

Smart & Breathable Cities

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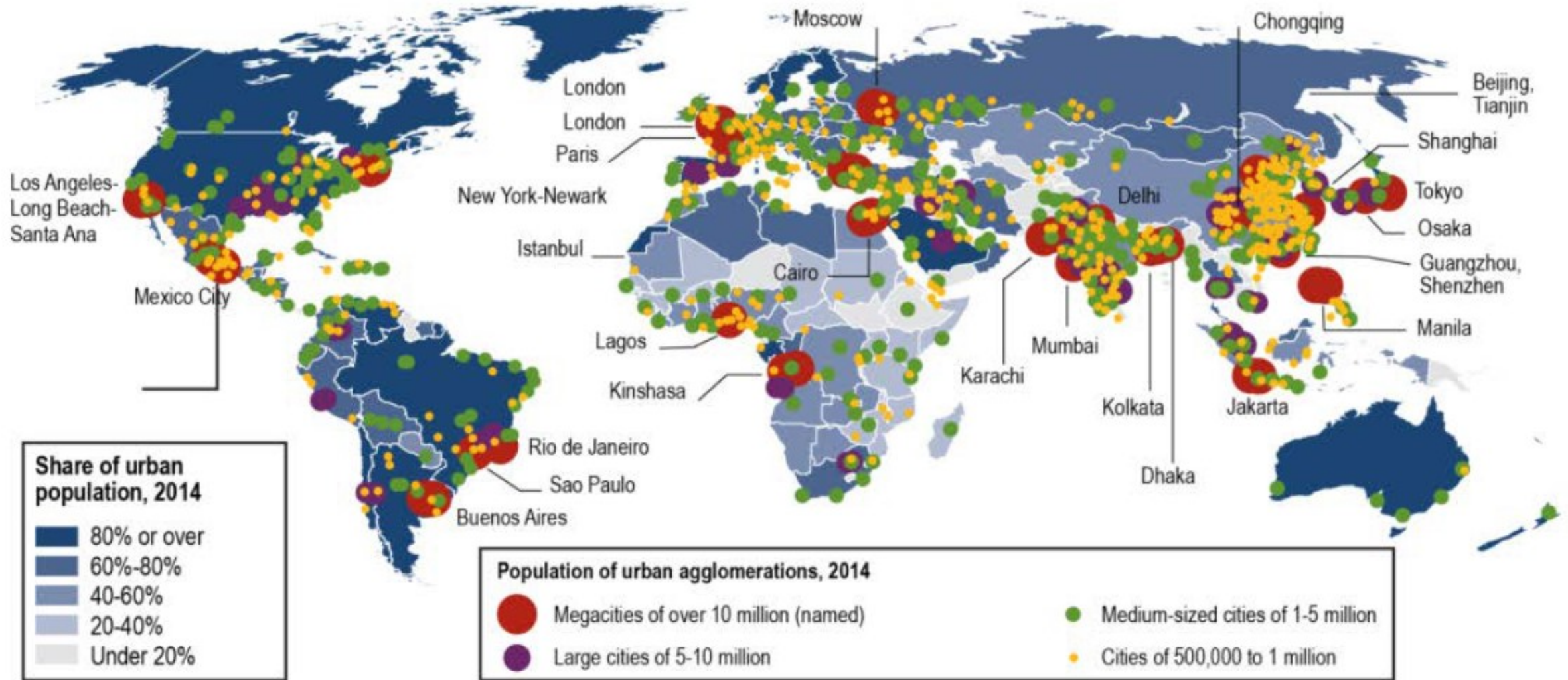
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Vaisala Weather & Environment

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Urbanization keeps accelerating with 55% of population living in cities today, up to 66% by 2050



Source: United Nations, Frost & Sullivan

This is leading to major environmental & health issues such as poor air quality and related health diseases

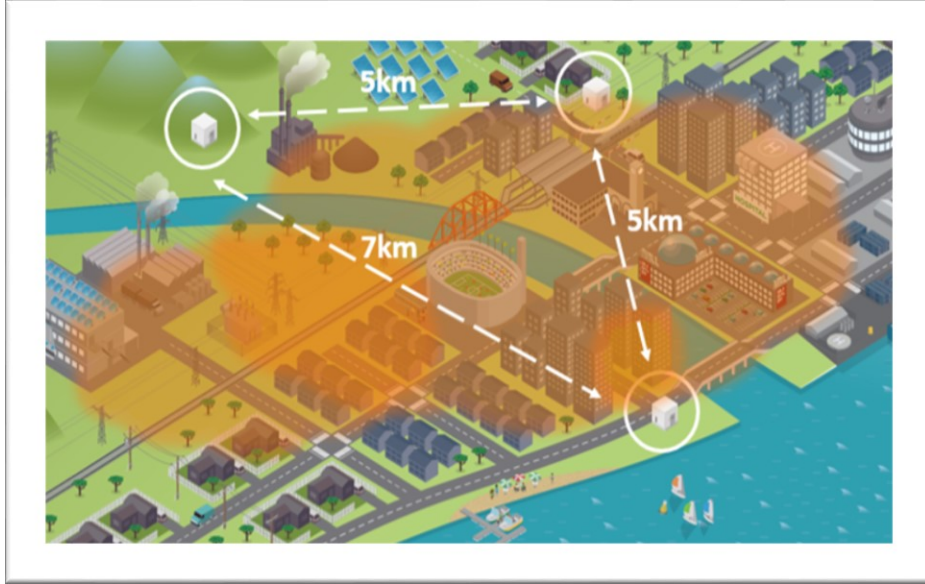


- 9 out of 10 people worldwide breathe polluted air
- Worldwide, ambient (outdoor) air pollution contributes to 5.4% of all deaths
- An increase in airborne $PM_{2.5}$ of 10 micrograms per cubic meter causes an average loss of life expectancy of 9–11 years

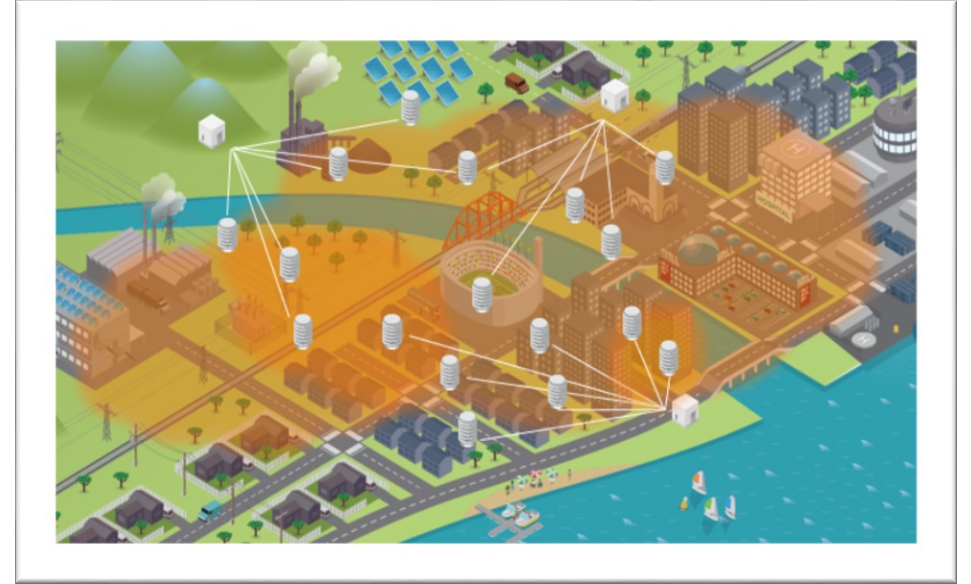
Source: World Health Organization; Mikael Skou Andersen, *Ecological Indicators*, volume 79, (August 2017), published by Elsevier

How can we make cities more breathable for citizens?

Step 1 – Understand sources, level of air pollution & weather



- Reference grade air quality monitoring stations offer accurate but sparse understanding of air quality



- Dense network of supplementary air quality sensors enables to accurately pinpoint sources and level of air pollution
- Understanding weather is also key for air quality (e.g. wind & precipitation)

How can we make cities more breathable for citizens?

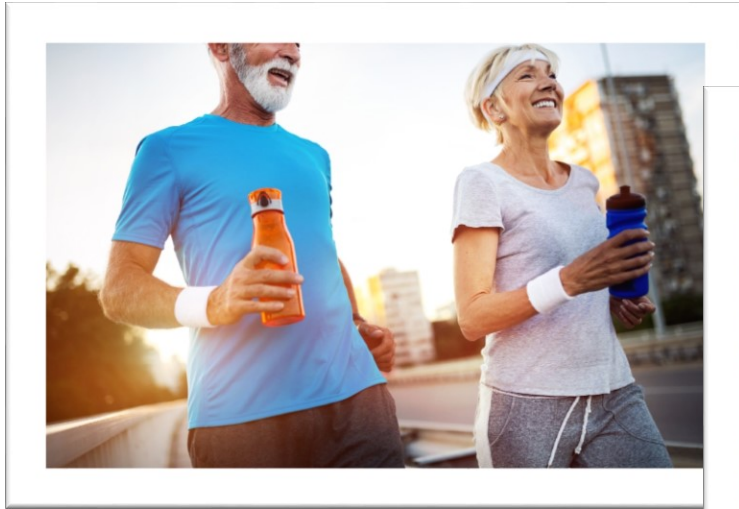
Step 2 – Take advantage of the measurement data

- High resolution air quality & weather observations through dense network
- Air quality modeling & forecast combining observations and data from difference sources (e.g. weather models, GIS, traffic)
- Visualization of air quality on maps for citizens & open interfaces to access data (APIs)



How can we make cities more breathable for citizens?

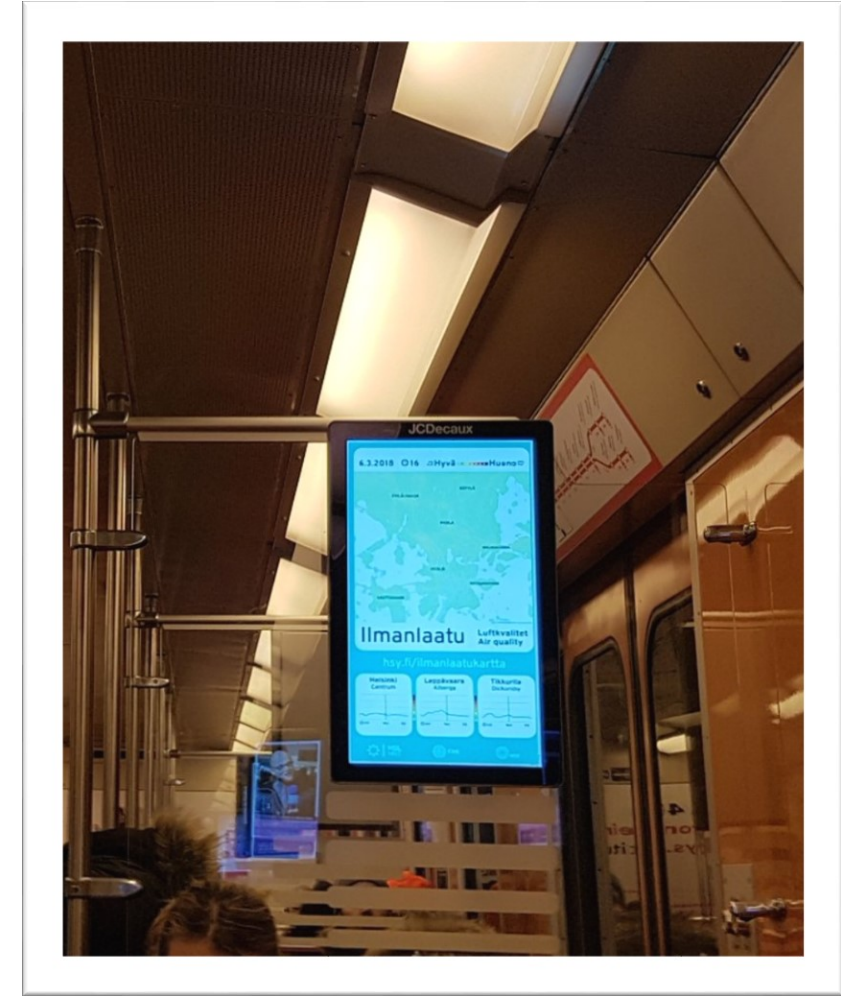
Step 3 – Create services benefiting cities and public health



- Create value added services using air quality data and forecasts
- Enable cities to achieve significant gains in areas as e.g. preventive health, traffic management, emission hunting

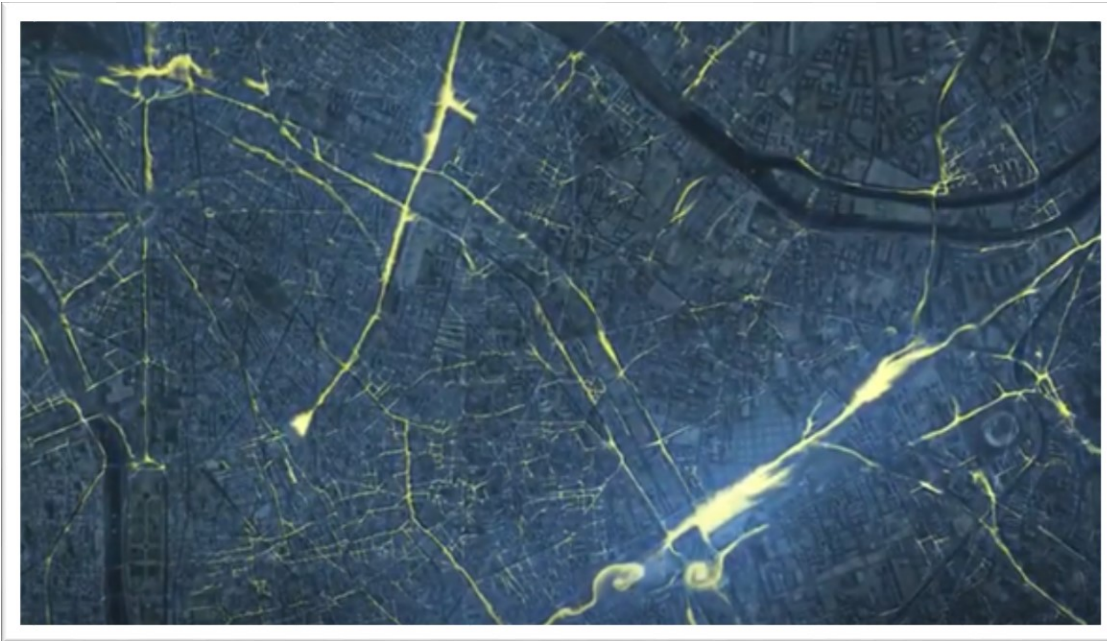
Vaisala seeks global growth from the CITYZER/HAQT network concept

- CITYZER:
 - Digital services to support decision making processes related to weather & air quality
 - Vaisala: network management & system architecture coordination
- HAQT (Helsinki Metropolitan Air Quality Testbed)
 - Employs CITYZER platform to integrate data from air quality measurements, FMI-ENFUSER air quality model and piloted demo services
 - Vaisala: air quality sensor network
- Related projects: Nanjing Air Quality testbed, HOPE



Source: HSY

The "Magic formula" to make cities breathable: Observations + Data & Modeling + Services



1. Understand sources, level of air pollution & weather through observations' sensor network
2. Take advantage of the measurement data & modeling
3. Create services benefiting cities and public health

Thank You!

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