

NOVA

IMS

Information
Management
School

NOVA
CIDADE
URBAN
ANALYTICS
LAB

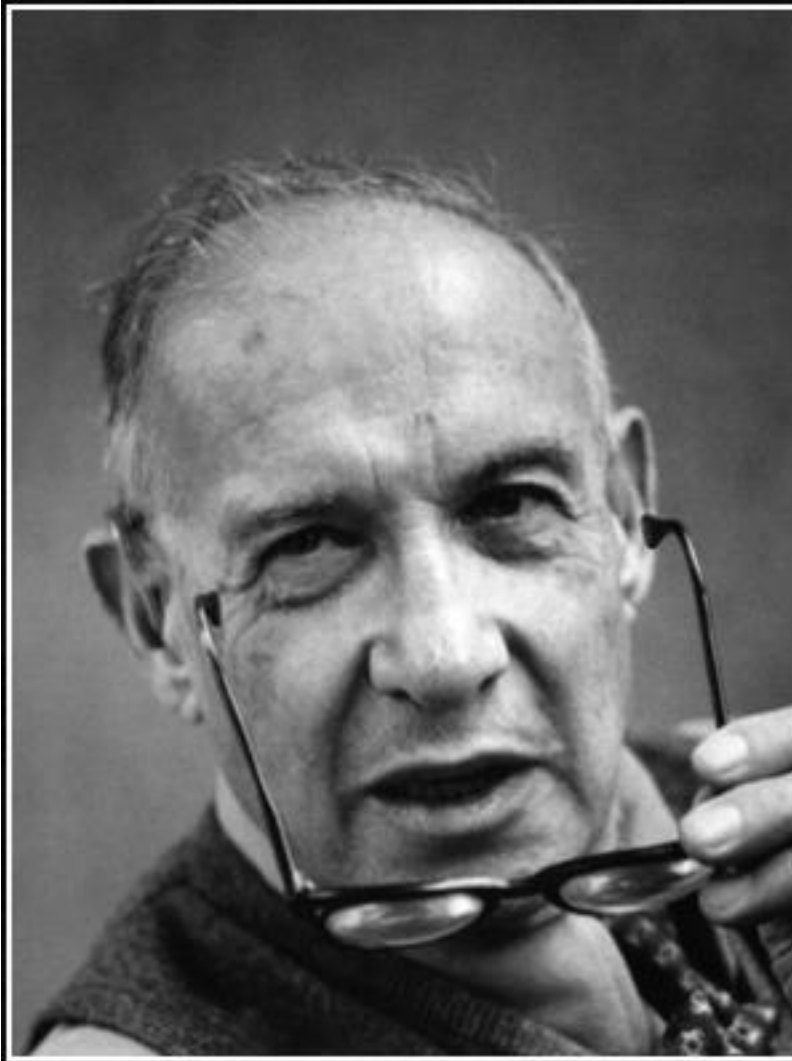


Cities as driving forces for sustainability *knowledge challenges*

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Smart Sustainable Cities

DIGITAL TRANSFORMATION



You can't manage what you don't
measure.

— *Peter Drucker* —

AZ QUOTES

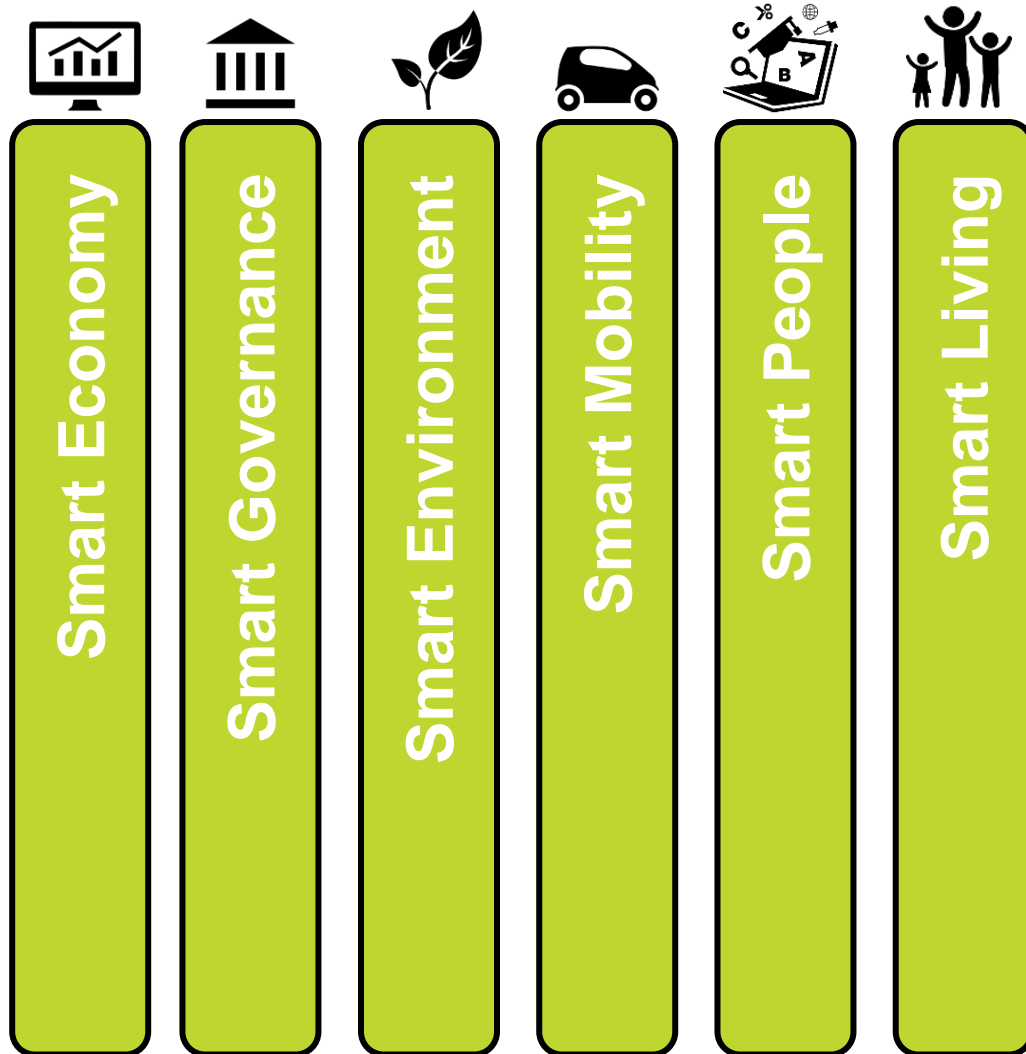


CIDADES.PT

FROM SMART CITIES TO A DIGITAL NATION

Cluster 1. Digital Transformation



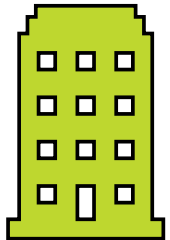


Cluster 2. “Vertical” approach

Vertical Organizational Model

IMPACTS

Smart Buildings



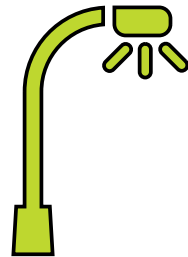
ROI in less than 6 months

Smart Waste Collection



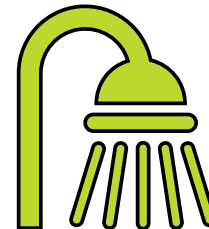
40 - 80% of cost reduction

LED + Smart Lighting



50% reduction (ROI in 6 years)

Smart Water Management



40% reduction of water losses

Smart Parking



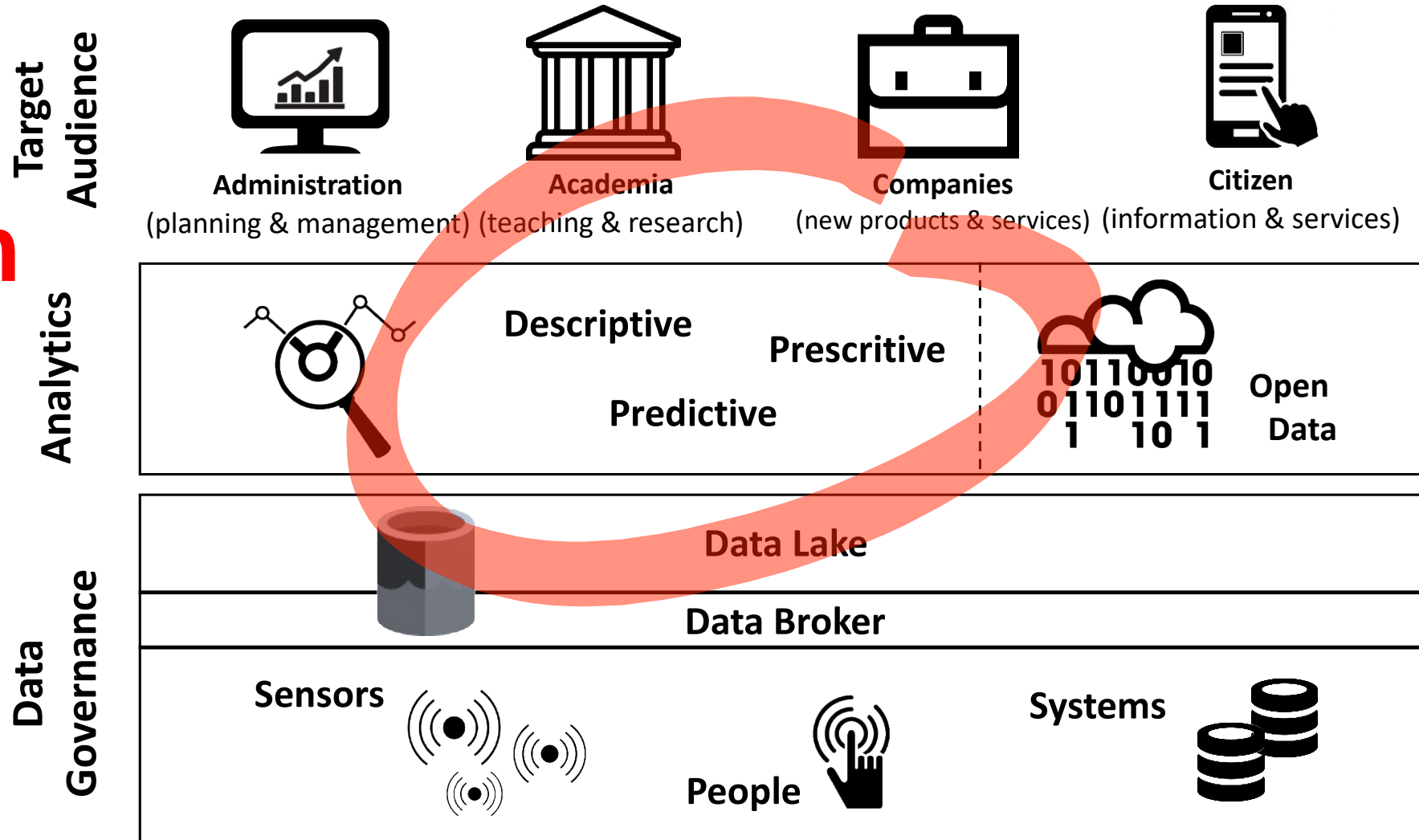
20-30% cost reduction (ROI in 2 years)

Source: IDC

A glowing lightbulb with a cracked glass globe and flying shards, symbolizing disruption. The lightbulb is illuminated from within, casting a warm orange glow. The glass globe is shattered, with numerous sharp, translucent shards flying outwards in all directions. The background is a dark blue gradient, and the overall scene is set against a dark, almost black, backdrop.

DISRUPTION

Cluster 3. City as a Plataform



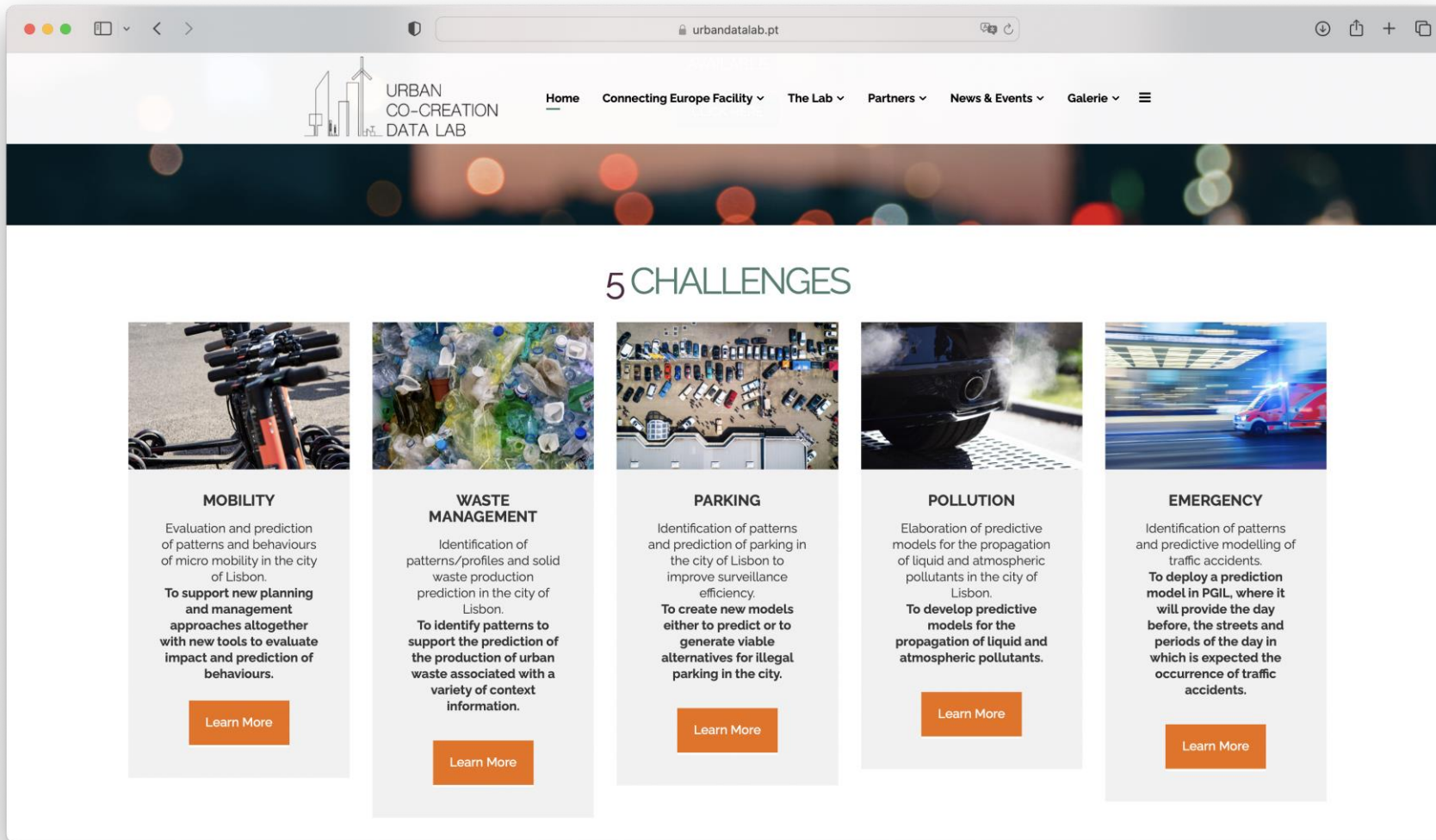
Lisboa

An aerial view of Lisbon, Portugal, at sunset. The city's buildings are illuminated with warm lights, and the sky is a mix of orange, red, and blue. In the background, the Golden Gate Bridge is visible across the water. The city is built on a hillside, with a castle on top of the hill on the left.

100 km²

547.733
population

925.959
Population +
commuters



<https://www.urbandatalab.pt>



PREDICTIVE ANALYTICS > Cycling

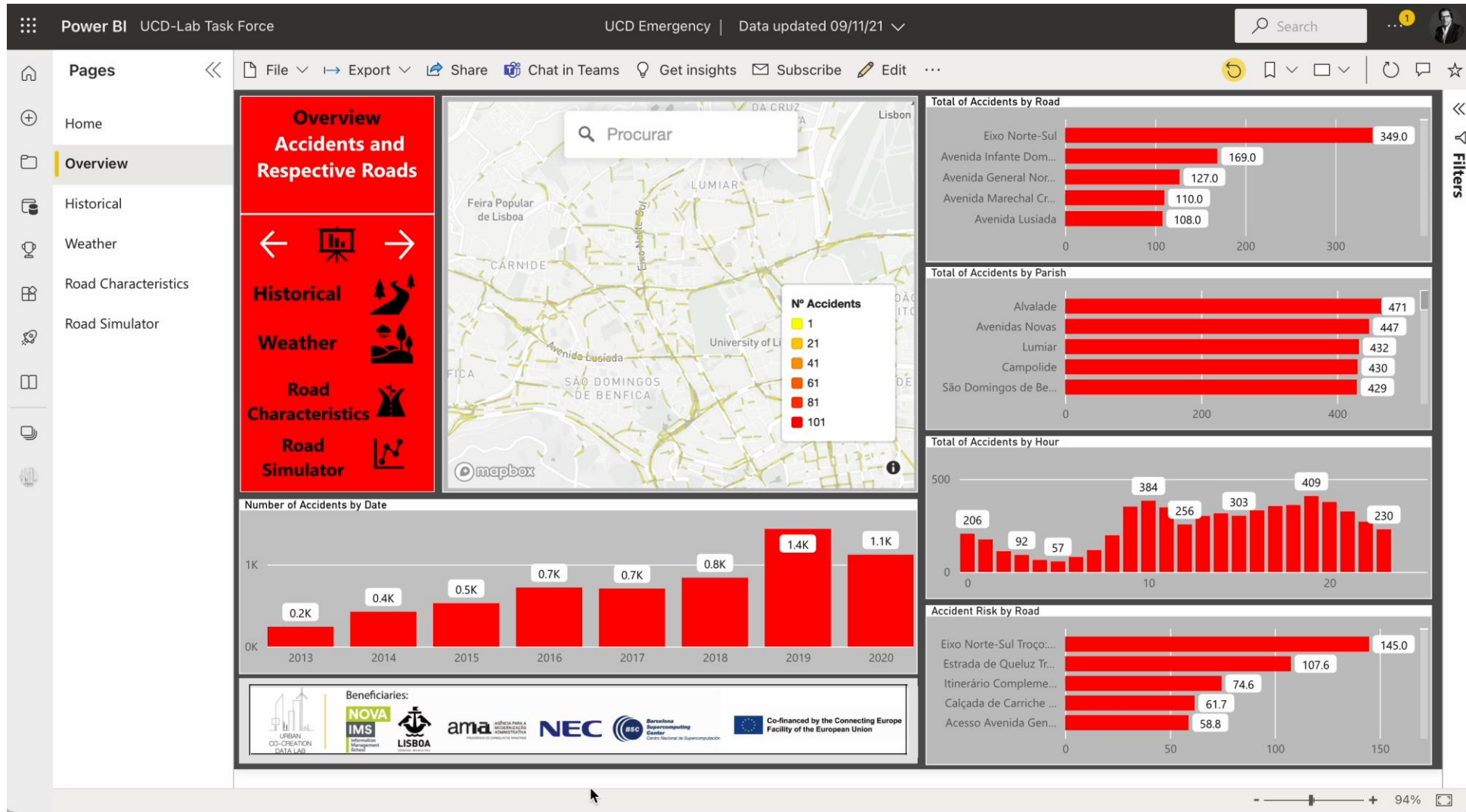
The dashboard displays the following components:

- Header:** Power BI UCD-Lab Task Force | UCD Micro Mobility | Data updated 01/09/21
- Navigation:** Pages (Home, Occupation, Predicted Occupation, Historic All Stations, Historic Single Station, Historic Prediction)
- Summary Cards:**
 - Predicted Occupation:** 34% (Goal: 0 (+4.29%), 12/1/2020 12:00:00 AM)
 - Predicted Bicycles vs Total:** 507 (Total: 1548)
 - Predicted Occupation Last 30 updates:** Bar chart showing percentages ranging from 32.27% to 34.98%.
- Map:** Map of Lisbon showing station locations with a legend for Current Occupation % Prediction (0%, 21%, 50%, 64%, 100%).
- Table: Today's Predictions**

Station	Predicted Occupation %	Predicted Parked Bicycles	Total Docks	Latest Hour
Alameda D. Afonso Henriques - 421	55%	11	20	9:00 PM
Alameda dos Oceanos / Passeio das Garças - 112	29%	9	14	9:00 PM
Alameda dos Oceanos / Rua dos Argonautas - 101	25%	9	16	9:00 PM
Alameda dos Oceanos / Rua Ilha dos Amores - 109	21%	7	14	9:00 PM
Alameda dos Oceanos / Passeio do Levante - 113	50%	3	14	9:00 PM
Av. 24 de Julho - 215	18%	5	17	9:00 PM
Av. 5 de Outubro / Rua da Cruz Vermelha - 449	71%	5	14	9:00 PM
Av. António José de Almeida / Instituto Superior Técnico - 419	52%	7	25	9:00 PM
Av. Barbosa Du Bocage / Rua Arco do Cego - 430	25%	4	20	9:00 PM
Av. Conde Valbom / Rua Marquês Sá da Bandeira - 423	50%	3	10	9:00 PM
Av. da Igreja / Rua	14%	8	14	9:00 PM
- Footer:** Beneficiaries: URBAN CO-CREATION DATA LAB, NOVA IMS, LISBOA, ama, NEC, BSC, Co-financed by the Connecting Europe Facility of the European Union.

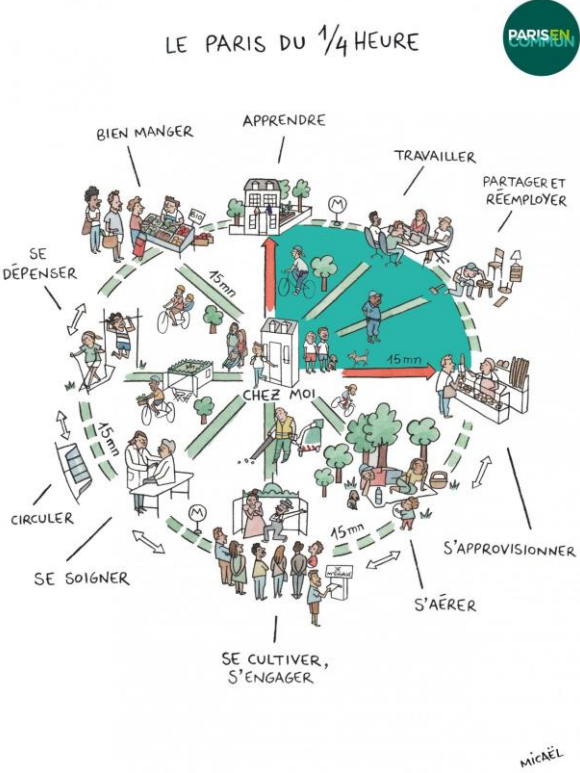


PRESCRIPTIVE ANALYTICS > Traffic Accidents



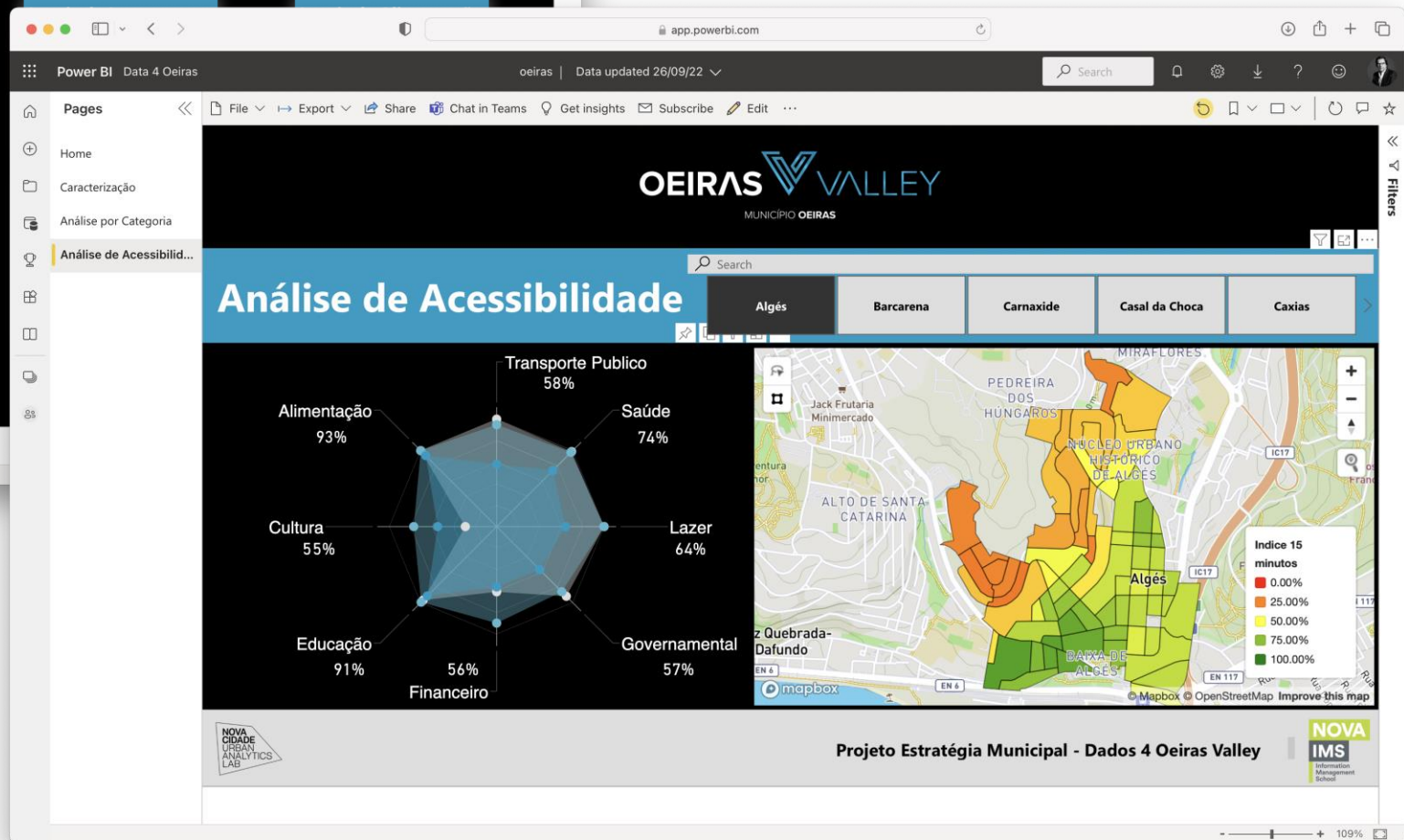
15 Minutes City > Walkability

The screenshot shows a Power BI dashboard for 'Walkability Simulator'. The top navigation bar includes 'Power BI UCD-Lab Task Force', 'Walkability Simulator', and 'Data updated 06/05/22'. A sidebar on the left lists 'Pages' with options like Home, Viewer, Street Profile, Features, Simulator, and Notes. The main content area features a colorful arc graphic at the top, the 'NOVA IMS Information Management School' logo, and a large green banner with the text 'Walkability Simulator'. Below this is the 'C-TECH' logo with the tagline 'Climate Driven Technologies for Low Carbon Cities'. At the bottom, there are logos for 'Lisbo@2020', 'COMPETE 2020', 'PORTUGAL 2020', the European Union flag, 'FCT' (Fundação para a Ciência e a Tecnologia), and 'MIT Portugal'. A zoom level of 97% is visible at the bottom right.



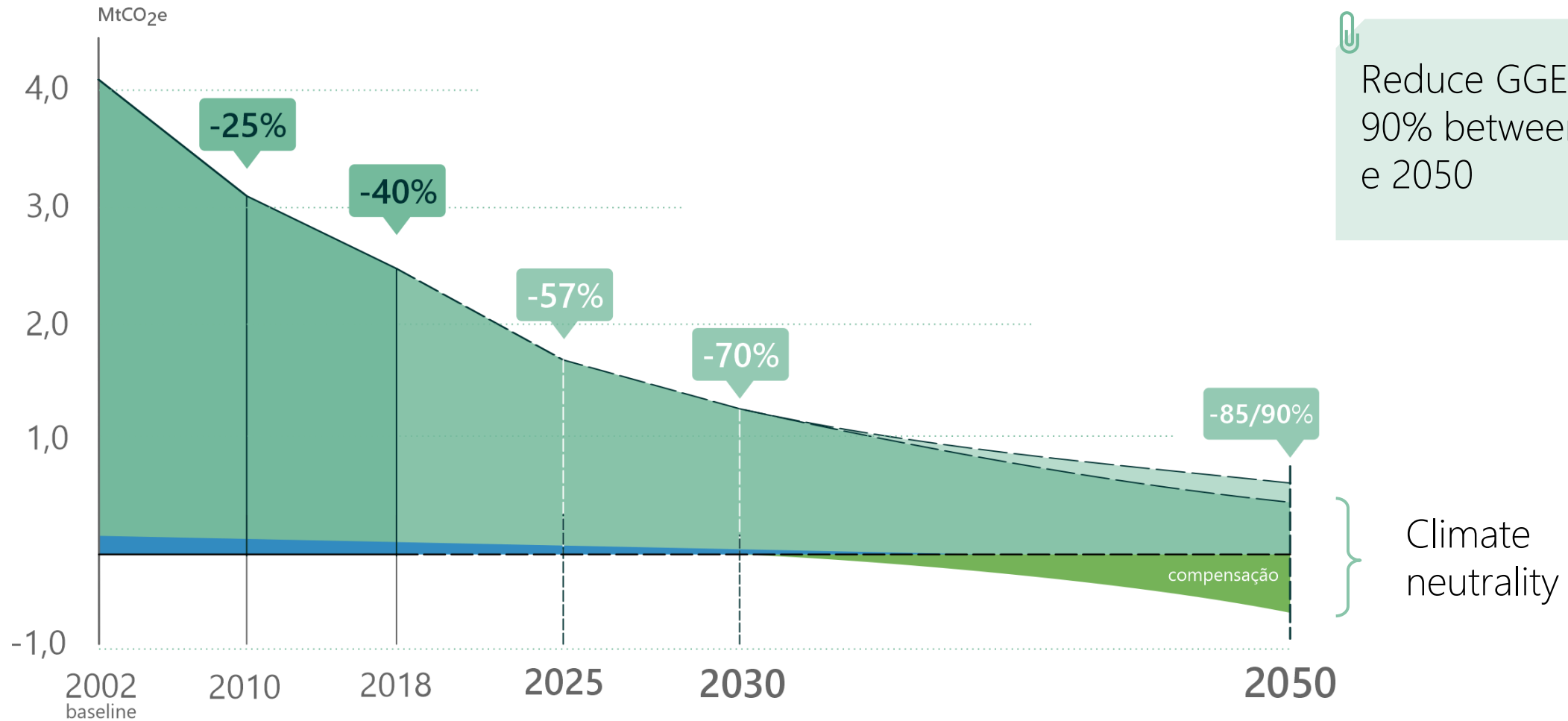
C-Tech - Climate Driven Technologies for Low Carbon Cities

<https://ctech.novaims.unl.pt>



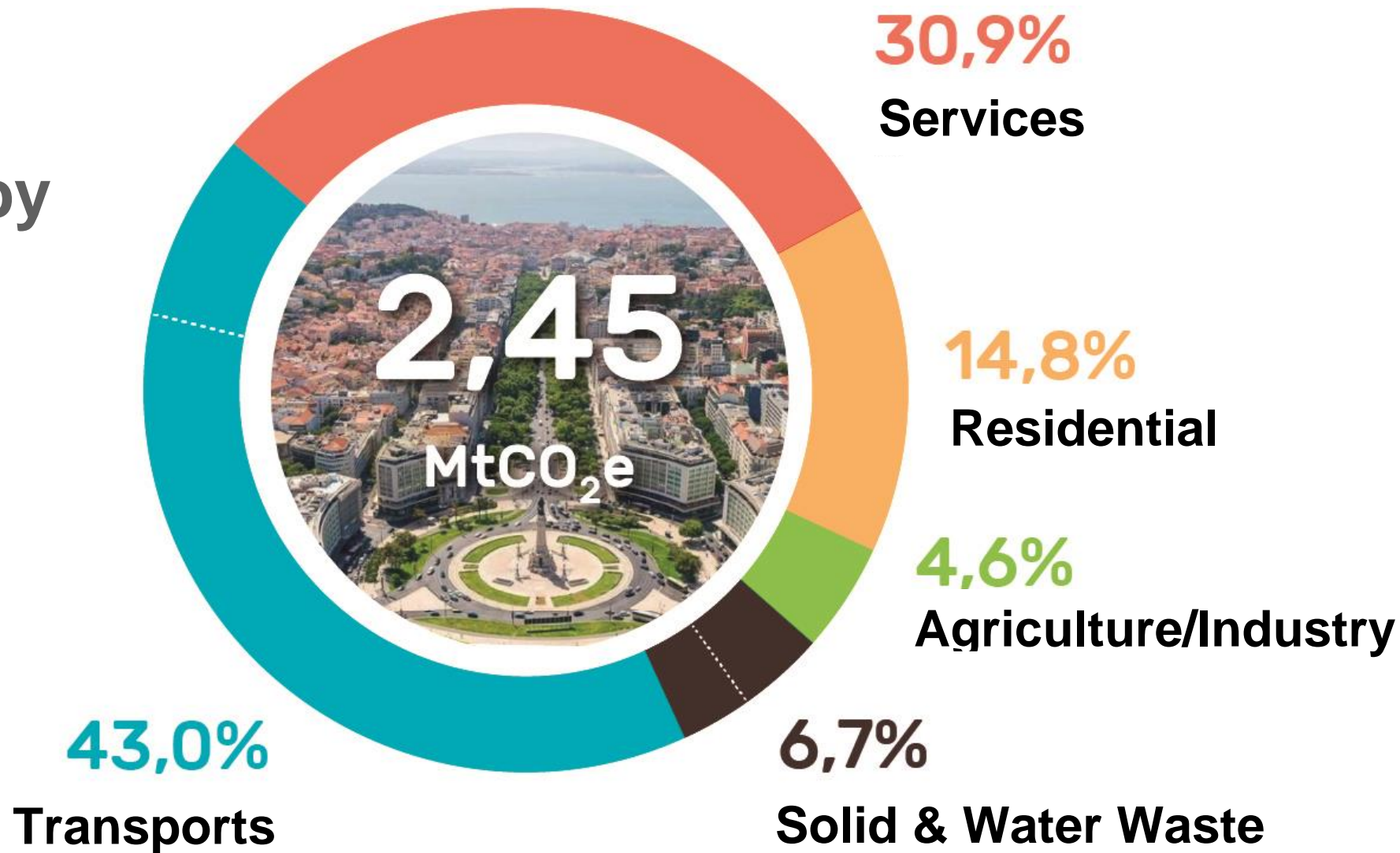


Carbon Neutrality by 2050



Climate Action in Lisbon

CO₂e
emissions by
sector





EUROPEAN UNION



EU MISSIONS

100 CLIMATE-NEUTRAL AND SMART CITIES



28 April 2022

Lisboa

OBJECTIVES OF THE EU CITIES MISSION

- 100 **climate-neutral** and **smart cities** by 2030
- Ensure that these cities act as **experimentation and innovation hubs** to put all European cities in a position to become climate-neutral by 2050

A green rectangular sign with rounded corners and a white border, mounted on two wooden posts. The sign features the word "Challenges" in a large, white, sans-serif font. The background is a bright blue sky with scattered white clouds. The sign is tilted slightly to the right.

Challenges

Carbon neutrality

Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC)

An Accounting and Reporting Standard for Cities version 1.1. - GHG Protocol

Measure and disclose a comprehensive GHG inventory using two distinct approaches:

1. Captures emissions from both production and consumption activities taking place within the city boundary, including some emissions released outside the city boundary.
2. Categorizes all emissions into “scopes,” depending on where they physically occur.

1. Inventory boundary and emission sources

- ✓ The boundary can align with the administrative boundary of a local government, a ward or borough within a city, a combination of administrative divisions, a metropolitan area, or another geographically identifiable entity.
- ✓ GHG emission sources are classified in 6 main sectors
 - ✓ Stationary energy
 - ✓ Transportation
 - ✓ Waste
 - ✓ Industrial processes and product use
 - ✓ Agriculture, forestry, and other land use
 - ✓ Any other emissions occurring outside the geographic boundary as a result of city activities

Sectors and sub-sectors
STATIONARY ENERGY
Residential buildings
Commercial and institutional buildings and facilities
Manufacturing industries and construction
Energy industries
Agriculture, forestry, and fishing activities
Non-specified sources
Fugitive emissions from mining, processing, storage, and transportation of coal
Fugitive emissions from oil and natural gas systems
TRANSPORTATION
On-road
Railways
Waterborne navigation
Aviation
Off-road
WASTE
Solid waste disposal
Biological treatment of waste
Incineration and open burning
Wastewater treatment and discharge
INDUSTRIAL PROCESSES AND PRODUCT USE (IPPU)
Industrial processes
Product use
AGRICULTURE, FORESTRY AND OTHER LAND USE (AFOLU)
Livestock
Land
Aggregate sources and non-CO ₂ emission sources on land
OTHER SCOPE 3

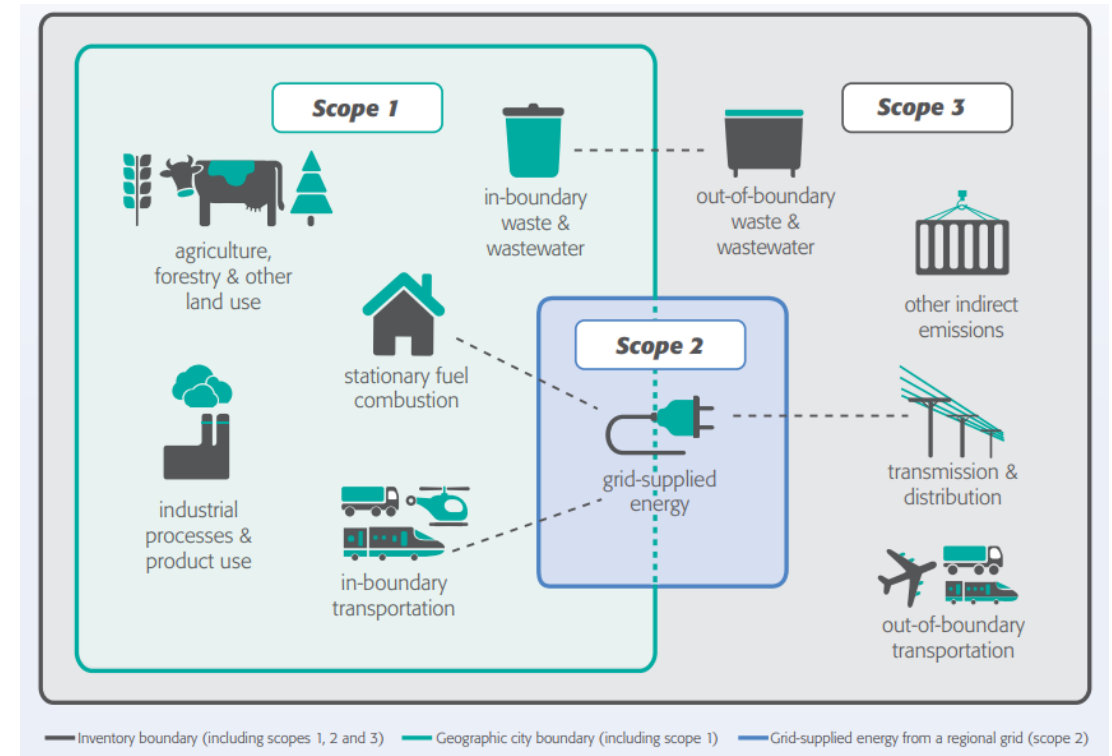
2. Categorizing emissions

- ✓ GHG emission can occur inside the city boundary as well as outside the city area
- ✓ Emissions are grouped into three categories
 - ✓ Scope 1
 - ✓ Scope 2
 - ✓ Scope 3

Scope	Definition
Scope 1	GHG emissions from sources located within the city boundary
Scope 2	GHG emissions occurring as a consequence of the use of grid-supplied electricity, heat, steam and/or cooling within the city boundary
Scope 3	All other GHG emissions that occur outside the city boundary as a result of activities taking place within the city boundary

3. Aggregating cities inventories

- ✓ City inventories can be aggregated at subnational and national levels
- ✓ To improve data quality
- ✓ Measure the contribution of city mitigation actions
- ✓ Identify innovative transboundary and cross-sectorial strategies for GHG mitigation.





**DEAD
END**

SUSTAINABILITY TRANSITIONS TAKE AWAYS

✓ Support governments in adopting data-driven public policies

✓ Engage citizens by linking actions to results towards 2030/2050

Augmented Urban Atlas / State of European Environment

✓ Address urban diversity (digital maturity !!!)

✓ Guarantee horizontal and multi-level data/information interoperability

Thank you for your attention

<http://www.novacidade.pt>