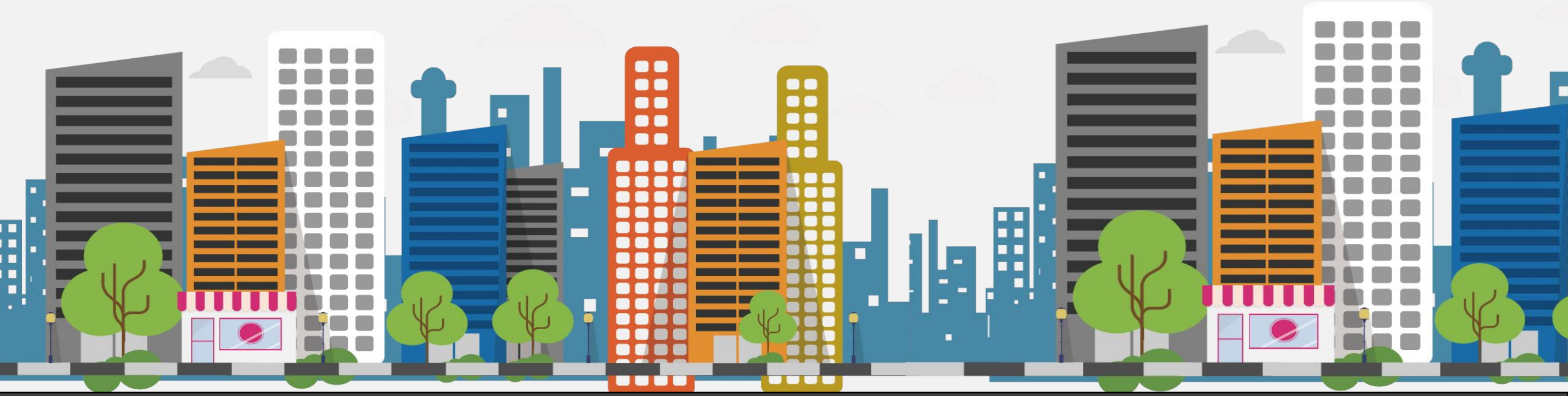
Green Our Cities
GROW Our WORLD



TEAM AMETHYST

- Stephanie
- Owen Nixon Jimawan

By 2030, rising heat from climate change could lead

80 million jobs loss

with developing countries hardest hit

A **temperature rise** of **1.5°C**

⬇

2.2% drop in **working hours** because of the health risks

=

equal to **80 million** full-time **jobs**

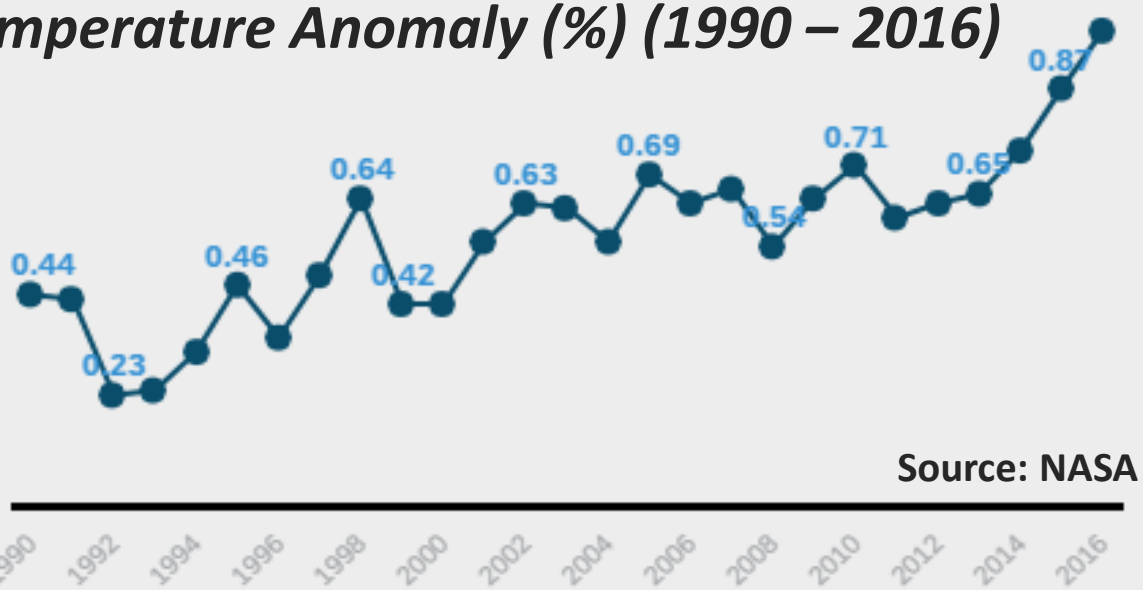
⬇

costing the **global economy**

$2.4 trillion

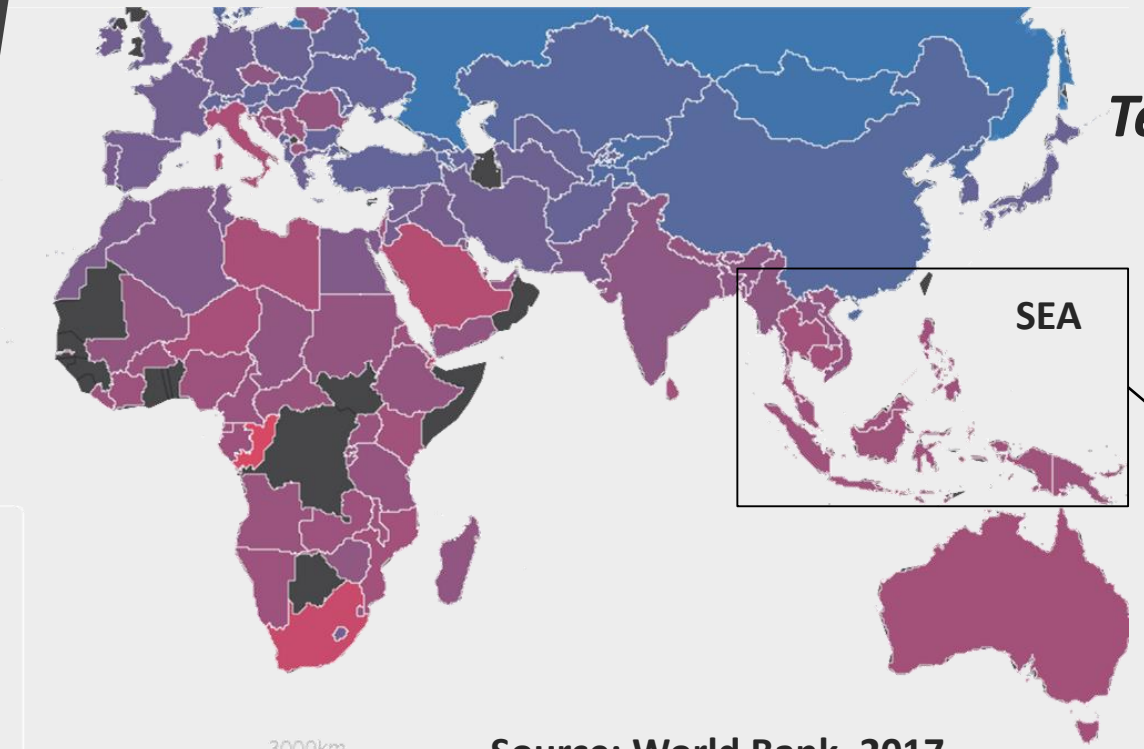
Source: International Labour Organization, United National, 2019

Temperature Anomaly (%) (1990 – 2016)



Source: NASA GIS, 2017

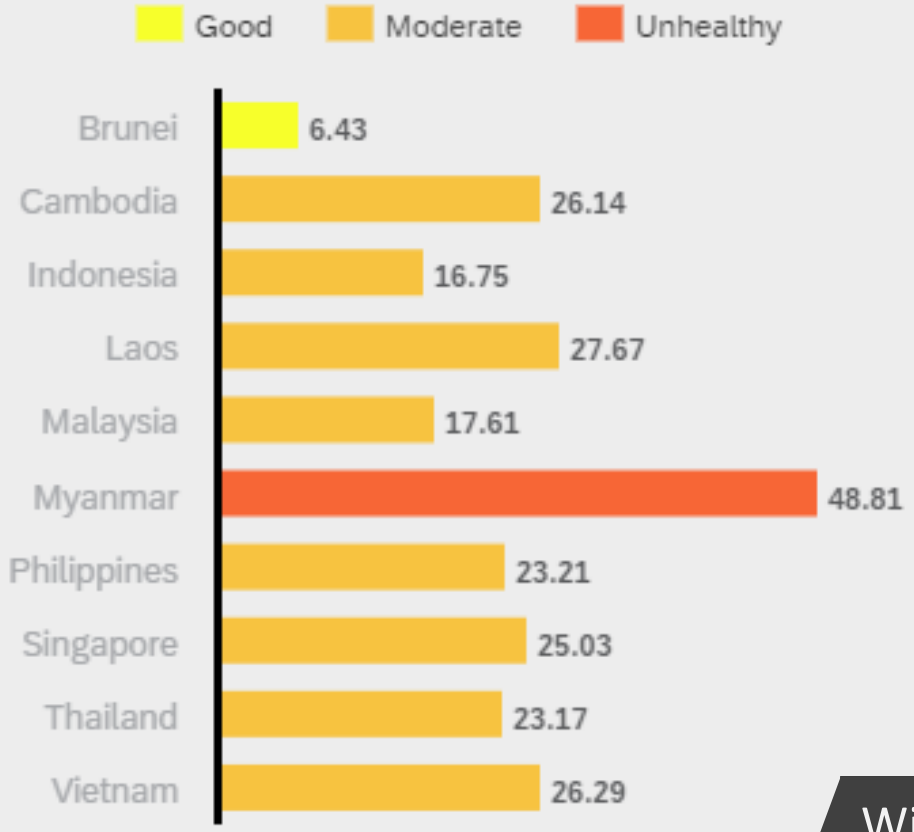
World Temperature Map (°C)



> 24 °C
in all SEA countries

Source: World Bank, 2017

PM 2.5 Air Pollution (South East Asia)



Source: Trading Economics, 2017

Out of 10 countries in SEA, there are

8 countries included to **moderate**

1 country included to **unhealthy**

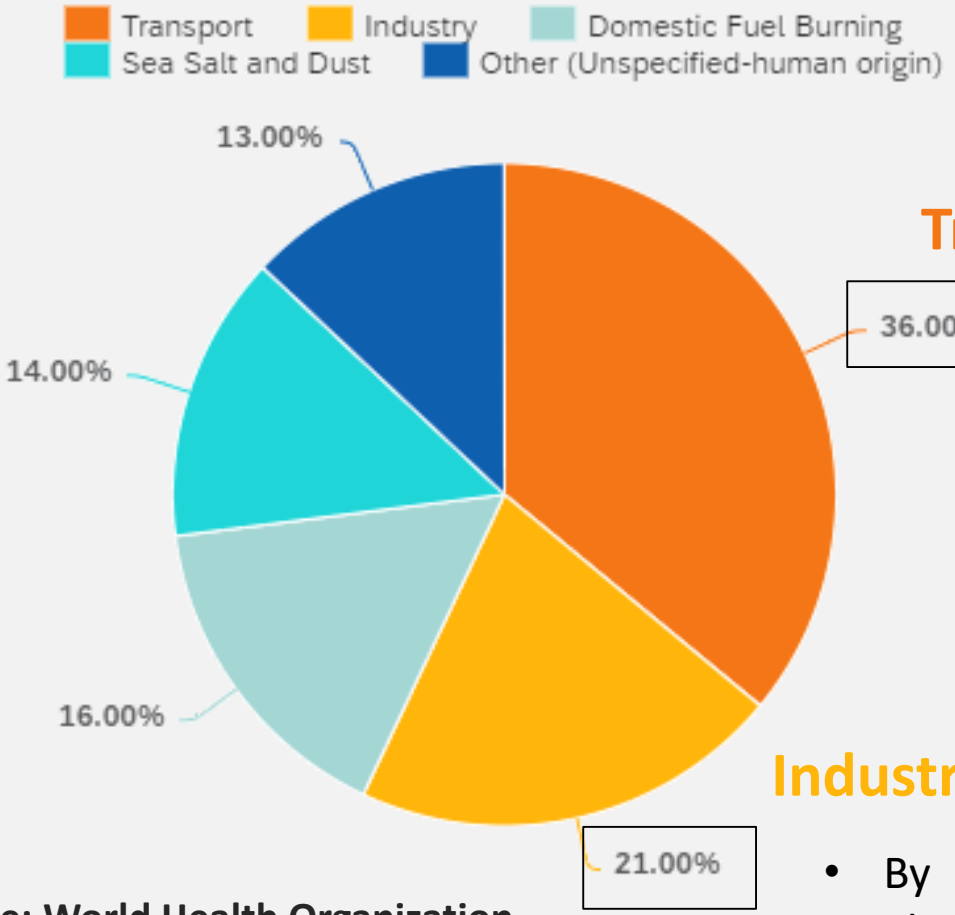
Without intervention, worldwide **premature deaths** due to ambient air pollution are expected to rise (annually)

3 million (2012) → **>6.5 million** (2050)

with the majority in **Southeast Asia** and the **Western Pacific region**

Source: The Globe Post, 2019

South East Asia Pollution Contributor



Source: World Health Organization, 2018

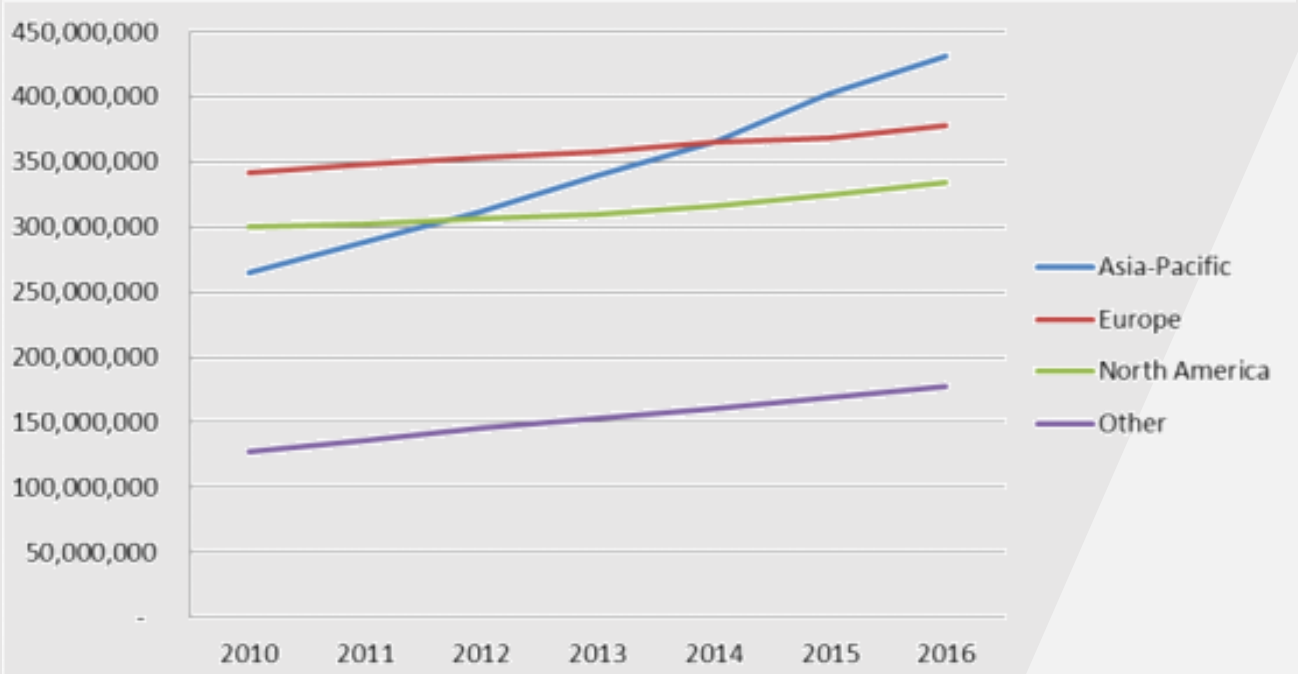
Transportation

- In SEA megacities, it would be no surprise that **road transport** is the **number one** driver of **toxic air pollution levels**.
- The problem is compounded by **poorly regulated** tailpipe emissions for vehicles and **traffic** that is regularly at a **standstill**.

Industry

- By 2030, the **4th industrial revolution** (Industrial Internet of Things) will transform traditional factories into high performance, **fully optimized plants**.
- However, **developing countries** also have argued they should be allowed to **continue increasing emissions** as they industrialize.

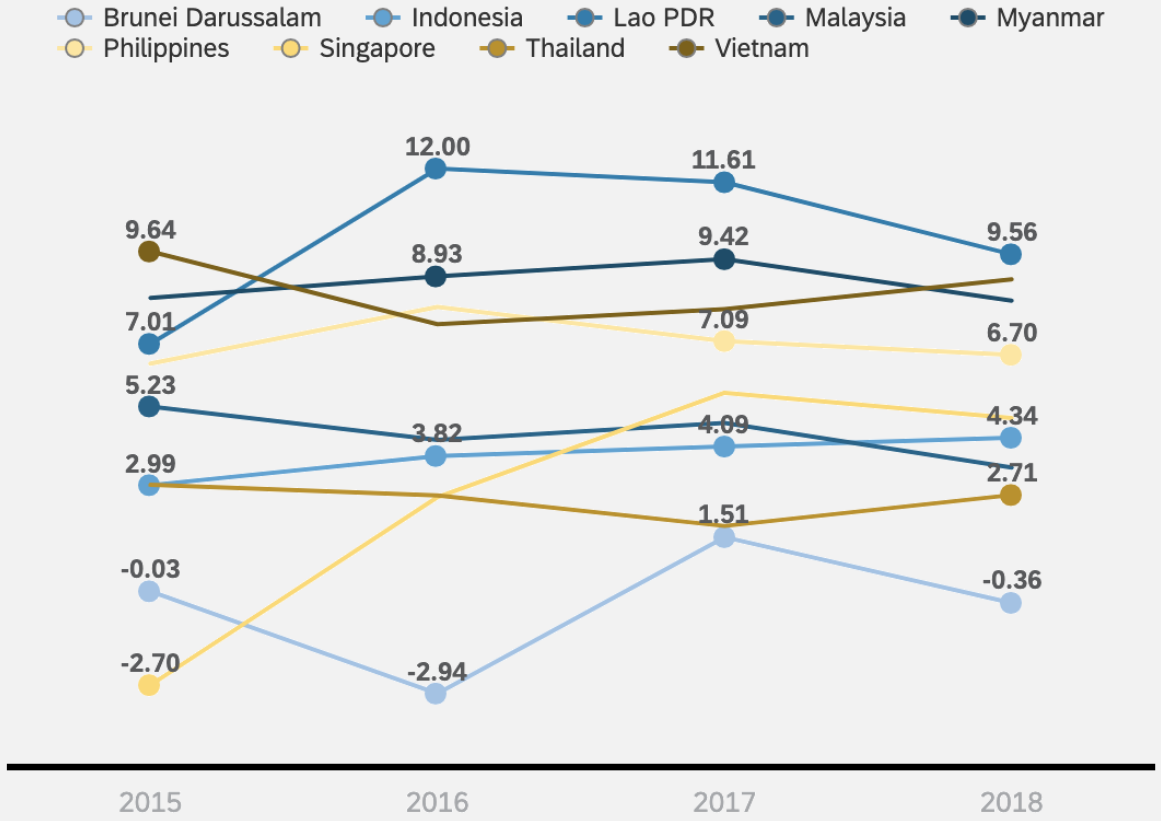
Transportations Annual Usage



Source: Auto Wards, 2017

Asia-Pacific trend are the most increasing one, which means **SEA transportations usage** is **one of the biggest** in the world.

Industries Annual Growth (%)



Source: World Bank, 2019

Industries annual growth in all SEA countries from 2015 – 2018 mostly are showing **increasing trend** and also **positive percentages of growth**

1st SOLUTION (transportation)

SMART CITY MAPPING

Analyze top congestion points in the city

Map it all around the city

Grow more trees around the congestion points

Monitor the impacts through air pollution index

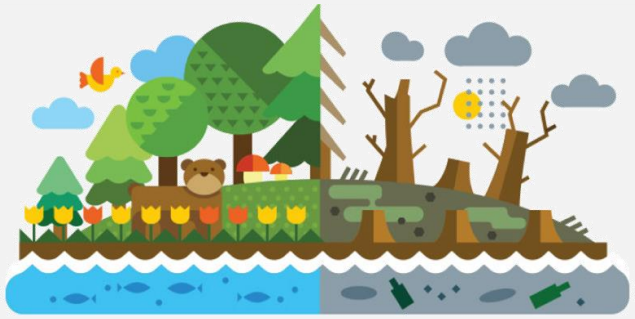
2nd SOLUTION (industry)

Payback Emission Apps

Application to **calculate** the number of **trees** that must be planted in **substitution** of **emissions** issued by factory machinery, with considering the types and levels of pollutants, tree absorption ability, length of time to grow, and other variables.

AIMS:

- **Industry** becomes **responsible** for **air pollutants** produced



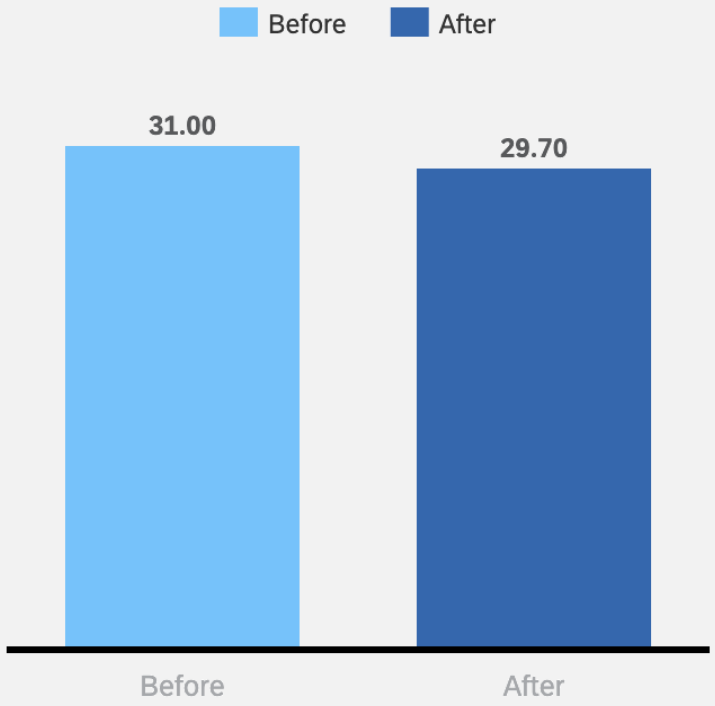
- Can **replace green open space** that lost due land clearing / land use

- As an innovation, it can be **combined** with the amount of **tax rates**, where trees that successfully grow are made into **tax credits**

WHY PLANT TREES ?

Temperature Reducing

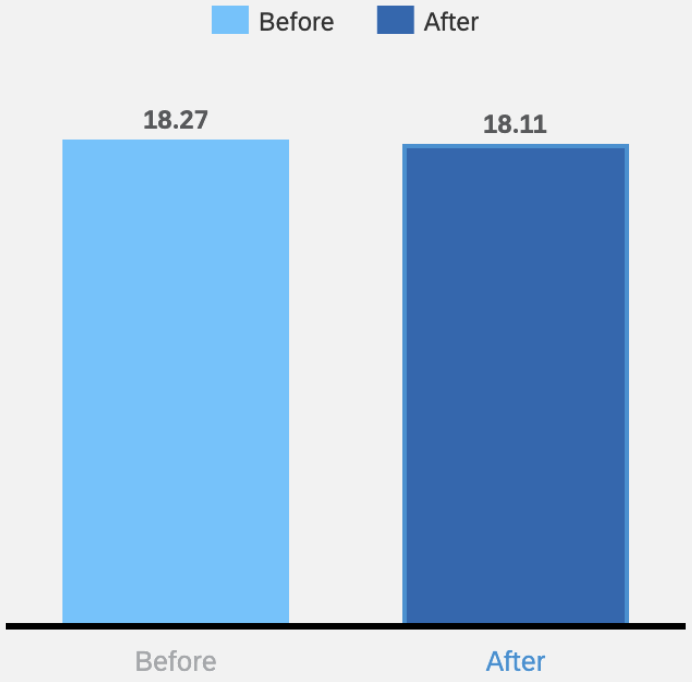
Indiana Temperature (Before and After Reforestation), in ℃



Source: Souch, C. A. and Souch, C. (1993)

Removal of Air Pollutants

New York PM 2.5 Pollution (Before and After Reforestation), in ppm



Source: Nowak, D. J. and Crane, D. E. (2000)

CONCLUSION

Cities are **key contributors** to air pollution and also climate change, as urban activities are **major sources** of greenhouse gas emissions.

At the same time, **technology** can be used to **support** in **preventing** and **reducing** the city problems.

REFERENCES

- Auto Wards, 2017
- International Labour Organization,United National, 2019
- NASA GIS, 2017
- Nowak, D.J. and Crane, D.E. (2000)
- Souch, C.A. and Souch, C. (1993)
- The Globe Post, 2019
- Trading Economics, 2017
- World Bank, 2017
- World Health Organization, 2018