations
4. **Improving the Specialized Skills of Stakeholders, Faculty Members, and Experts at the Center**
- Conducting various workshops (e.g., assessing the health effects of air pollution and measuring ambient and indoor air pollutants)
 - Collaborating in the delivery of educational classes (for MPH, master's, and doctoral students in environmental health)
5. **Raising Public Awareness Regarding Environmental Pollutants and Their Effects**
- Developing and compiling educational materials related to air pollution and its health impacts
 - Preparing news updates on the results of significant national and international studies concerning air pollution and its effects