# Air Pollution and Firm Productivity in Uganda
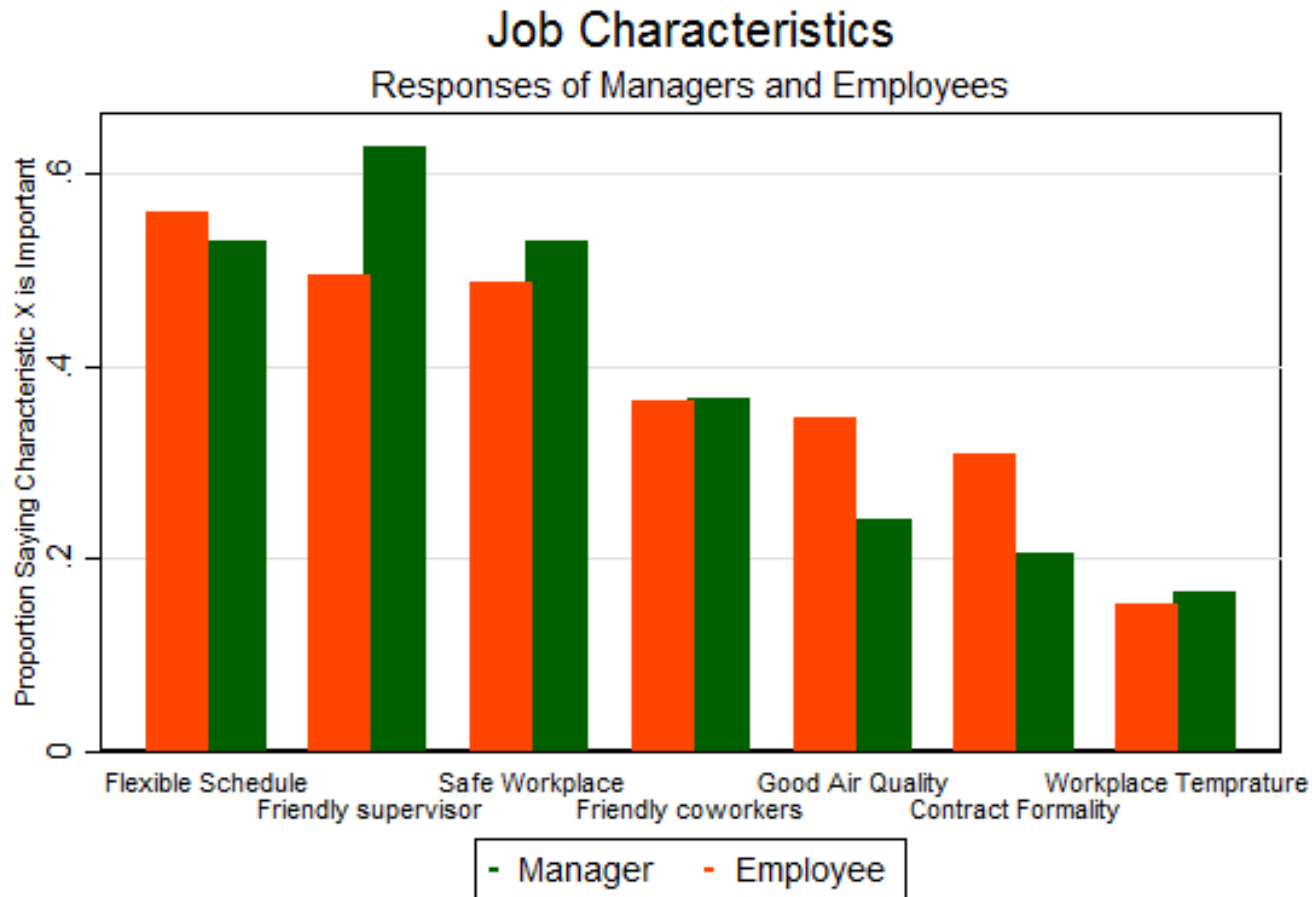
Vittorio Bassi (USC), Nancy Gracia (WB), Matt Kahn (USC), Raffaela Muoio (BRAC), Tommaso Porzio (UCSD), Maria Soppelsa (WB) and Esau Tugume (BRAC)
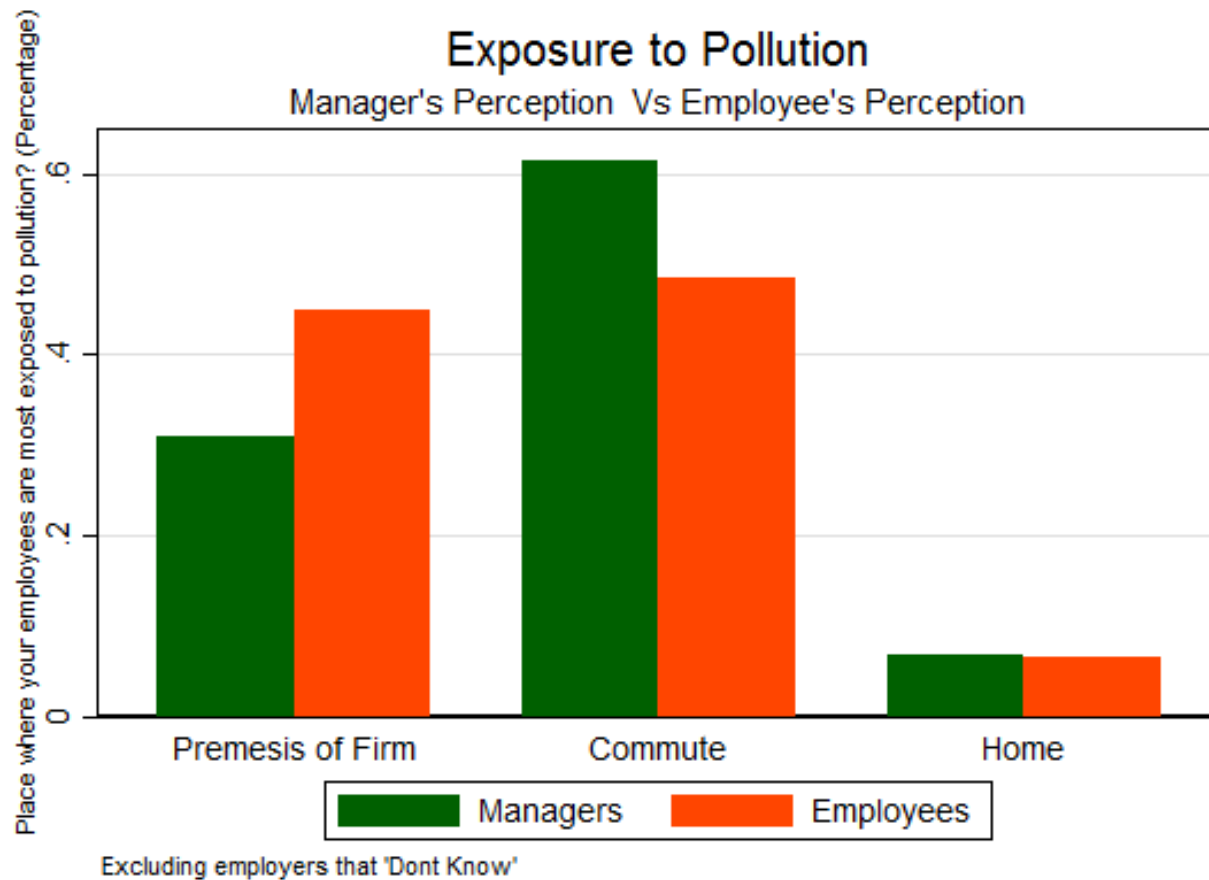
Kampala, 14 December 2018

# Motivation

- Exposure to air pollution may lower firms' productivity

  - Pollution management is a priority for African countries/cities experiencing rapid growth in manufacturing and urbanization

- Monitoring air pollution is crucial to take action supporting firms' competitiveness

  - No pollution data available in Uganda (e.g. PM2.5)

- This project:

  - Understand firms' exposure and contribution to air pollution

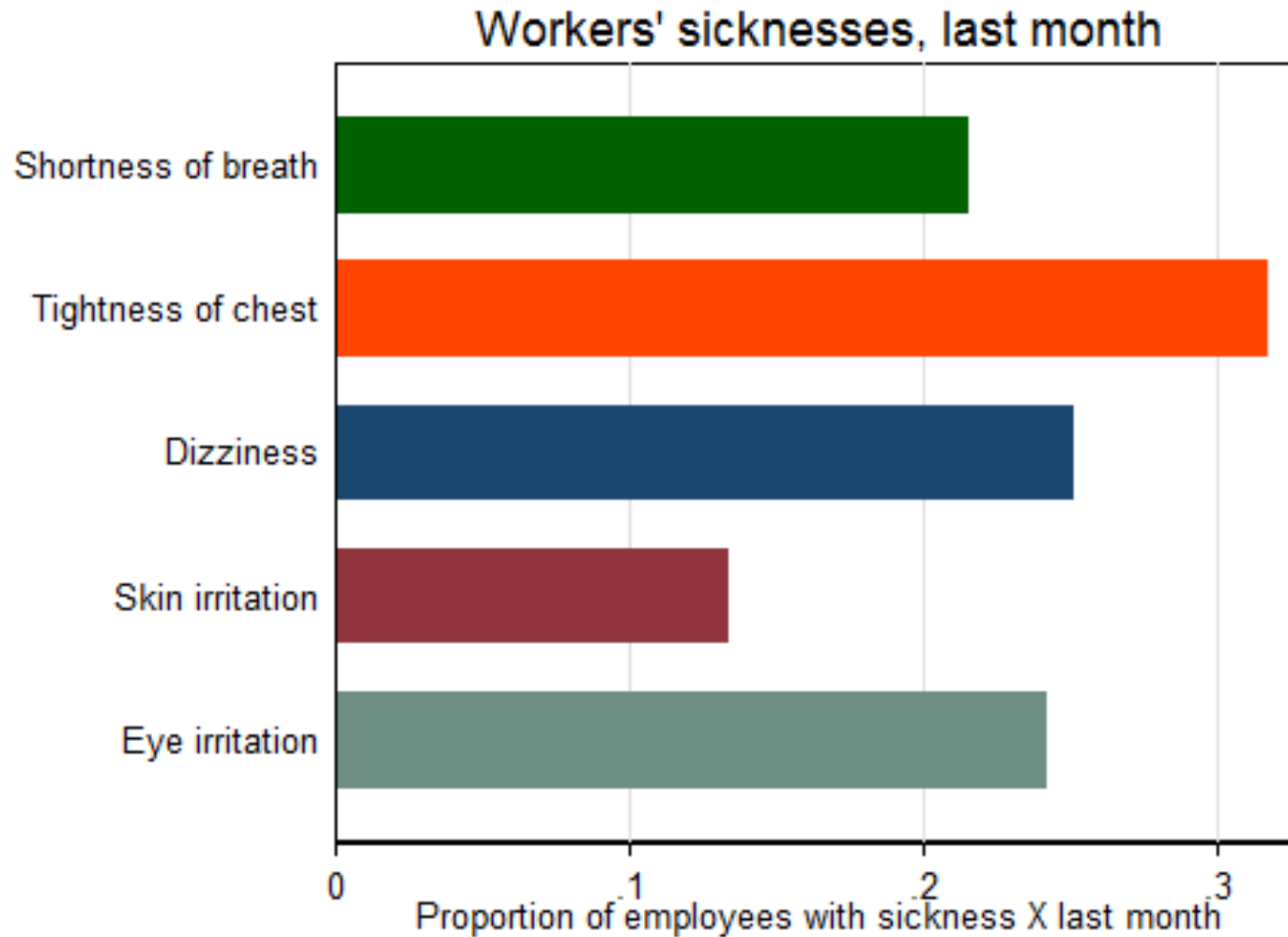  - Fill the pollution monitoring gap (in collaboration with AirQo)

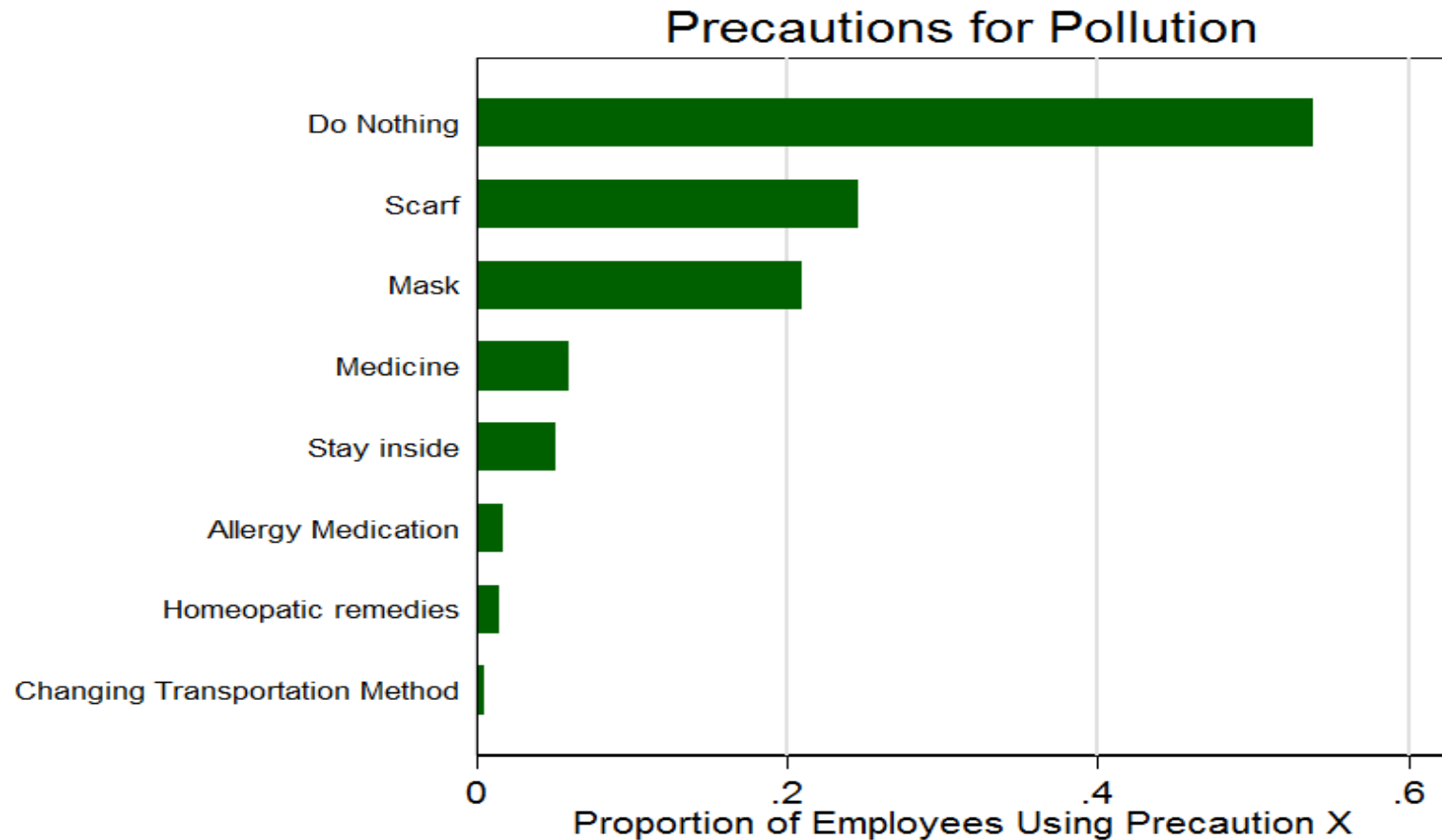# Good air quality at the workplace: manager's and workers' view



**Job Characteristics**
Responses of Managers and Employees

Proportion Saying Characteristic X is Important

Categories (x-axis): Flexible Schedule, Friendly supervisor, Safe Workplace, Friendly coworkers, Good Air Quality, Contract Formality, Workplace Temprature

Legend: — Manager   — Employee

# Where workers are most exposed to air pollution

# Common sicknesses among workers



Workers' sicknesses, last month

# What workers do to prevent unintended side effects of air pollution

# Perception of pollution vs actual pollution data

- Firms' perception of pollution:

  – Almost 40% of the workers interviewed consider good air quality at the workplace relevant

  – However, around 50% of the workers do nothing to protect themselves from pollution

  – Commuting route seems to be the place where workers are most exposed to pollution

- Link perception of pollution to actual pollution data (e.g. PM2.5) recorded in the same Parish → collaboration with AirQo

# An Air Quality Initiative



School of Computing & IT, Makerere University

# AirQo focus areas

- Design & develop low-cost tools and methods for air quality monitoring

- Provide insights into the sources & quantification of the magnitude of ambient air pollution

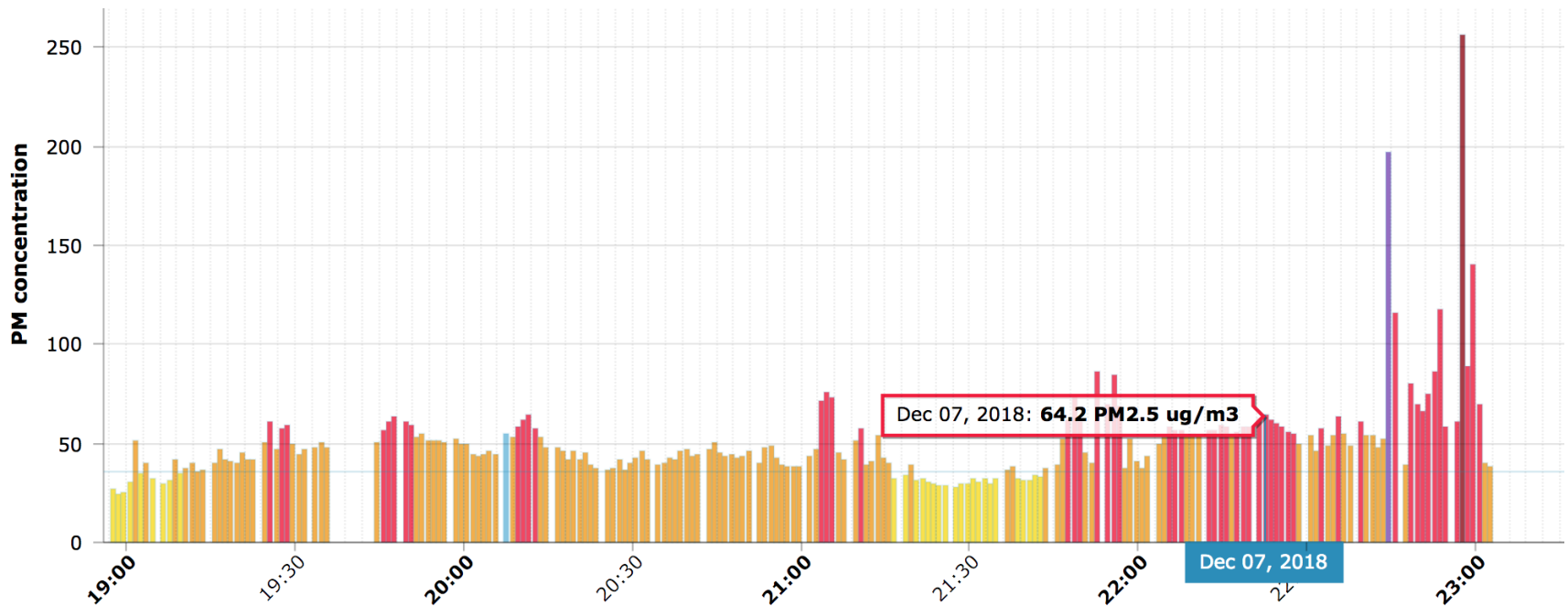- Make citizens aware and inform policy

# AirQo is supporting the project through:

- Deployment of mobile and fixed continuous air quality monitors to collect key pollution data on particulate matter (PM) in selected sub-counties/parishes

- Deployment of passive monitors (diffusion tubes) to collect data on Ozone and Nitrogen Dioxide

# Preliminary Data Visuals

Preliminary data from the boda-boda unit in Kawempe division Kampala (PM2.5 concentration in micrograms per cubic meter (µg/m3)

# Contact us



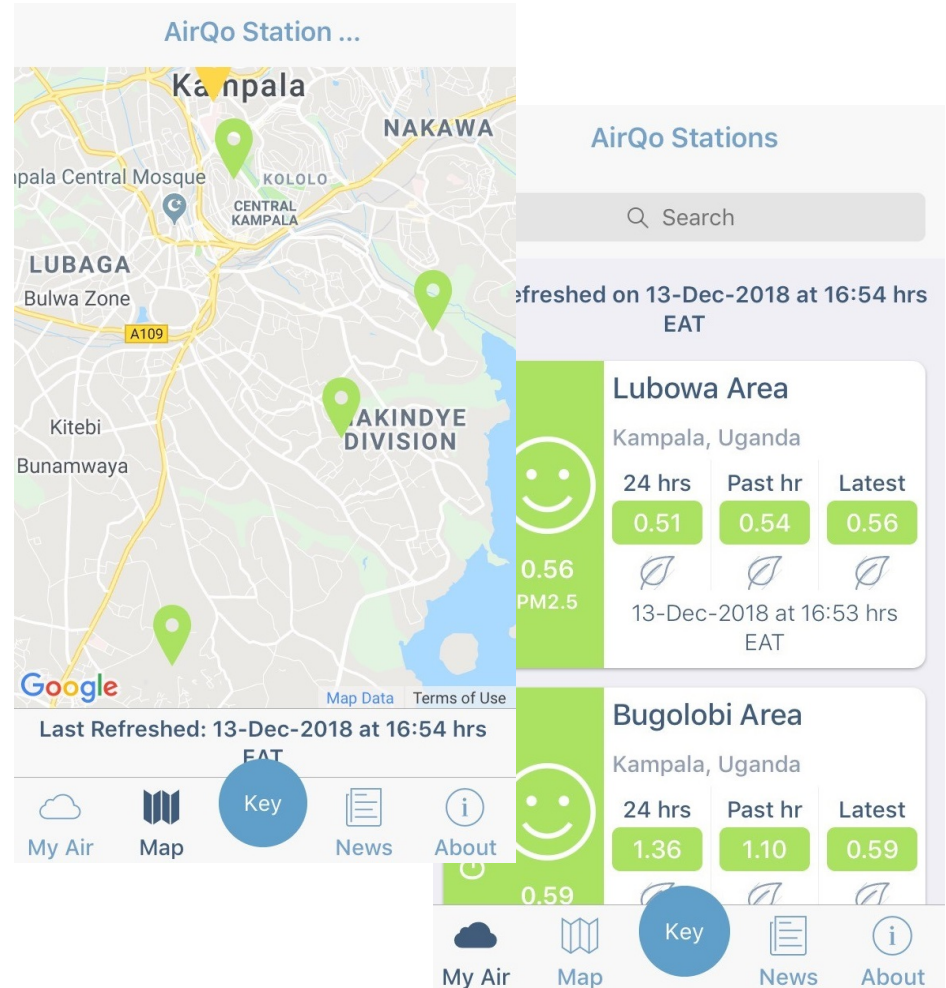Email:  info@airqo.net
Web:   www.airqo.net

@KampalaAirQo

# Conclusions and Next Steps

- The mis-alignment between employers' and employees' perceptions on pollution at work suggests that standards are needed to contain employees' exposure to air pollution at the workplace

- Pollution management policies can be important to create a healthy and productive workforce

- Next steps:
  - Correlate actual pollution levels with employees' and workers' perceptions

  - Study interaction between actual pollution levels and firm productivity, including firm adaptation to pollution

# Thank You!