Global Platform for Sustainable Cities | Resource Team

Making the case

HOW TO LEVERAGE CO-BENEFITS OF CLIMATE ACTION TO GET EVERYONE EXCITED ABOUT IT?

gef

Global Platform for Sustainable Cities

WORLD RESOURCES INSTITUTE | ROSS CENTER

C40 CITIES

ICLEI Local Governments for Sustainability

Agenda

01. BENEFITS OF CLIMATE ACTION

What a benefit is - Why measuring the benefits

02. HOW THE BENEFITS APPROACH CAN UNLOCK ACTION

Examples of cities who successfully used the Benefits approach

03. MEASURING THE BENEFITS

Tools available with C40

04. CASE STUDY: MEDELLIN

CAP Process and Air Quality benefits

05. AIR QUALITY CONDITIONS IN MEDELLIN

Air quality as a driver

06. CASE STUDY: MEASURING THE BENEFITS

Examples projects

01.

BENEFITS OF CLIMATE ACTION

What is a benefit
Why measuring the benefits

BENEFITS OF CLIMATE ACTION

Impacts and benefits

Every climate action has an impact

IMPACT

Generic term for positive or negative impacts of an action.

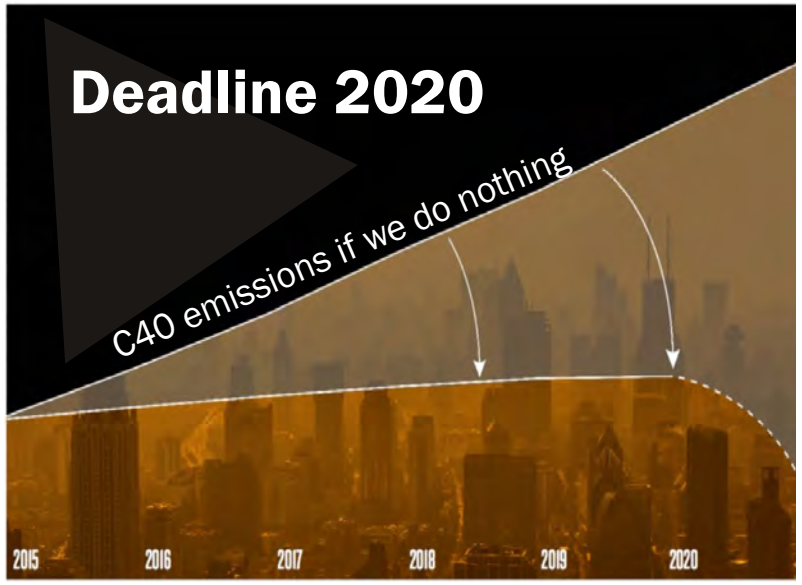
BENEFIT

When you have current evidence that its clearly a positive impact.

BENEFITS OF CLIMATE ACTION

Why measuring the benefits is important

Cities need to take urgent climate action



The fierce of climate urgency. By 2020 – C40 cities must:

- Double the rate of action
- Ensure 70% of action are at city-scale

Public Health & Economic challenges:

- Poor air quality
- Cities growth
- Inequality of access to healthcare

BENEFITS OF CLIMATE ACTION

Why measuring the benefits is important

Making the case is a key barrier – Cities face challenges to delivering and expanding climate action

CITIES CHALLENGES

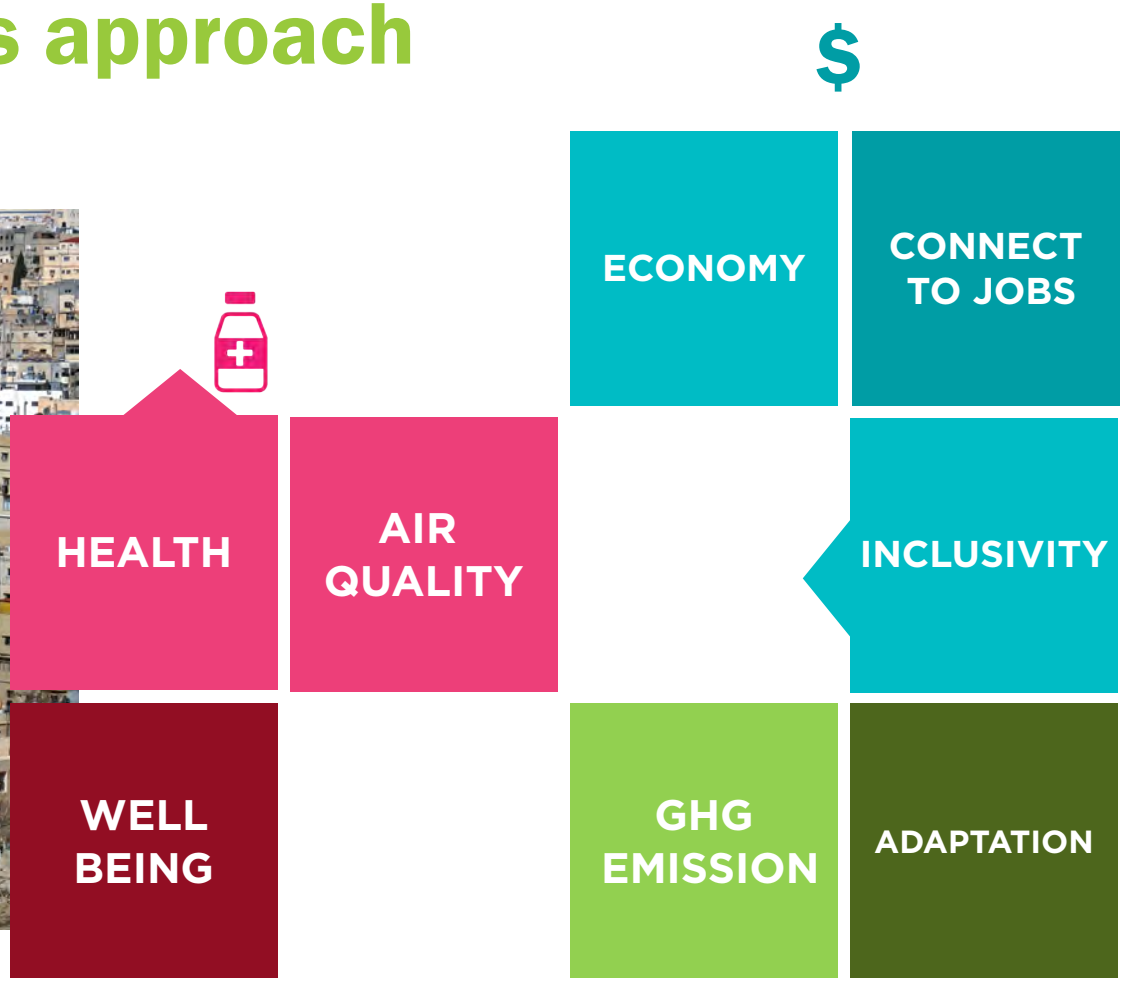
- Political will
- Lack of funding
- Public reluctance
- Engagement of stakeholders
- Lack of clear targets
- Lack of knowledge
- ...

WHY INVESTING IN CLIMATE ACTION?

BENEFITS OF CLIMATE ACTION

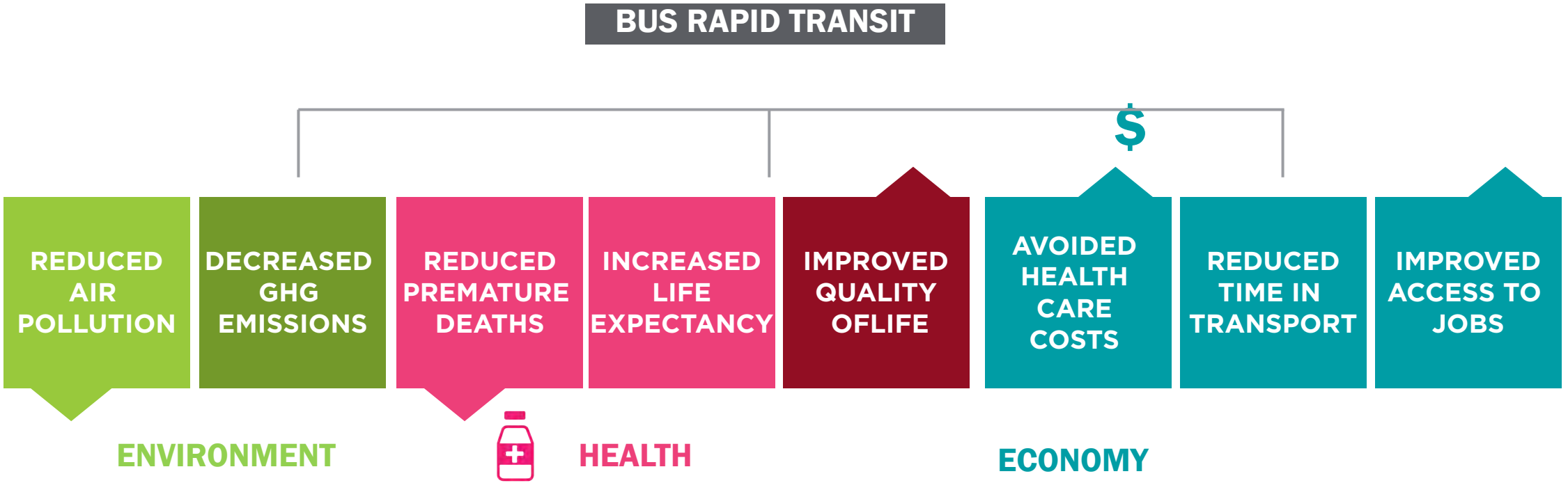
Understanding the Benefits approach

Synergy to address the city's challenges



Understanding the Benefits approach

Climate Action can bring a range of wider benefits



CITIES ACADEMY

2. First two questions to be addressed

1. What benefits can be measured now, based on the data currently available in cities and feasible methods of analysis?

2. How can gaps in data and research be filled and what methods can be employed to improve the measurement of benefits in the future?

02.

HOW THE BENEFITS APPROACH CAN UNLOCK ACTION

Examples of cities who successfully used the Benefits approach.

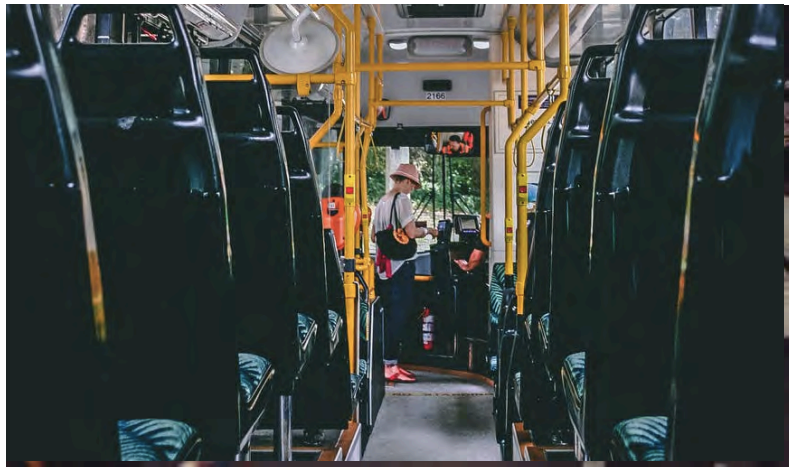
HOW THE BENEFITS APPROACH CAN UNLOCK ACTION

Example : Quito electric buses

380 PREMATURE DEATHS
EACH YEAR IN QUITO ARE DUE TO $PM_{2.5}$ LEVELS

BUSES REPRESENT 31% OF ROAD TRANSPORT SECTOR PM2.5 CONCENTRATION

THE PROBLEM



THE ACTION: REPLACING BUSES BY ELECTRIC ONES

11.4% reduction $PM_{2.5}$ in the intervention area

6.5 premature deaths avoided per year

3 days increase in life expectancy

7.3 avoided hospital admissions per year

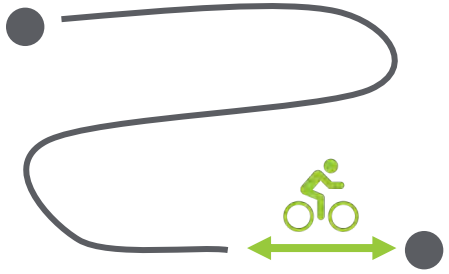
6,500$ avoided healthcare costs

THE BENEFITS

HOW THE BENEFITS APPROACH CAN UNLOCK ACTION

Example : Mexico Walking & Cycling facilities

MASSIVE BIKE PARKING FACILITIES



First and Last mile

15 minutes

2 times on week days

TRIPS CHARACTERISTICS

150 mins of weekly physical activity

100% of the WHO physical activity target

10 months increase in life expectancy

14% Reduction in Type II Diabetes

22% Reduction in CVD Diseases

HEALTH BENEFITS PER USER

03.

MEASURING THE BENEFITS

Tools available with C40

MEASURING THE BENEFITS

Walking & Cycling Benefits – Tool available

HEALTH BENEFITS

- Cardiovascular & Respiratory diseases reduction
- Type II Diabetes reduction
- Depression, Dementia reduction
- Cancer (Colon, Breast) reduction
- Increased life expectancy and premature death avoided

GHG EMISSIONS REDUCTION

ECONOMIC BENEFITS

- Economic value of premature death avoided (VOLY/VSL)

Tool Available Online

Video tutorial, Guidance & FAQ

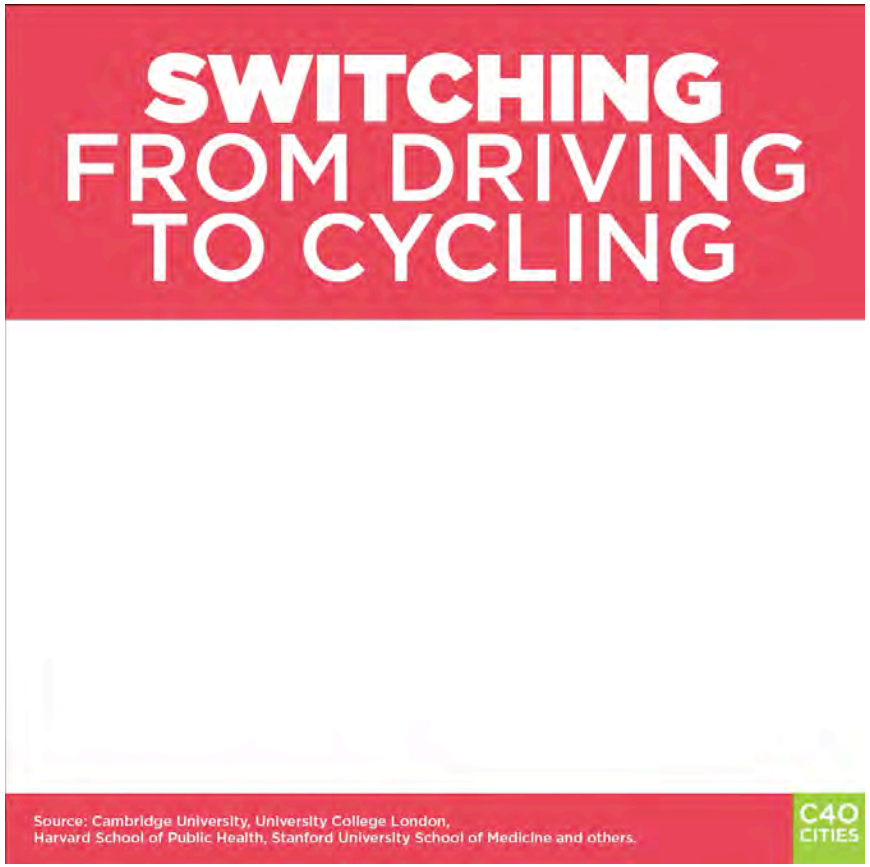
Case Studies Available Online

MEASURING THE BENEFITS

Walking and Cycling : health benefits of active mobility general results

Switching from driving to an active commute (walking at a brisk pace or cycling 30 minutes per day, 5 days a week) can deliver the following health benefits for citizens:

- 23% reduced risk of heart disease,
- 23% reduced risk of stroke,
- 15% reduced risk of type 2 diabetes,
- 14% reduced risk of depression,
- 12% reduced risk of breast cancer
- 11% reduced risk of dementia, and
- 8% reduced risk of colon cancer



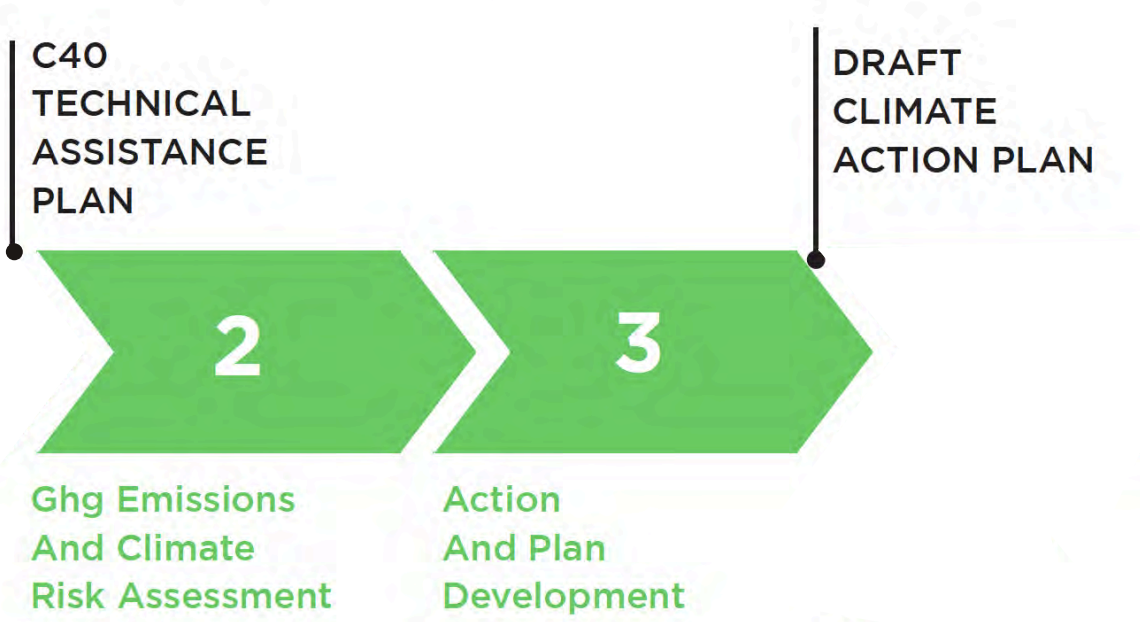
04.

CASE STUDY: MEDELLIN-CONTEXT

CAP Process and Air Quality benefits

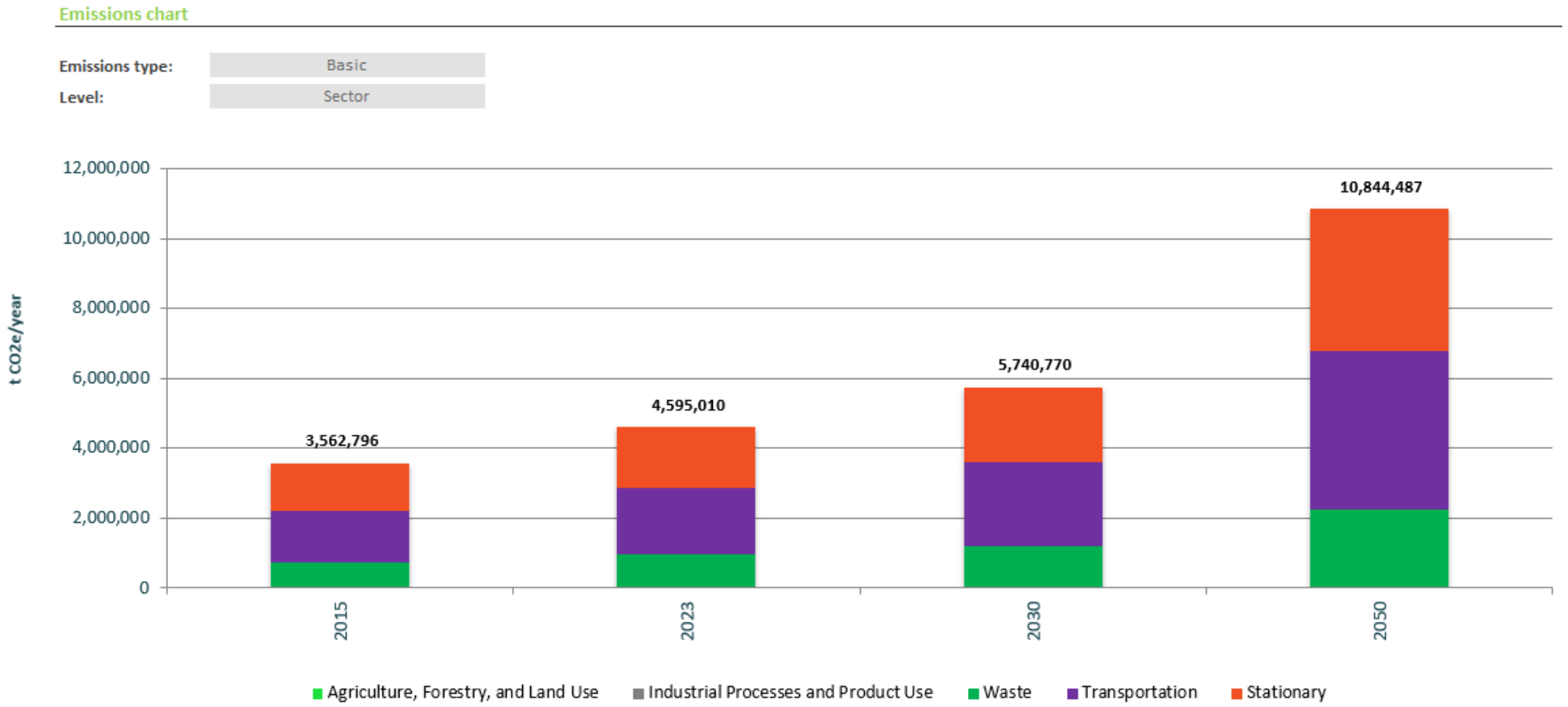
CASE STUDY: MEDELLIN-CONTEXT

CAP Process



CASE STUDY: MEDELLIN-CONTEXT

Second stage: GHG emissions (Mitigation)



Transport 43%

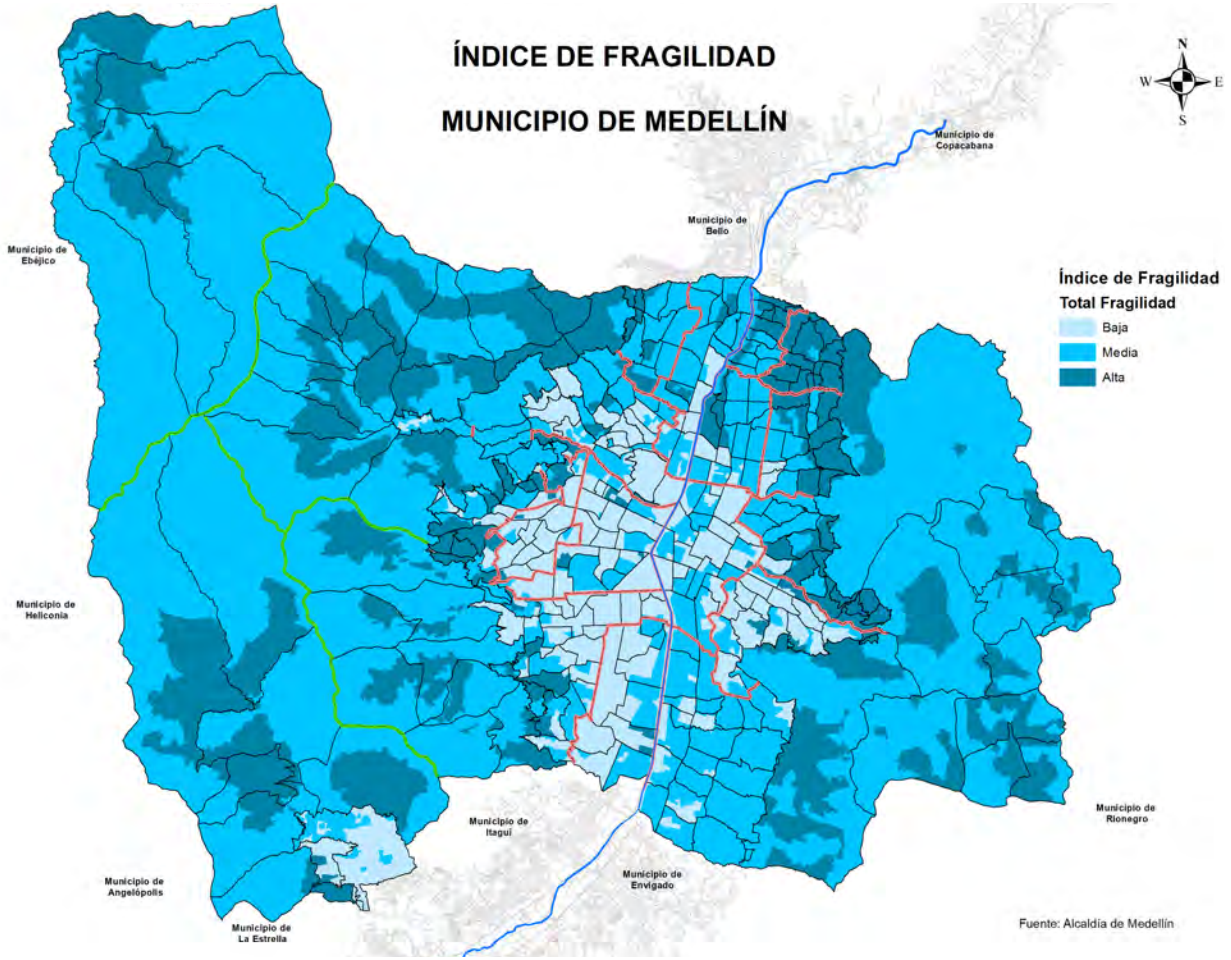
Energy 35%

Waste 22%

CASE STUDY: MEDELLIN-CONTEXT

Second stage: Climate Risk assessment (Adaptation)

- Climate scenarios.
- Fragility index: social variables.
- Risk assessment.
- Health variables.
- Ecosystems vulnerability analysis.



Floods

Foto: @DAGRD-Medellín

Floods

Foto: @DAGRD-Medellín

Wildfire

Foto: @DAGRD-Medellín

Mass movements

Foto: @DAGRD-Medellín

CASE STUDY: MEDELLIN-CONTEXT

Third stage: Action and Plan development

TRADITIONAL APPROACH

Measure/action: "To modernize and increase the electric public transport vehicles fleet"

Term: undefined.

Target: undefined.

NEW APPROACH: ALIGNED WITH THE PARIS AGREEMENT

Measure: "To modernize and increase the electric public transport vehicles fleet"

Action: percentage of electric buses

Term: 2023, 2030 and 2050.

Target: 5%, 24% and 100% respectively.

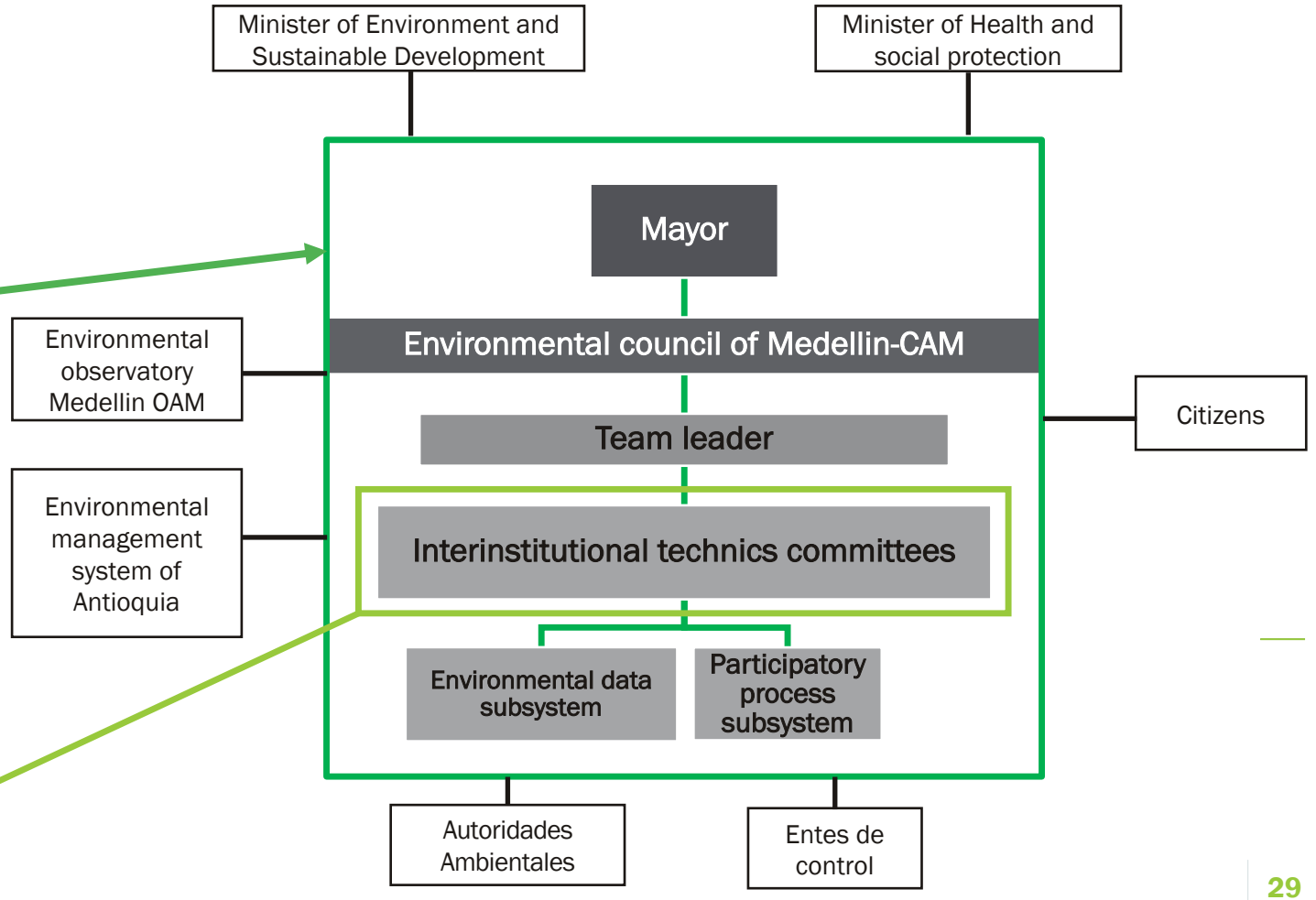
CASE STUDY: MEDELLIN-CONTEXT

Third stage: Action and Plan development

Governance structure behind the CAP

- SIGAM (Environmental management system of Medellin)

Technical boards: 11 in total



CASE STUDY: MEDELLIN-CONTEXT

Third stage: Action and Plan development

Governance structure behind the CAP: traditional approach

1. Ecosystems

2. Silviculture

3. Environmental education

4. Wildlife

5. Habitat

6. Waste

7. Cleaning and ornament

8. Cleaning and ornament

9. Air quality

10. Climate change

11. Water

CASE STUDY: MEDELLIN-CONTEXT

Third stage: Action and Plan development

Governance structure behind the CAP: the new approach

CASE STUDY: MEDELLIN-CONTEXT

Air quality as a driver

During March and October the city experiences an Air Quality Crisis

THEME	IMPACT GROUP	IMPACT (examples)	SPECIFIC GROUP (examples)	INDICATORS (examples)
SOCIAL	Health	Physical health	*Healt hazards and death*	Life expectancy at birth
			Disability	Disability adjusted life years
			Physical activity	Share of time spent doing physical activity
		Mental health	*Stress*	Suicide rate
			Dementia	Incidence of dementia
	Quality of life and urban liveability	Housing	*Housing affordability*	Cost of rent as share of disposable income
			Housing quality	Living area per household
ECONOMIC	Wealth and economy	Economic prosperity	*Economic production*	Total city income (GDP)
			Labour productivity	GDP per job
		Employment	*Employment figures*	Unemployment rate
			Job quality	Earnings quality
		Economic innovation	*Innovation*	Number of patents created
			Local sector development	Number of start-ups
ENVIRONMENTAL	Environmental quality	Biodiversity	*Biodiversity protection*	Proportion of natural areas under protection
			Ecosystem services	Daily volume of natural freshwater extracted
		Air quality	*Indoor pollution*	Types of cooking fuels used
			Outdoor air pollution	Number of days above WHO pollutants recommendations
		Noise	*Indoor noise*	Indoor noise levels (dB)
			Outdoor noise	Noise level from traffic (dB)

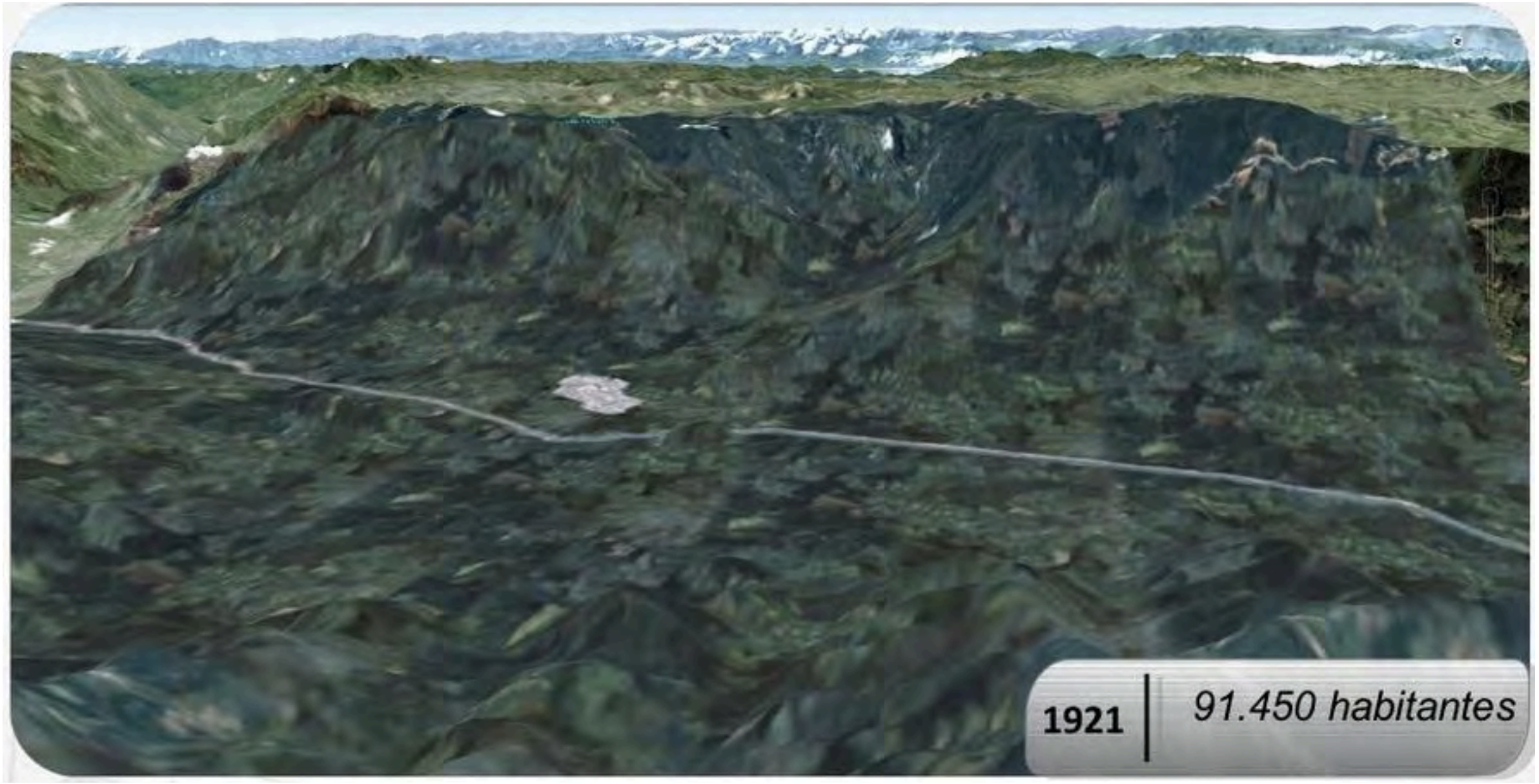
Source: extract from the Climate Action Impacts Taxonomy

05.

CASE STUDY: AIR QUALITY CONDITIONS- MEDELLIN

AQ as a driver

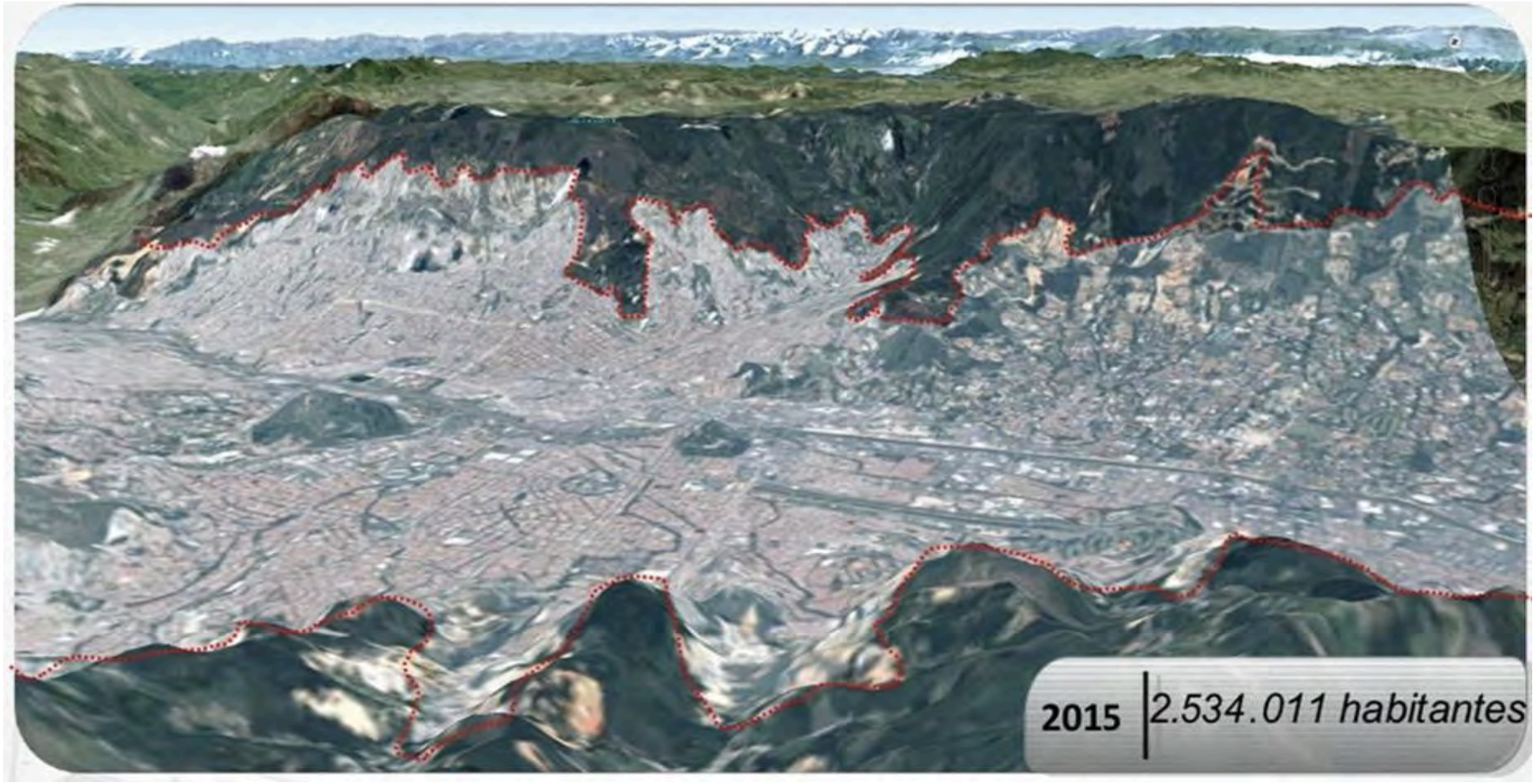
Barbosa
North Aburrá
East Border
Girardota
Copacabana
Bello
Medellin
Envigado
Itagui
Sabaneta
West Border
Cauca river
La Estrella
South Aburrá
Caldas

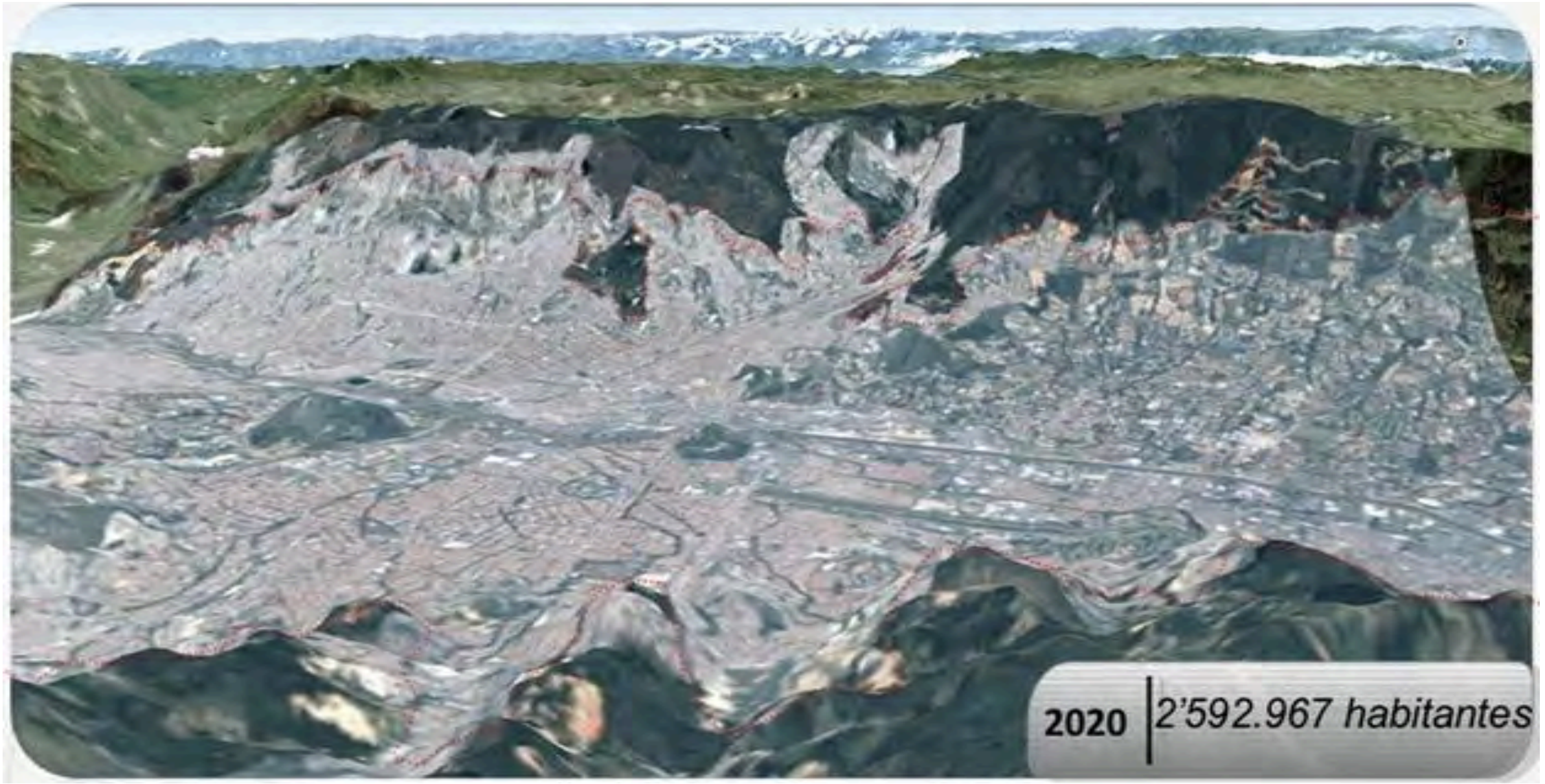

1921
91.450 habitantes

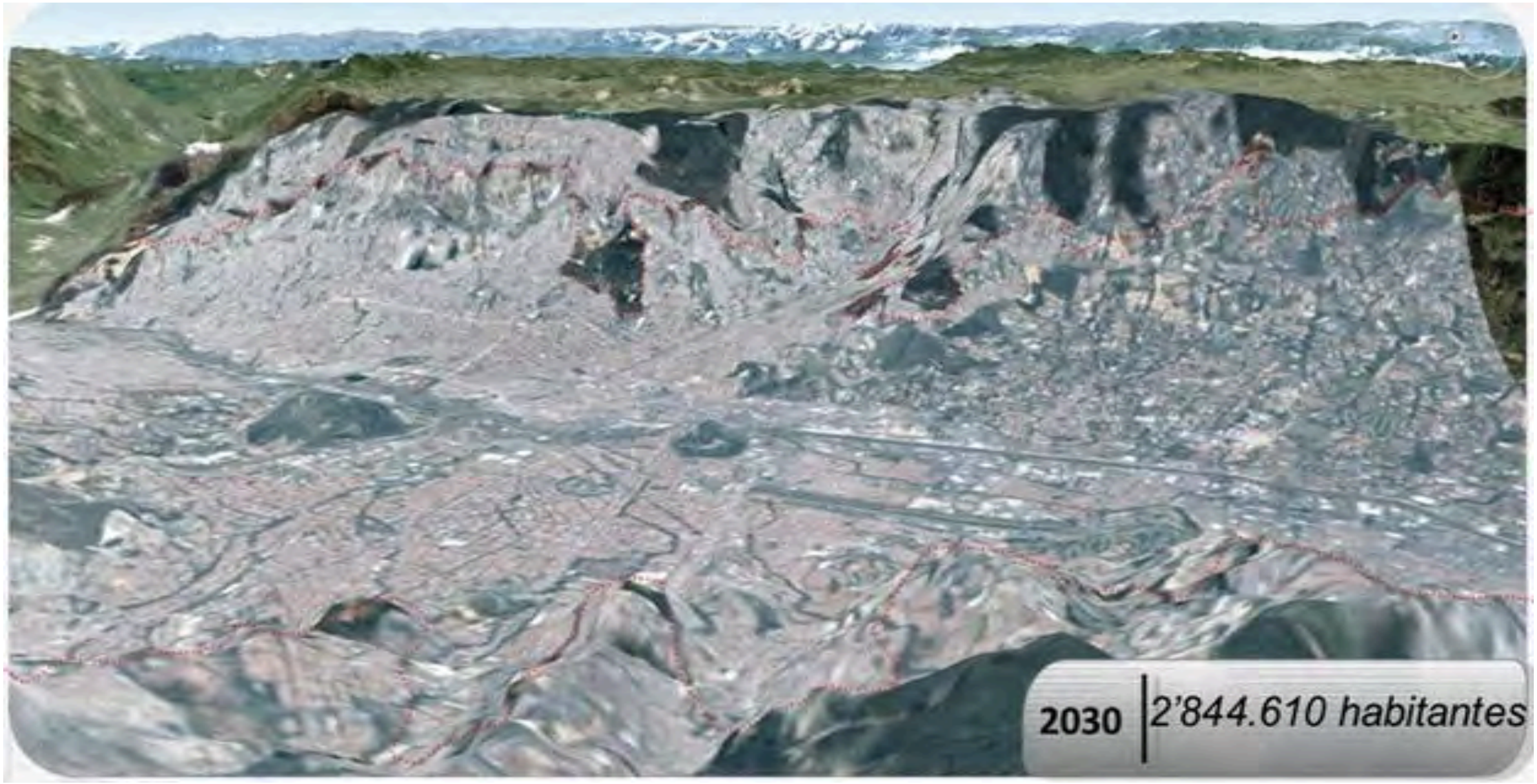
1945
270.534 habitantes

1981
1.337.496 habitantes

2012
2.393.011 habitantes


2015
2.534.011 habitantes

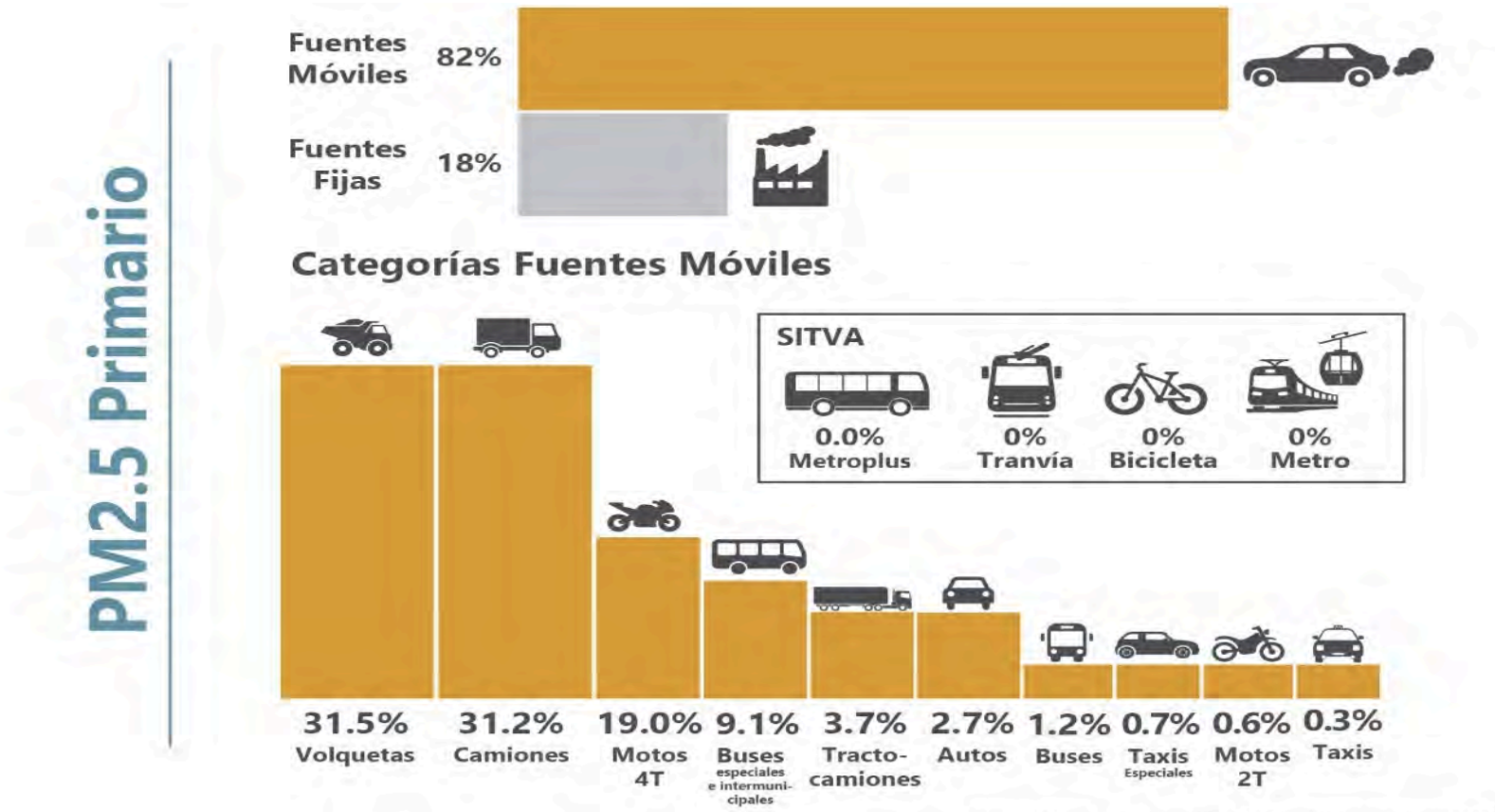

2020
2'592.967 habitantes


2030
2'844.610 habitantes

AIR QUALITY BENEFITS-MEDELLIN

PM2.5 Inventory

Making the case is a key barrier – Cities face challenges to delivering and expanding climate action

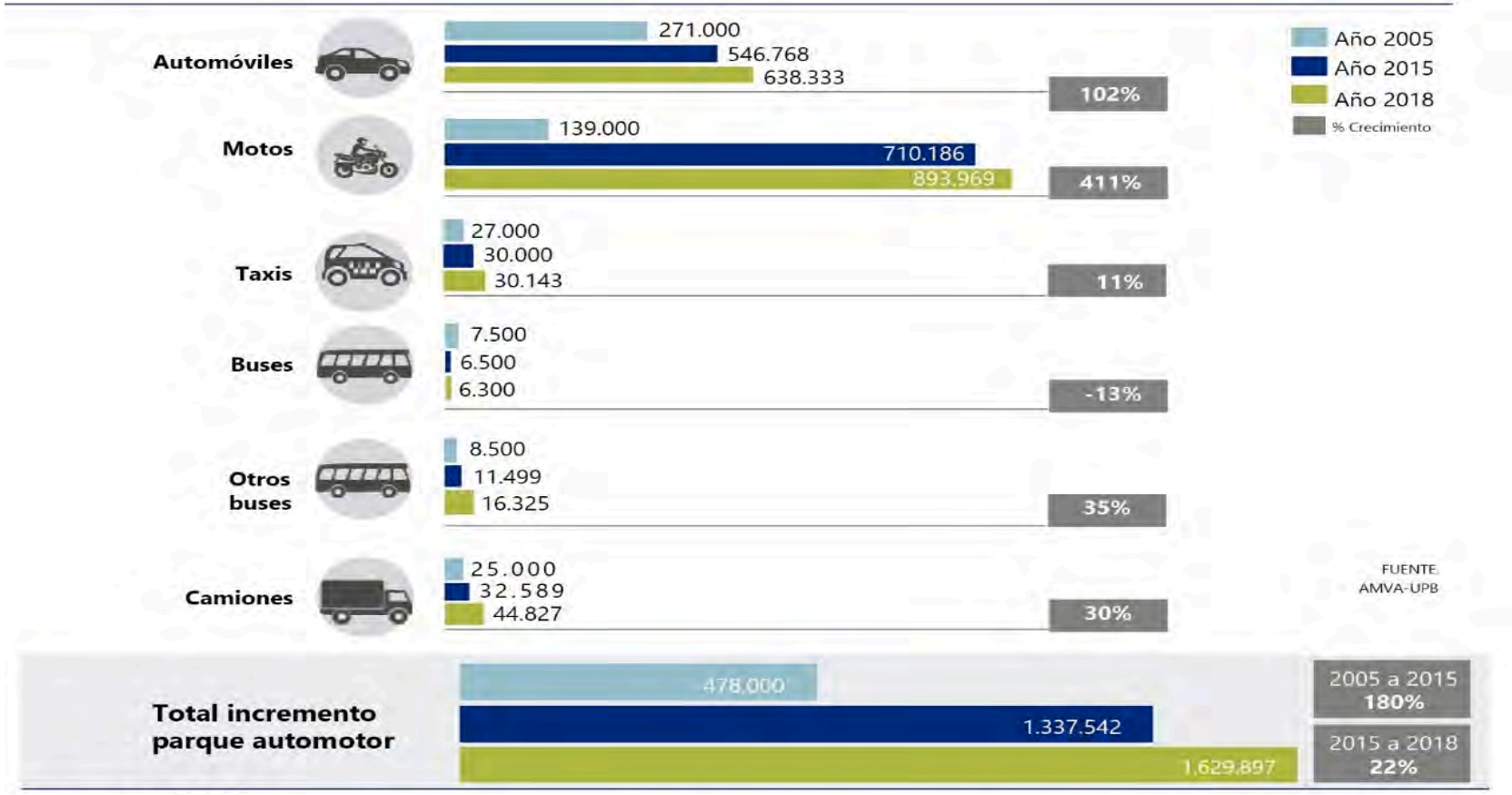


Fuente: Inventario de Emisiones Atmosféricas año base 2016
Área Metropolitana del Valle de Aburrá - UPB

AIR QUALITY BENEFITS-MEDELLIN

Vehicles fleet

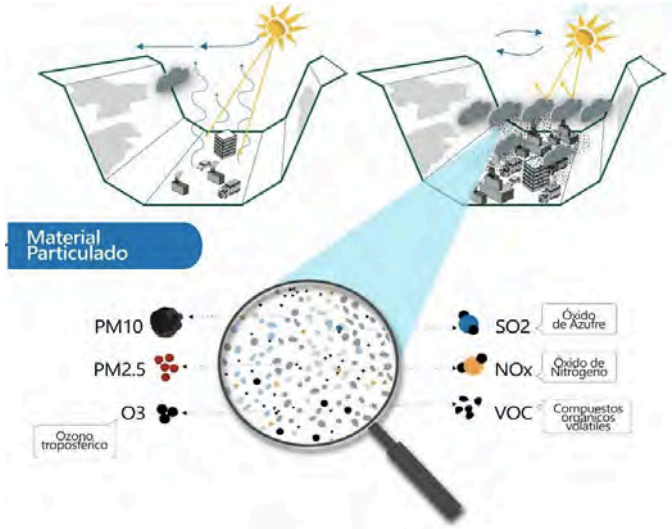
Making the case is a key barrier – Cities face challenges to delivering and expanding climate action



AIR QUALITY BENEFITS-MEDELLIN

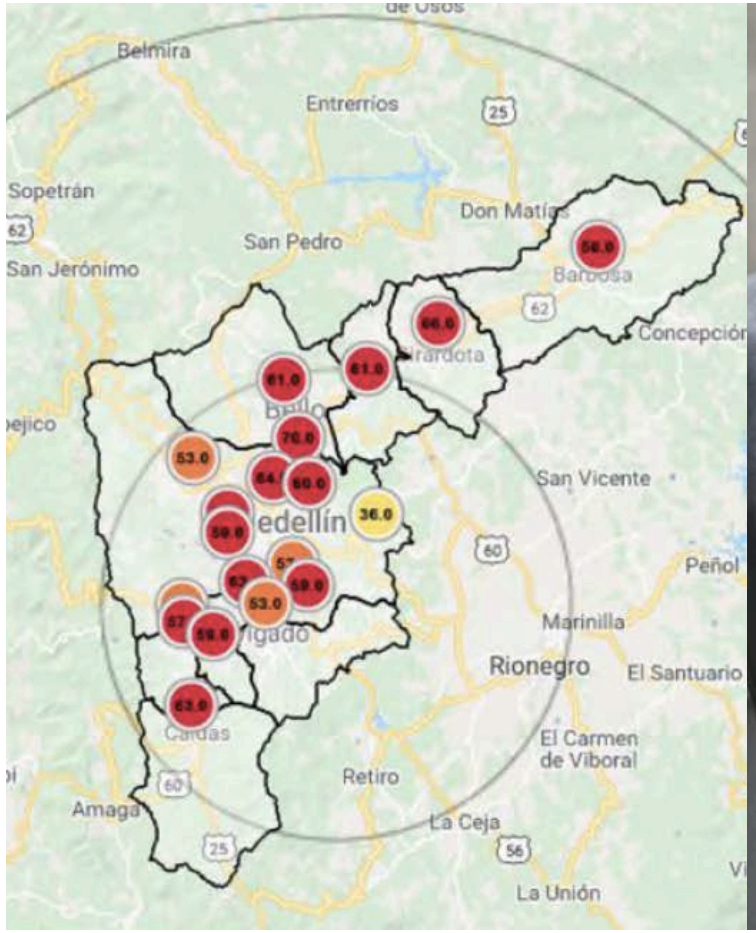
Air quality as a driver to act

A driver to overcome city's challenges to delivering and expanding climate action



AIR QUALITY BENEFITS

Air quality as a driver to act



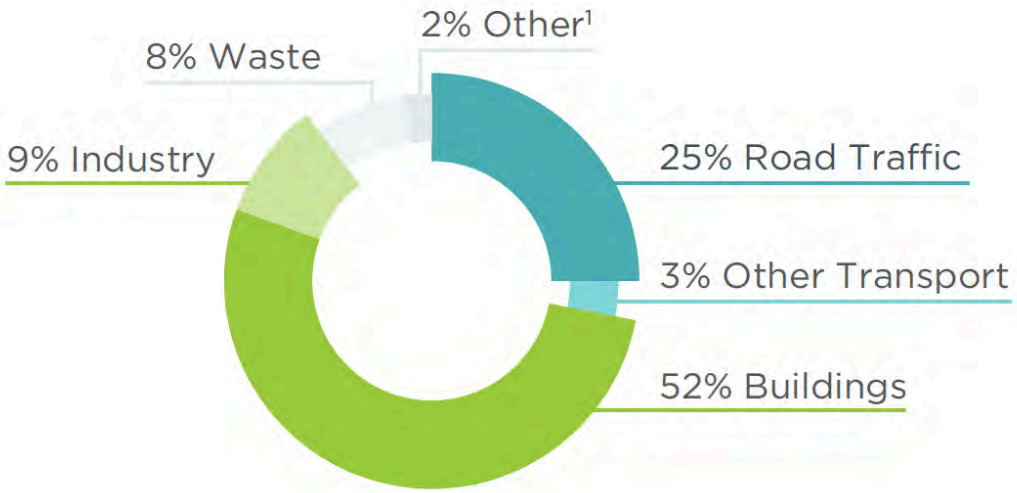
AIR QUALITY BENEFITS-MEDELLIN

Global climate and air quality

Making the case is a key barrier – Cities face challenges to delivering and expanding climate action

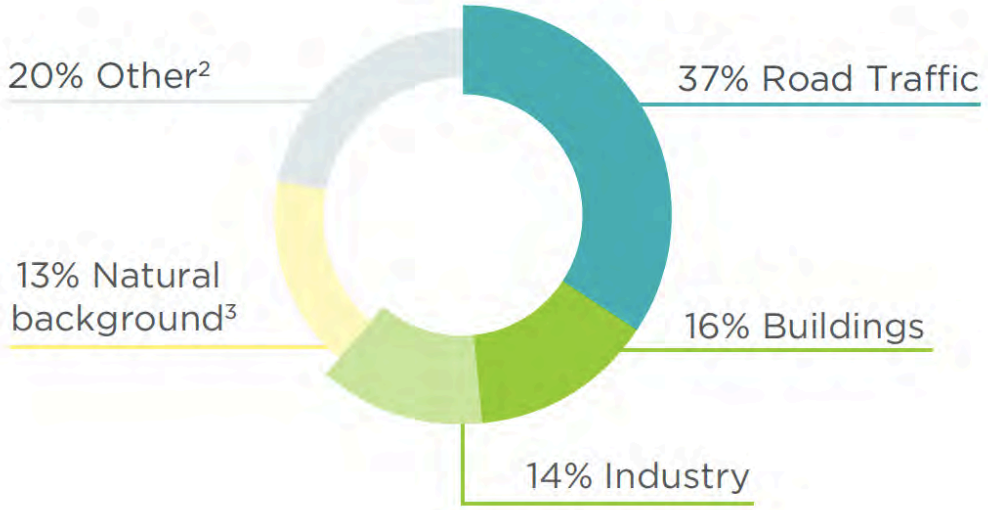
CLIMATE CHANGE

Sources of GHG Emissions



AIR POLLUTION

Sources of $PM_{2.5}$ Concentration



[1] Agriculture, forestry and fishing activities [2] Unspecified sources of human origins [3] Soil dust and sea salt
GHG source apportionment takes into account Scope 1 (not including energy generation) and 2 emissions, while PM2.5 considers Scope 1 only. See methodology report for details.

AIR QUALITY BENEFTIS-MEDELLIN

Global climate and air quality

Connecting the dots between climate action and improved air quality

CLEAN INDUSTRY

ALL-CITY ACTIONS

- Industrial operational improvements and energy efficient technologies
- Emissions capture
- Fugitive emissions control
- Maintenance and monitoring

CLEAN BUILDINGS

ALL-CITY ACTIONS

- Stringent standards for new buildings
- Retrofit envelope
- HVAC and water heating
- Lighting, automation and controls

CLEAN TRANSPORT

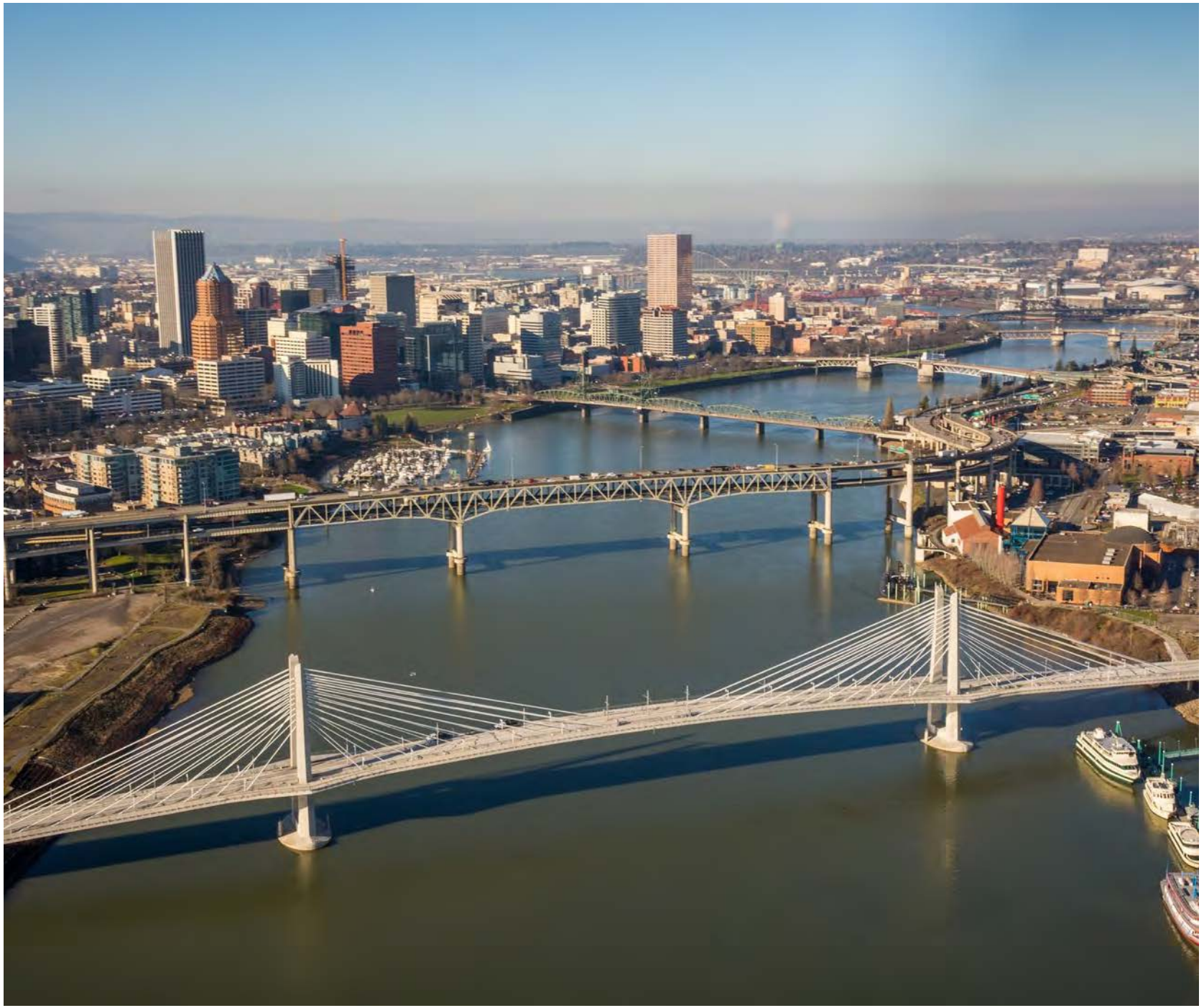
ALL-CITY ACTIONS

- Walking, cycling and mass transit
- Transit-oriented development
- Emission standards
- Zero tailpipe-emission vehicles
- Freight optimisation
- Zero emission area

06.

CASE STUDY: MEASURING THE BENEFITS

Examples project



MEASURING THE BENEFITS

1. Early warning system: monitoring

APRIL (2016–2019)

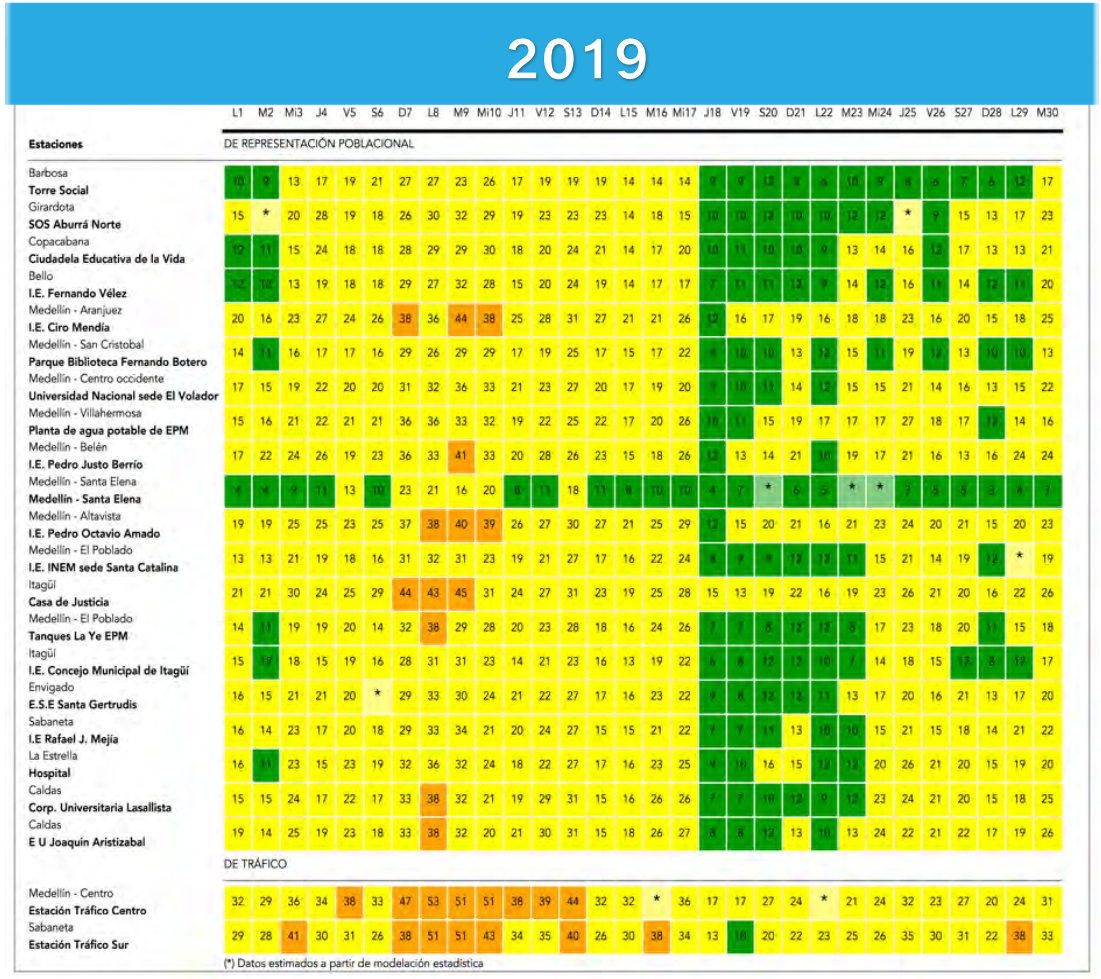
0-12	13-37	38-55	56-150	>150

2016

2017

2018

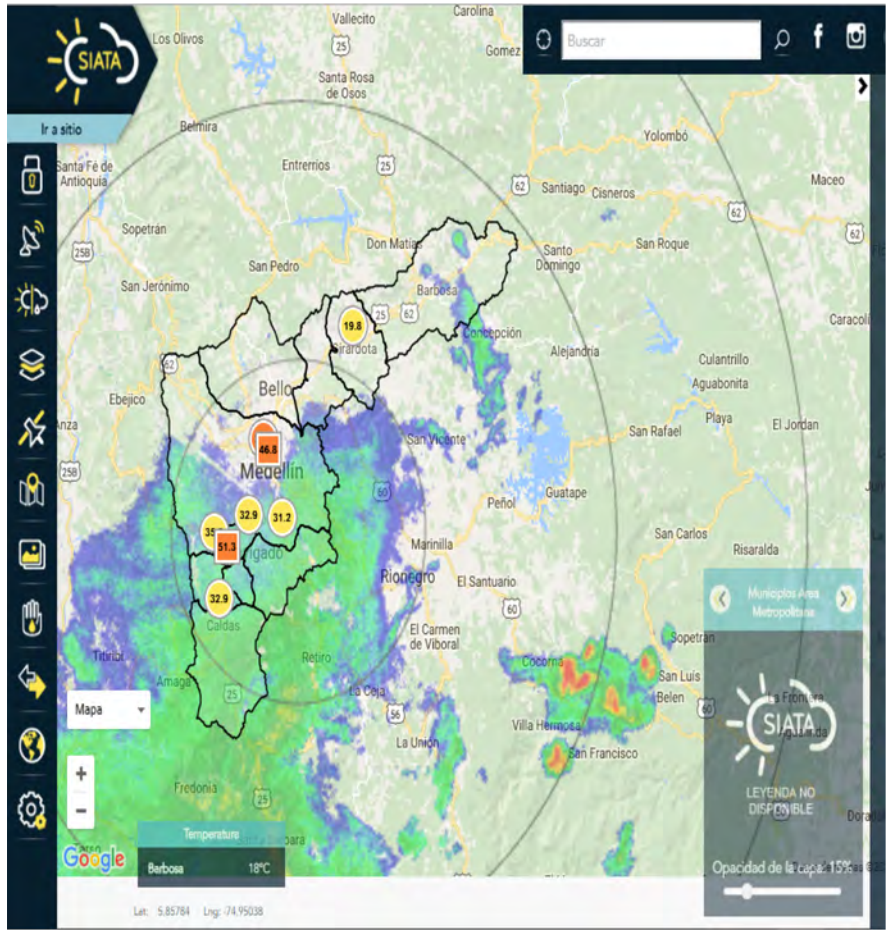
2019

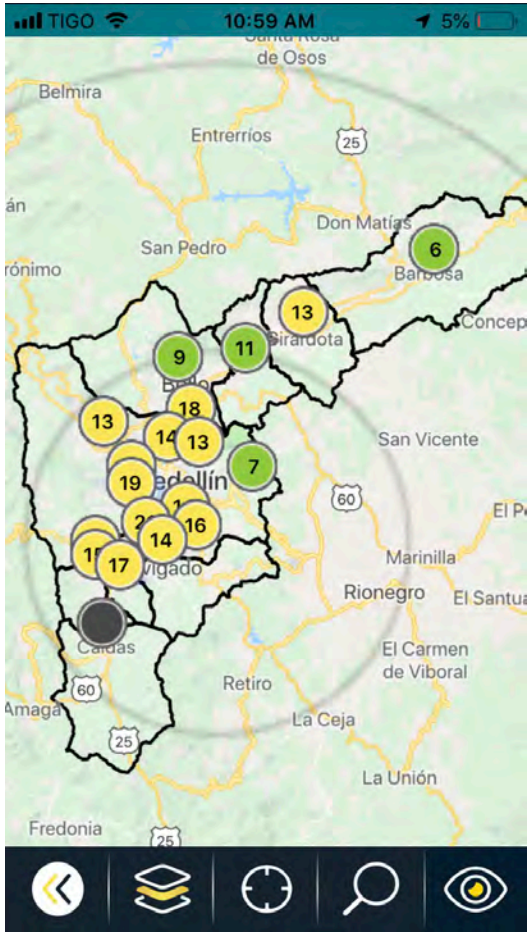


- Environment Secretariat
- Mobility Secretariat
- AMVA: Air quality authority
- Health Secretariat

MEASURING THE BENEFITS

1. Early warning system: monitoring





40KM

of bicycle lanes under constructions

SIATA-app

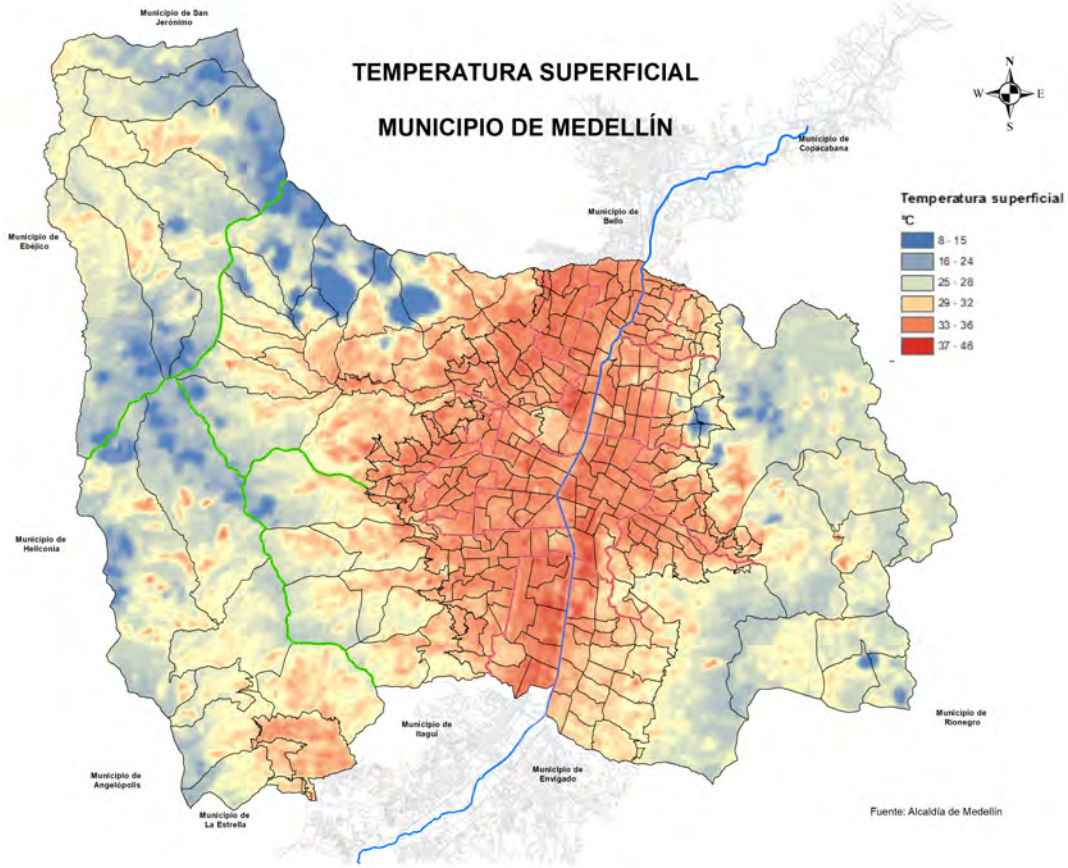
Early warning system

- Environment Secretariat
- Mobility Secretariat
- AMVA: Air quality authority
- Health Secretariat

MEASURING THE BENEFITS

2. Green corridors by 2030

- Environment Secretariat
- Mobility Secretariat
- AMVA: Air quality authority
- Planning Department
- Infrastructure Secretariat
- Urban Development enterprise



MEASURING THE BENEFITS

3. Electric buses

- Environment Secretariat
- Mobility Secretariat
- AMVA: Air quality authority
- Health Secretariat

89.5Kg reduction $PM_{2.5}$ in the intervention area

3.723 C02 ton reduction per year

REDUCED AIR POLLUTION

DECREASED GHG EMISSIONS

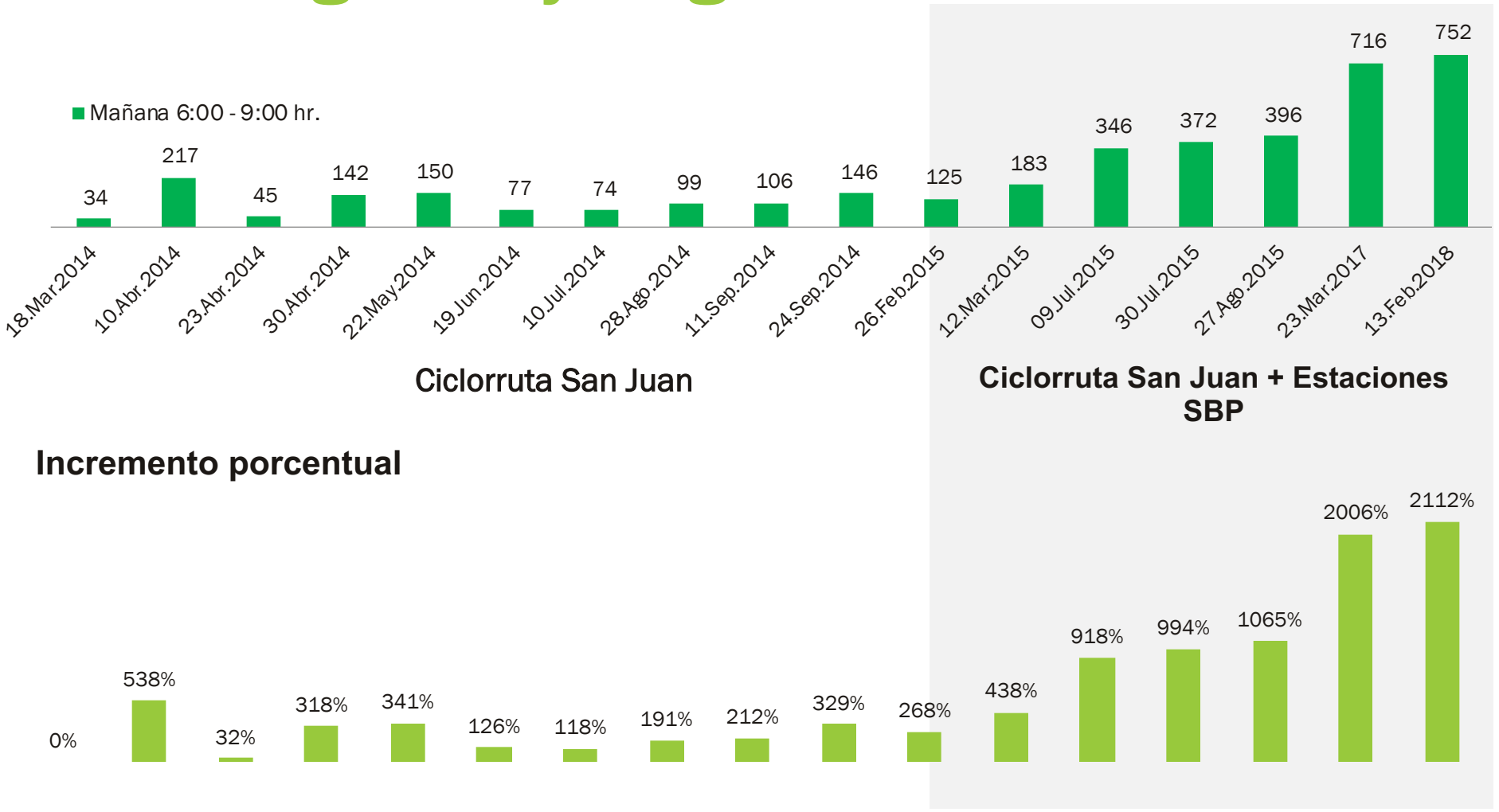
ENVIRONMENT

MEASURING THE BENEFITS

4. “Cleaner” diesel and gasoline

MEASURING THE BENEFITS

5. Walking and cycling facilities



Source: AMVA (2018)

REDUCED TIME IN TRANSPORT

INCREASED PHYSICAL ACTIVITY

DECREASED GHG EMISSIONS

REDUCED AIR POLLUTION

MEASURING THE BENEFITS

5. Walking and cycling facilities

40KM

of bicycle lanes under constructions

42

Bike Shared System new stations

- Mobility Secretariat
- AMVA: Air quality authority
- Planning Department
- Health Secretariat
- Environment Secretariat

REDUCED TIME IN TRANSPORT

INCREASED PHYSICAL ACTIVITY

DECREASED GHG EMISSIONS

REDUCED AIR POLLUTION

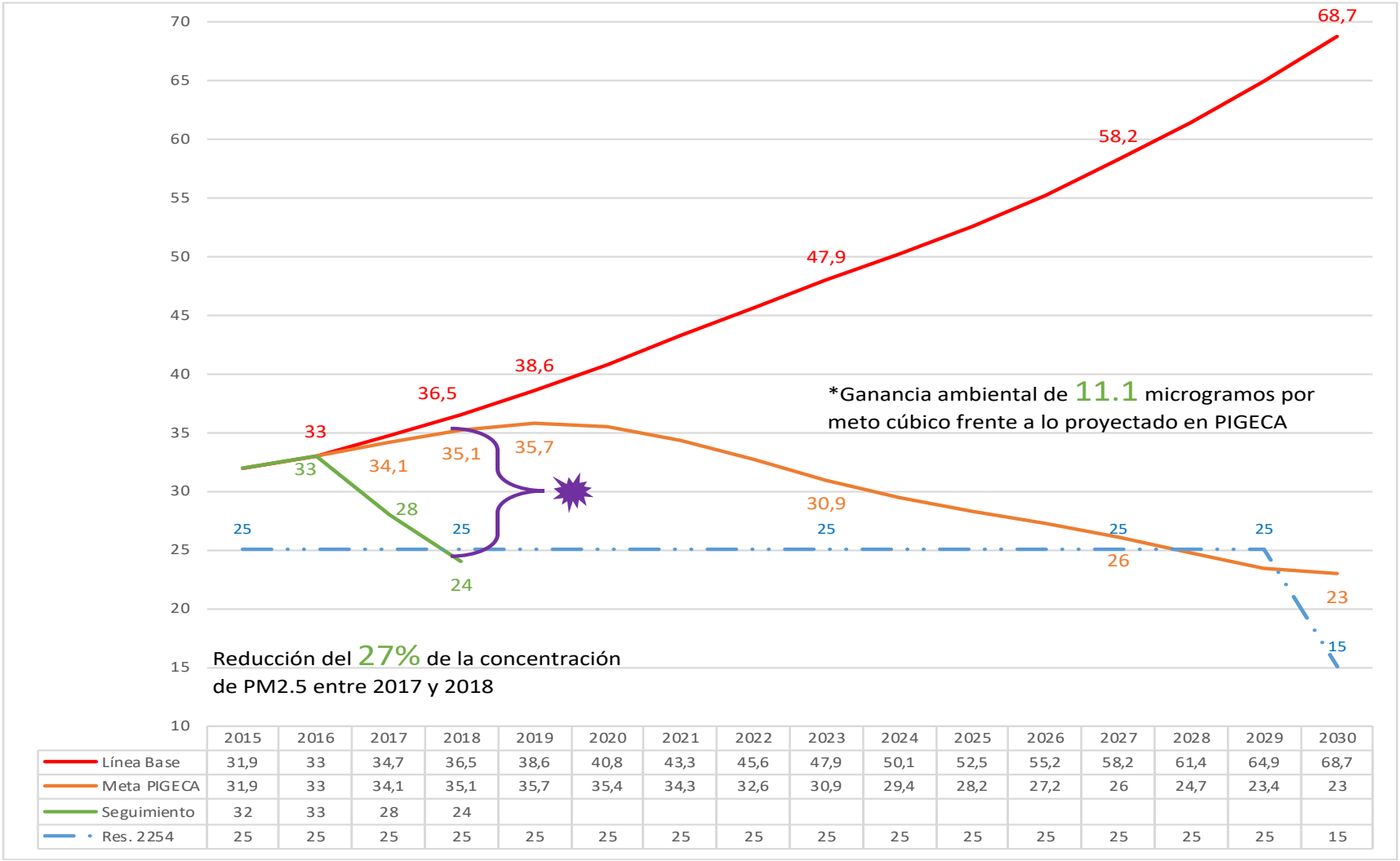
Before
PASEO
BOLÍVAR
Alcaldía de Medellín
Cuenta con vos

After
PAŞEO
BOLÍVAR
Alcaldía de Medellín
Cuenta con vos

MEASURING THE BENEFITS

Results

27% reduction PM2.5 from 2017-2018



	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Línea Base	31,9	33	34,7	36,5	38,6	40,8	43,3	45,6	47,9	50,1	52,5	55,2	58,2	61,4	64,9	68,7
Meta PIGECA	31,9	33	34,1	35,1	35,7	35,4	34,3	32,6	30,9	29,4	28,2	27,2	26	24,7	23,4	23
Seguimiento	32	33	28	24												
Res. 2254	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	15

C40 CITIES Climate Action Planning

Thank you

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