enel X

Cities Digital Transition to a Sustainable Future

Sergio Gambacorta
Head of B2G Innovation & Smart City

Cities have a pivotal role in shaping a sustainable future for us all

Challenges for cities and megatrends

Reduce emissions

Reduce and optimize resource consumption

Improve urban resiliency and respond to new citizens' needs

Reduce spending and find budget for innovative projects

Cities account for **70% of worldwide emissions** [1]

Cities consume over **75%** of **natural resources**[2], producing **50%** of **total waste**[3]

By 2050 68% of world population will **move to cities** vs 55% of today[4],

Lifestyles and citizens' needs change rapidly

Budget constraints and lack of municipal economic resources for smart city deployments is still one of the key barriers to the green transition [5]

Electrification	eMobility	Storage	PV	HVAC	District heating
Digitalization	IoT	Artificial Intelligence	Big Data	Cloud	

(1, 2, 3) https://www.c40.org/why_cities, (4) UN World Urbanization Prospects: The 2018 Revision, (5) Guidehouse smart city trackers 2Q2020

Enel X role in supporting smart, sustainable & digital cities

enel X

- ☐ Smart Public lighting
- ☐ Architectural Lighting
- ☐ eBus
- ☐ Smart Public Buildings
- ☐ Digital services
- ☐ Intelligent Traffic System
- ☐ Smart Urban Furniture

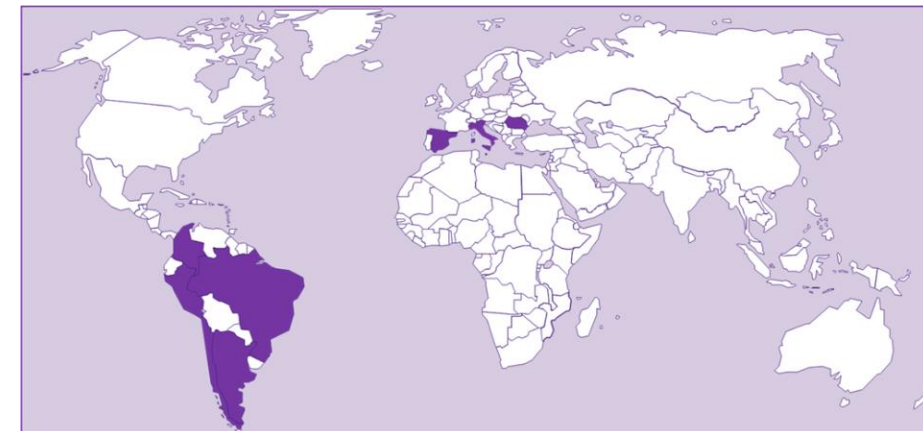|		
Government Clients		>3.000
Lighting points (#)		>3Mn
eBus served (#)		>5000
Smart and Efficient Buildings served (#)		>500

3

3 steps to support PAs in cascading their sustainability vision into concrete projects

enel x

🟢 **Environmental Sustainability**

🟡 **Social Sustainability**

🟣 **Economic Sustainability**

SMART & SUSTAINABLE CITIES

Decarbonization

Circular Economy

Citizen-centricity

STEP 1.

INFORM

SUSTAINABILITY ANALYSIS THROUGH ASSESSMENT MODELS & COMPARABLE KPIs:
FREE CITY INDEXES AVAILABLE ON YORUBAN PORTAL

CO2 CITY INDEX

CICULAR CITY INDEX

15MIN CITY INDEX

STEP 2.

ADVISE

SUSTAINABILITY ROADMAP OF INTERVENTIONS DEFINED & CUSTOMIZED:
SUSTAINABLE CITY REPORT
CITY ANALTYTICS
eBUS SIMULATOR

STEP 3.

IMPLEMENT

TAILORED SMART CITY PROJECTS & INNOVATIVE PRIVATE/PUBLIC FINANCING SOLUTIONS:
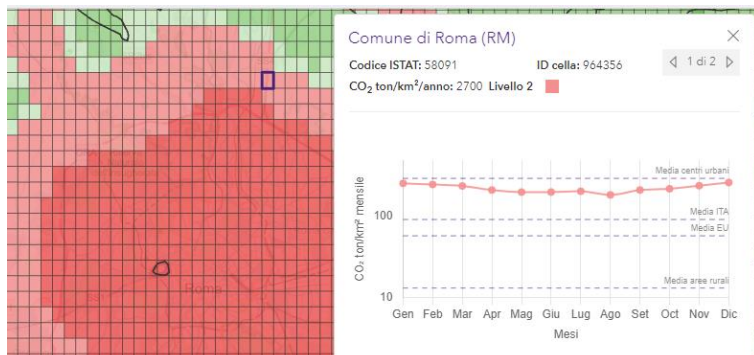**TENDERS AND PPP**
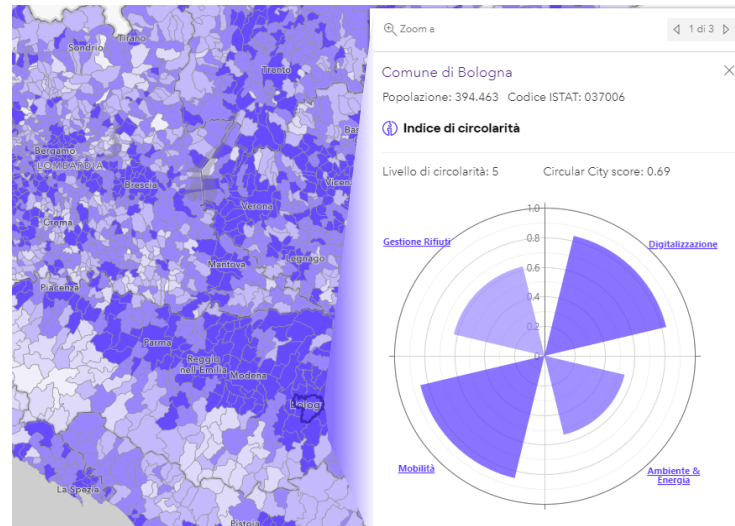
INFORM

Enel X Open Data Program 4 Smart Cities

Data Science to transform Open Data into actionable insights to build smarter & sustainable cites

enel x

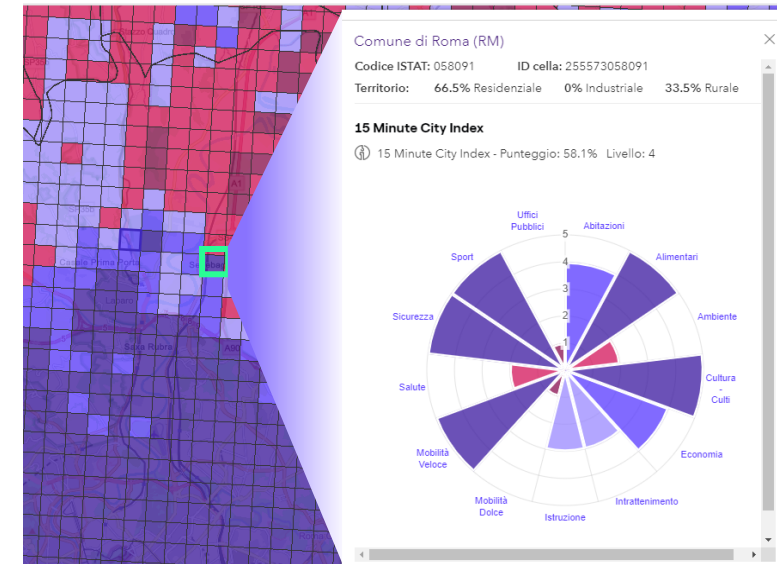### Decarbonization

CO2 City Index

Urban Circularity

Circular City Index

Citizen Centricity

15 Minute City Index

100% powered by Open Data

Scientifically validated

Available in Enel X YoUrban Portal for all Italian Municipalities

Free

ADVISE

eBus Simulator: AI to empower public transport electrification planning
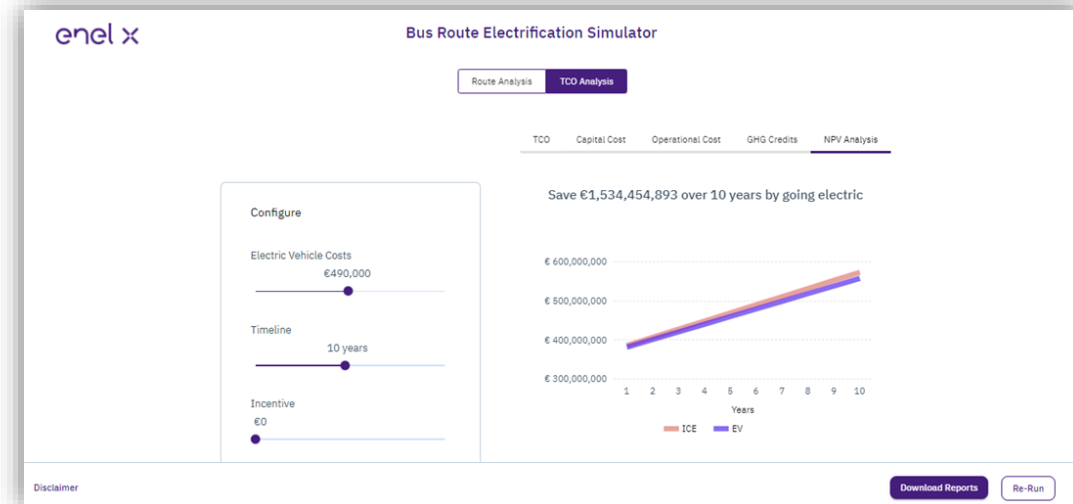
enel X

GOALS

- <u>Raise awareness of electrification benefit</u> with Transport Company Tool (deployed in YoUrban, Enel X Portal for PAs)
- <u>Save up to 80% of Money & Time</u> in addressing electrification project feasibility with Internal Advanced Simulator by assessing TCO, Emission and Level of services to qualify best routes for electrification

SOLUTION

Set-up of a cloud platform with <u>ad hoc algorithms</u> to evaluate electrification scenario / benefits (TCO, emission, SLA) by leveraging <u>Open Data</u> (GTFS) and <u>EX proprietary data</u> (eBus and Chargers datasheets)

KPIs

€ 400,000,000
Total saving over diesel

€ 234,000,000
Savings in maintenance

€ 234,000,000
TCO over 10 years

400,000 tonnes
Carbon saved over 10 years

IMPLEMENT

Adaptive Lighting: AI as energy efficiency & city resiliency enabler
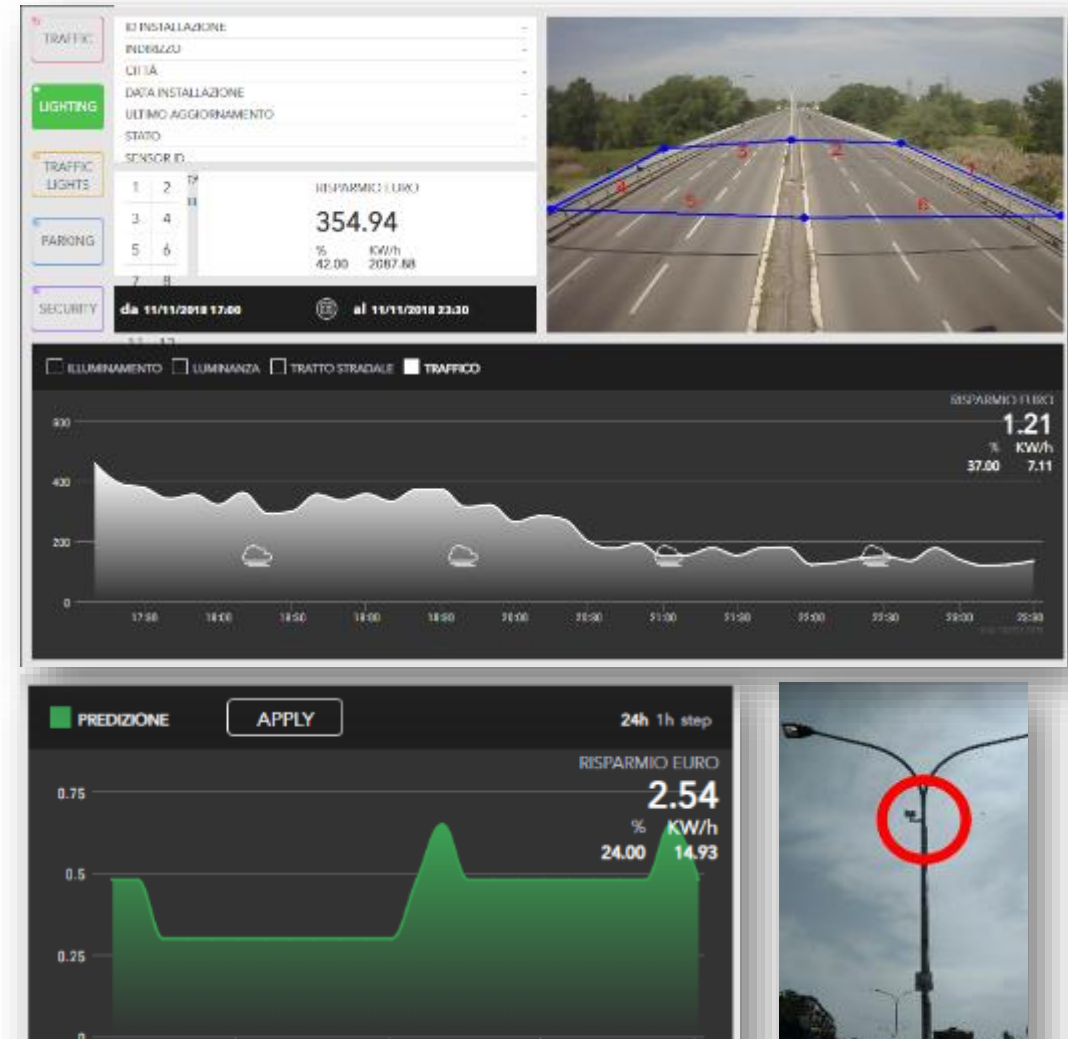
enel X

Increase energy efficiency

Improve safety on streets

Enabling smart traffic planning

- **What: Automating street lighting dimming** by evaluating real time traffic, light intensity and weather conditions

- **How:** Integration of <u>Public Lighting Remote control</u> solutions with Connected <u>IP Cam</u> with pre-processing capabilities and <u>computer vision/ neural networks algorithms</u>

- **Results** collected in field tests:

  - Incremental **36,3% energy saving** on already optimized **test lighting plant** (M3 street category)

  - Around **11% estimated** energy saving at **city level**

  - The same video-analysis solutions installed for adaptive lighting can enable relevant synergies also in increasing **street security** (ie. incident detection) and **traffic monitoring** capabilities

Enel X Adaptive Lighting awarded by World Economic Forum: listed as one of the most impactful Global Innovations from the Energy Sector in 2010-2020

Thanks!

sergio.gambacorta@enel.com

enel X