URBAN TRANSITIONS MISSION

IN COLLABORATION WITH Google

Transforming the future of Urban Planning with data and insights

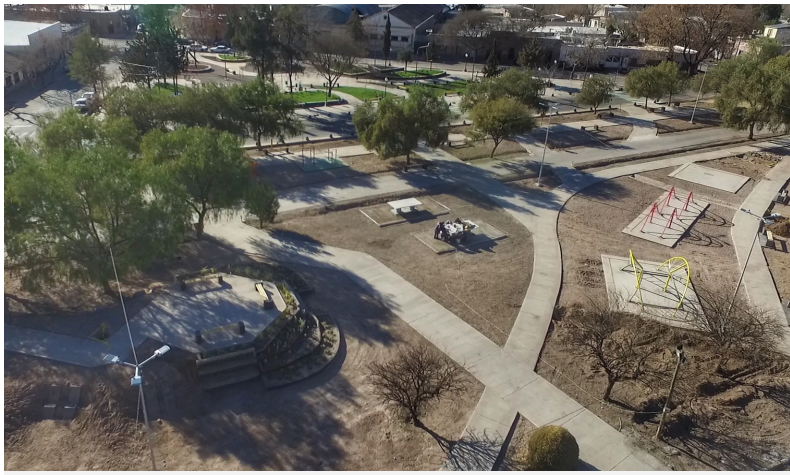
Urban Transitions Mission & Google join forces

Table of contents

Introduction

Urban planning is undergoing a transformation, fueled by unprecedented access to data and tools, providing insights on how people live, work, move, and spend their free time. The integration of data-driven approaches in city planning can, and is, reshaping the way policymakers and stakeholders make critical decisions and engage communities. Understanding the potential of new data and insights can better help city practitioners to develop urban plans that are integrated and holistic, ambitious but realistic, data-driven but consultative, and are reflective of the uniqueness of cities.

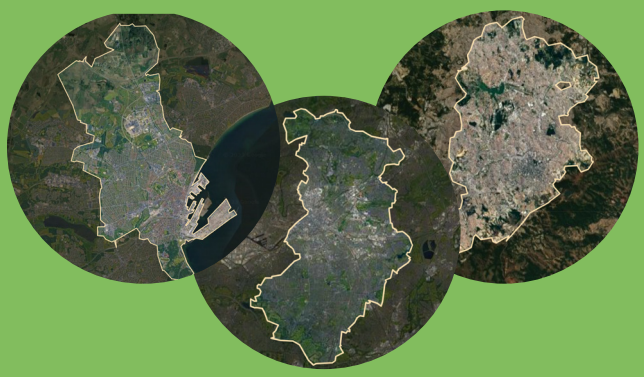
Urban planning covers a multitude of needs, with different requirements and processes but these can typically be broken down into some common steps. This guide aims to provide a snapshot of how data and tools, such as Google's Environmental Insights Explorer (EIE), could help urban planners with each of these steps. The suggestions are based on city feedback and experiences.



Urban planning: as defined by Science Direct - is the process of designing and developing a city's land, infrastructure, and services to create a sustainable and attractive urban environment, in ways that ensure the maximum level of economic development, high quality of life, wise management of natural resources, and efficient operation of infrastructures.

Google Environmental Insights in support of urban planning

Google's Environmental Insights Explorer (EIE) provides cities with insights to better understand their emissions, identify areas for improvement, evaluate the impact of climate policies, and develop targeted climate action plans. The data is available to over 40,000 cities worldwide.



Are you interested in specific data for your city?
Visit the Environmental Insights Explorer site https://insights.sustainability.google/, select your language and sign up.

Let your UTM contact know that you have requested access – UTM will help you explore features and interpret available insights for your city.

Stage 1

Discovery, Engagement and Mobilization

Urban planning processes, whether city-wide or at sector level, invariably start with a need to engage and mobilise key stakeholders, scope out ideas, identify locations, or understand key opportunities. Data is particularly valuable at this initial stage, for example for:

1. **Providing an initial estimate or benchmark at discovery stage** to support idea generation, or to help identify and analyse options and ideas before committing to further analysis or feasibility studies. EIE data can help understand total solar potential for a city-wide programme, or the estimated GHG impact of incentivising bus travel, to develop a business case for further analysis and feasibility. Find more in the UTM Guide "Data & Insights to accelerate impact finance and de-risk investments in cities".
2. **Obtaining buy-in from high-level decision makers** in order to 'sign off' development of new plans or analysis. For instance, EIE annual data, available since 2018 for most cities, enables identification of key trends over time to make the case for measures to reduce emissions. EIE can also be used to create scenarios, quickly showing the likely reduction in emissions or energy generation potential from changes to building energy fuel mix or solar installations, for example.
3. **Identifying priority areas** of the city to target for new development, regulations or community programs. 'Hotspots' visible in EIE mapping data, for example tree canopy data, can help to understand existing green space provision in areas for new development, and the possible need for additional cooling provision or opportunities for new shaded cycle lanes.
4. **Answering questions confidently**, such as from stakeholders or colleagues. EIE can show, for example, the impact of vehicle measures, or building energy switches, to address concerns or inform options.
5. **Bringing communities and stakeholders on board** early as participants in the planning process. As a simple and visual tool, EIE data can help to add value to consultations by bringing the plans to life, making the plans more accessible and supporting the validation of assumptions.

Puerto Montt, Chile used EIE transport data in the scoping stages of a 10km transport corridor with neighbouring city, Alerce. EIE data has enabled the city to estimate the potential GHG emission reductions from adopting low-carbon transport options in this project. These data-driven insights have been instrumental in strengthening the business case to central government, helping secure buy-in from key decision makers and the required funding needed for the project.

Find out more about using data for mobility policies in the UTM Guide "Data and insights to inform, action, and monitor local mobility policies".

"Data and a scientific approach are a key way to engage with politicians. The EIE insights on transportation and emissions savings are crucial—it's an amazing tool for us."

Daniel Reyes,
Chief Urban Planning Advisor
Municipality of Puerto Montt

Miami Dade County, Florida found EIE a valuable tool for quick assessments in the city, particularly when engaging stakeholders and decision-makers in 'what if' scenarios. For example, the city exported 2023 bus data on annual km travelled and adjusted fuel consumption values to quickly assess the potential emissions reductions from switching to compressed natural gas. They were able to evaluate low-carbon fuel options to inform planners of whether to further pursue this intervention and its potential impact.

"Google EIE is my quick go-to tool for quickly answering transportation related questions, and I trust the source – it's proven to be a reliable resource."

Maria Del Mar Trejos,
Resiliency Metrics Analyst
Miami-Dade County, Office of Resilience

Stage 2

Assessment and Planning

Robust urban plans should be based on high quality data and analysis to ensure actions and regulations are evidence-based, and there is confidence in expected outcomes. Data and tools, including EIE, can be used in various ways to support assessment and planning processes, for example:

1. **Bringing together different data sources** to provide additional or complementary insights. EIE transport mode share data can help to understand the end-use of city-derived fuel sales to better inform decision-making, for example. It is also a useful resource for cities with data gaps.
2. **Validating other data, assessments and plans** through comparing and benchmarking datasets. For example, EIE solar potential data could help assess the likely accuracy of a solar PV proposal, or validate downscaled national or regional data.
3. **Supporting access by city departments and teams to data outside their sector** can enhance planning processes and ensure a more holistic approach. For instance, housing teams could better consider current green space provision within residential development proposals by using EIE tree canopy data.
4. **Aligning across governments for coordinated planning**, where a city authority covers only part of the city and collaboration is needed for larger-scale city- or region-wide proposals. EIE can provide a comparable dataset across multiple jurisdictions for joined-up planning and funding proposals.
5. **Creating bespoke analyses** by bringing datasets together, 'overlaying' information, adjusting assumptions, or downloading data to interrogate offline or integrate into models. For example, EIE commercial building energy data could be used with transport and solar potential data to help identify optimal locations for new solar parking lots with EV charging.

Renca, Chile intends to utilise EIE data to support more holistic urban planning. For example, using EIE tree canopy data to help identify optimal routes for cycle lanes that benefit from the cooling and shading effects of existing tree canopies. To incentivise electric vehicles through development of solar EV charging stations, EIE solar potential, buildings and transport data can help with site identification. Renca also plans to integrate EIE with existing city data to identify and validate viable commercial sites for solar installations.

"Renca can utilise EIE data throughout the entire project lifecycle, offering valuable insights across various city teams. Our municipality colleagues are eager to learn more about EIE."

Cristina Contreras,
Leader in Sustainability Innovation at La Fábrica (Municipal Corporation)
Renca, Chile

Stage 3

Implementation, Management and Monitoring

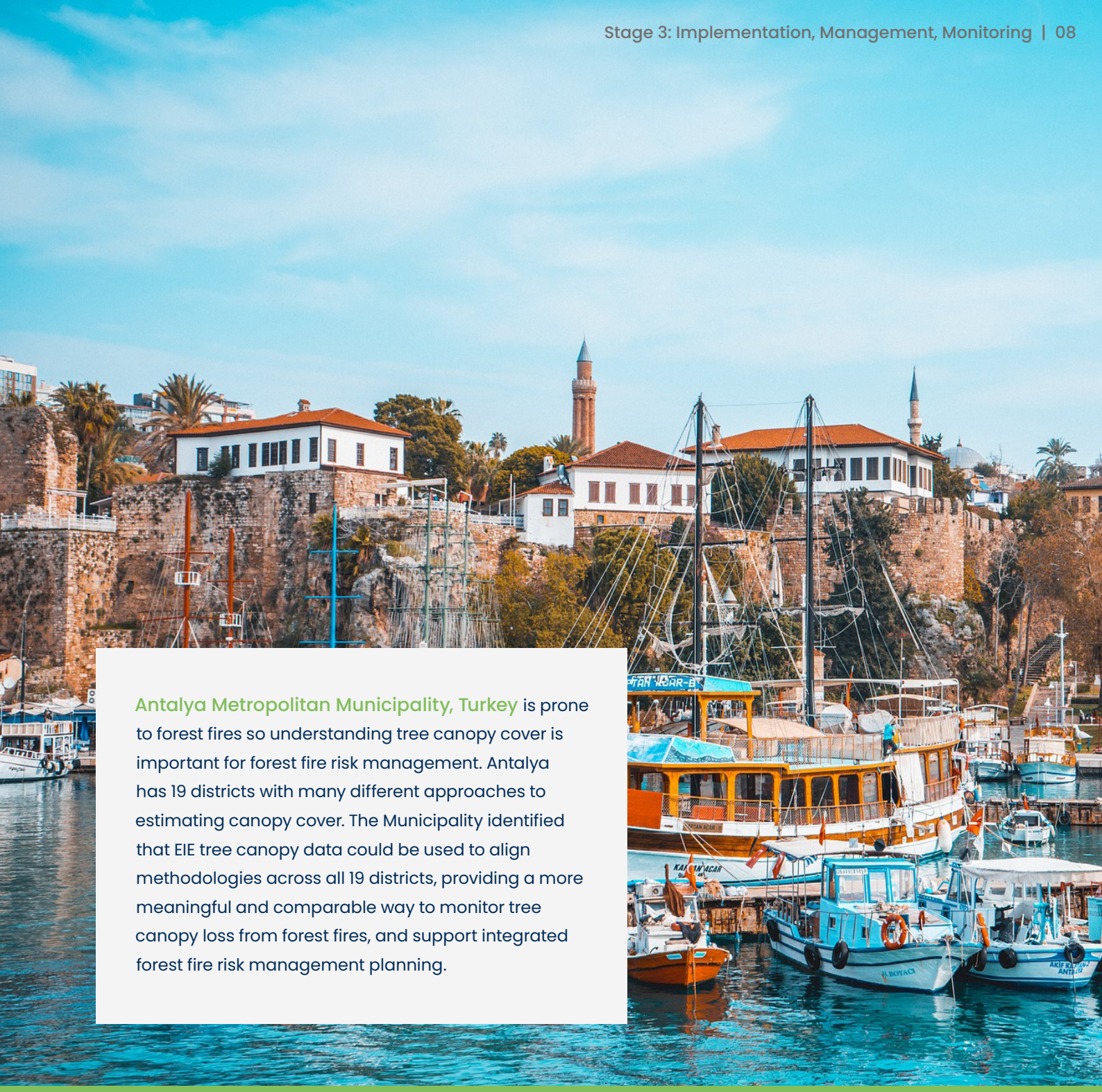
Evidence-based design, regulation, operationalisation, and tracking is needed for sound implementation of urban plans. Data and tools, including Google Environmental Insights, can be used in various ways including:

1. **Undertaking detailed estimations at the project level,** customising parameters and assumptions specific to a project or site to ensure outcomes will be achieved. For example, EIE Buildings data floor area and energy assumptions can be adjusted to estimate impacts of energy project interventions, or solar potential goals and panel assumptions amended to support PV installation planning.
2. **Setting regulations and goals for new developments,** using data to inform and support new land or housing regulations or setting renewable energy goals for new developments. For example, using Google Environmental Insights to identify minimum energy standards required to meet targets, or determining solar potential.
3. **Validating development proposals** through checks and comparisons of assumptions and outputs with other datasets, to ensure stated benefits can be realised. For example, calculations from a project implementer could be easily checked and benchmarked against EIE assumptions and outputs.
4. **Communicating projects to the public** using engaging and visual data and tools, to gain support. Zooming-in on images of EIE building energy demand, for instance, could help effectively communicate benefits of community retrofit programs, or green space maps could engage schools or youth groups to implement urban agriculture or tree planting projects.
5. **Implementing continuous monitoring** through accessing almost real-time information can enable better tracking and assessment of overall impact (e.g. on emissions), to make necessary adjustments or a business case for new projects. For example, EIE data is often more recent for many cities than local data, such as that used for GHG inventories, which may have a time lag.

Cascais, Portugal plans to further its sustainable mobility strategy and study car free zones in high-density downtown areas. EIE transport data by mode revealed a high level of private car dependency. EIE will play a critical role in evaluating the current (2023) modal splits before the implementation of sustainable mobility solutions and to monitor the policy's impact. Additionally, Cascais found EIE's visual insights valuable to gain buy-in across teams and promote awareness of urban infrastructure gaps and opportunities, and as an educational tool.

"Google's tool is user-friendly and easy to use, providing valuable visuals that benefit not only technical staff but also wider teams, including citizens and schools. It's a great resource for everyone and serves as a wonderful way to make data more democratic."

João Dinis,
Climate Action Director,
Cascais Ambiente,
Cascais, Portugal



Antalya Metropolitan Municipality, Turkey is prone to forest fires so understanding tree canopy cover is important for forest fire risk management. Antalya has 19 districts with many different approaches to estimating canopy cover. The Municipality identified that EIE tree canopy data could be used to align methodologies across all 19 districts, providing a more meaningful and comparable way to monitor tree canopy loss from forest fires, and support integrated forest fire risk management planning.

"In 2021, we lost approximately 70,000 ha [of forest] in a huge forest fire. We are always losing our biodiversity and carbon offset areas; monitoring this is so important! The EIE data can be used to do this, not only in urban areas, but for our whole region."

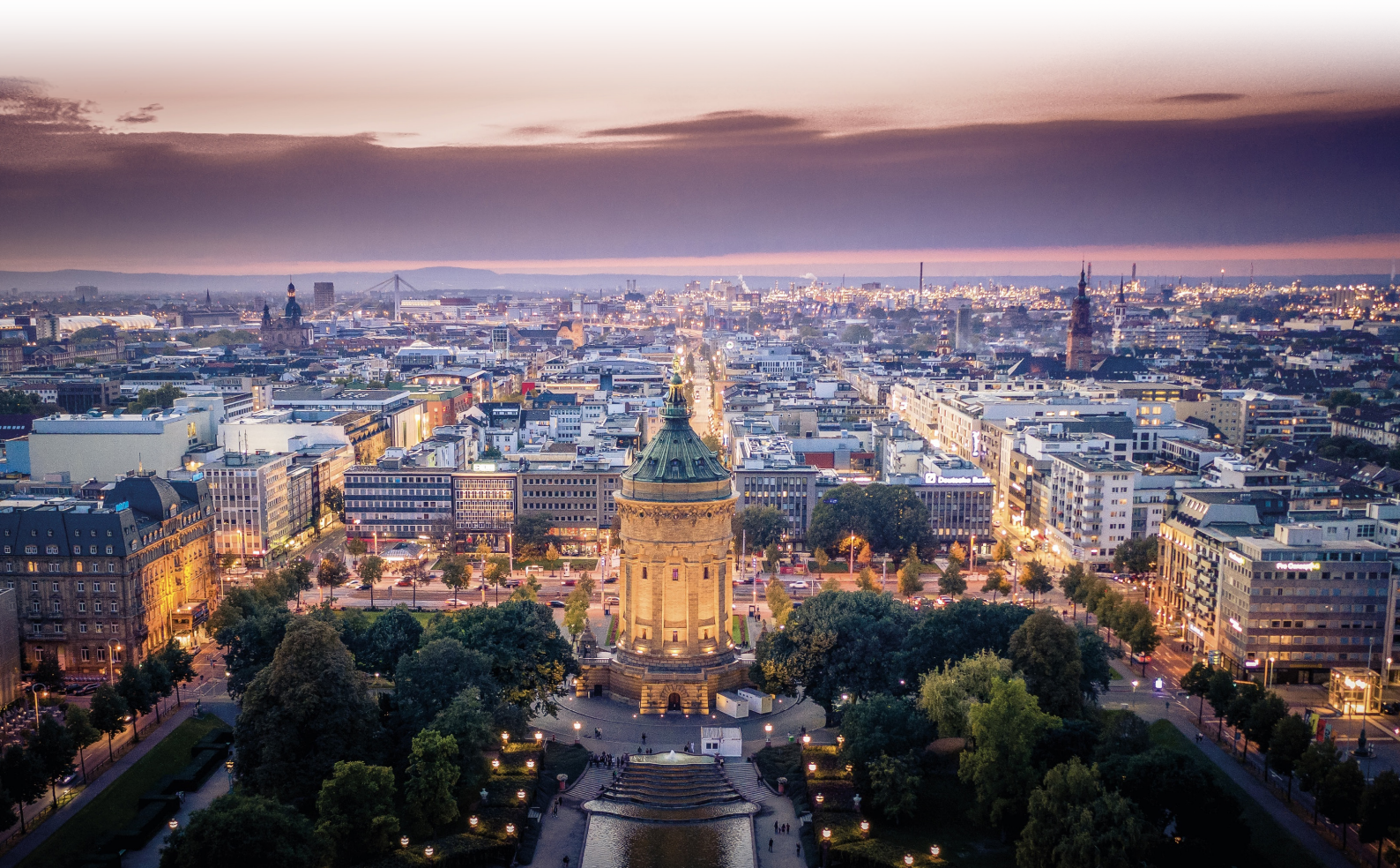
Dr. Fulya Aydin Kandemir, Kandemir, Özlem Kılıçarslan, Volkan Sepetçi, Mehmet Doğan, Kadir Yıldız, Mustafa Kaynarca;
experts from Climate Change and Zero Waste Department, GIS Branch, Disaster Affairs Department respectively
Antalya Metropolitan Municipality, Turkey

Getting started: 3 questions to ask yourself

1. **Who needs the data and for what purpose?**
   Choose data and tools that best meet the audience needs, and review how detailed the data needs to be for the purpose. Prioritise resources for the highest-impact areas or activities.

2. **What is required in official city planning processes?**
   Check how third party data, such as Google EIE, can be used to inform and simplify both internal and external processes in the municipality. Be open about assumptions and include appropriate disclaimers about use of data for different purposes.

3. **Is the data and its use transparent?**
   Ensure that sources, assumptions, and calculations are clear and documented. Compare and analyse data to understand the results and differences with other data.



About Urban Transitions Mission

The Urban Transitions Mission (UTM) mobilizes decision makers across all levels of government to prioritize climate neutral and net-zero pathways enabled by clean energy and systemic innovation across all sectors and in urban governance. By accelerating capacity-building and closing the gap between research, development and deployment, the Mission will empower cities to adopt innovative solutions and help reach tipping points in the cost and scale of those solutions for urban transitions.


utm@globalcovenantofmayors.org


urbantransitionsmission.org


linkedin.com/company/urban-transitions-mission


twitter.com/UTM_MI

About Google's Environmental Insights Explorer

Google's Environmental Insights Explorer (EIE) is a free platform for cities and local governments to understand their main sources of greenhouse gasses (GHGs), and to identify areas of opportunity for emissions reduction and climate adaptation projects. EIE information is delivered through ready-made insights and inbuilt scenario planning functionality, and has been designed to support cities across their climate action journeys: from measuring and planning, to developing climate action plans, and enacting policies, and tracking impact over time.

Check your city here : https://goo.gle/utm

Stay up to date on Google's ambitious journey to help build a more sustainable future here: https://sustainability.google/