EU City Calc

THE JOURNEY

FROM THOUGHT TO ACTION

EUCITYCALCULATOR: A WEBTOOL MADE BY CITIES FOR CITIES

Narrative report

EUROPEANCITYCALCULATOR.EU

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WE COME TOGETHER

A collaborative project that has enabled us to work together harmoniously, allowing for a constructive outcomes that recognises each other's perspectives and needs across the European Union.

A NEW TOOL GUIDES EUROPEAN CITIES TOWARDS CLIMATE TRANSITION

BY BÉNÉDICTE WEBER, PROJECT MANAGER, ENERGY CITIES

The EUCityCalc project aims to support cities in developing and implementing scientifically robust, detailed, and integrated transition pathways towards climate neutrality. The project, coordinated by Energy Cities, adopts the prospective modelling approach of the EU City Calculator, an open-source tool providing cities with a sectoral outlook on the type and ambition of measures they can take to achieve a transition towards climate neutrality, developed by modelling partner Climact based on research and analysis done by the Potsdam Institute for Climate Impact Research (PIK).

EUCityCalc supports 10 pilot cities: Riga in Latvia through the involvement of Riga Energy Agency; Dijon Métropole in France; the municipality of Mantova in Italy; the municipality of Zdar in the Czech Republic aided by the association of energy managers SEMMO; Palmela, Sesimbra and Setubal in Portugal through the involvement of the Energy Agency of Arrábida (ENA); Koprivnica, Varazdin, and Virovitica in Croatia through the involvement of Regional Energy Agency North (REAN) – in developing and implementing pathways and scenarios towards climate neutrality.
To follow these pioneer cities, a learning programme was launched in February 2024, consisting of e-learning and in-person trainings, to enable more cities to use the calculator to develop their own pathways.

Another aspect was to link local strategies to national and European plans. With the help of policy partner Carbon Market Watch, each pilot city held national roundtable workshops with representatives of their local governments.

EUCityCalc was an inspiring journey as a coordinator, with dedicated partners and motivated cities! The resulting tool as well as the learning programme are helpful for cities building their path towards climate neutrality.

VISIT THE PROJECT WEBSITE

EUROPEANCITYCALCULATOR.EU

WATCH THE VIDEO

VIDEO

BY SACHA BREYER, ENERGY AND CLIMATE CHANGE SENIOR CONSULTANT, CLIMACT

The main purpose of the EU City Calculator is to enable the exploration of pathways reflecting different futures through real-time simulations. It allows cities to explore opportunities to reach climate targets with concrete measures at the city level.

The webtool supports the development of transition scenarios, exploring cross-sectoral dynamics, and comparing them in terms of GHG emissions, energy consumption, and cost indicators. It also allows users to explore other implications such as air pollution, circularity, and water use.

The Calculator aims to support local authorities by reducing the administrative process needed to design and report strategies. It equips cities with the ability to understand the impact of political measures and engineering levers. By providing a common language, it facilitates the co-creation process with various stakeholders.

EU City Calculator allows cities to quickly perceive their main action levers to decarbonise their territory but also limit the impact linked to their import of goods and materials.

The webtool provides step-by-step guidance to build scenarios by selecting concrete measures.

As part of the EUCityCalc project, we interacted with 10 pilot cities of different sizes, countries, and contexts to identify and better understand the needs of cities that had ambitions or had already committed to the Covenant of Mayors. During the project, concrete measures were listed and discussed with the cities to better respond to their context and reflect their scope of action. The quantification of measures was conducted by PIK following a scientific approach.

The webtool is designed to facilitate the transfer of data from the SECAP template provided by the Covenant of Mayors to the EU City Calculator, and also the transfer of outputs from the webtool (measures and their implications) back to the SECAP template.

This simulation tool captures insights on the trade-offs and implications of implementing transition scenarios. The model underlying the web tool comprehensively covers all sectors that produce or consume energy, emit greenhouse gases, or act as carbon sinks.
It also extends its reach into the realm of the circular economy and land use. The EU City Calculator even models human behavior, reflecting societal and cultural changes. All data and assumptions are readily visible on the webtool, ensuring transparency. The model is open-source and operates in nearly real-time.

Finally, the EU City Calculator is a linear model and does not provide optimised scenarios or forecasts.

PROJECT EXPERIENCES

LEARNING TOGETHER

All about our pilot cities
experience with the EU City Calculator

Within the non-profit association ENA, Orlando Paraíba has collaborated with the Portuguese municipalities of Setúbal, Palmela, and Sesimbra to promote sustainable energy practices and foster a more sustainable community. This initiative led them to participate in the EUCityCalc project, where they continue to support the development of climate neutrality pathways for these municipalities.

"With previous tools we tested, calculating the cross-influence between measures and assessing the impact of intangible measures was challenging. Additionally, these tools often had complex interfaces that were difficult to navigate. One of the most beneficial aspects of the Calculator is its visual presentation of data. This feature has enabled us to identify the most promising strategies by sector, particularly in terms of CO2 reduction impact. It has also allowed us to learn from similar actions implemented in other cities, enhancing our approach to sustainability planning.

"The tool also provided the capability to estimate the cross-impacts of different measures, such as how a measure in city planning could affect mobility initiatives. However, challenges persisted, particularly regarding the amount of data required to refine the tool's results to fit local contexts. Despite these challenges, the tool significantly aided in designing the Climate Neutrality Pathways for our three municipalities.

These pathways, combined with Local Plans for Climate Change Adaptation, are crucial for ensuring our municipalities meet national legal obligations. Throughout the webtool's design process, we provided several inputs aimed at enhancing its usability, including simplifying procedures".

ORLANDO PARAÍBA, TECHNICAL DIRECTOR, ENA – ENERGY AND ENVIRONMENT AGENCY OF ARRÁBIDA

Latvia's primary objective is to achieve a 65% reduction in total greenhouse gas emissions by 2030 compared to 1990 levels.

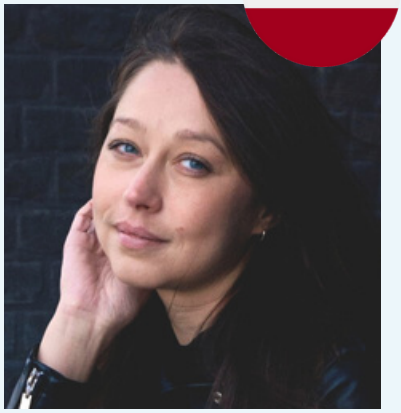
Māra Reča, the Project Coordinator at Riga Energy Agency, described how Riga is utilising the EU City Calculator.

“The tool has proven valuable in visualising various scenarios, yet there remain concerns regarding data quality and the comprehensibility of all its features.

There are clear areas for enhancement. For instance, integrating CO2 sequestration metrics and refining parameters related to land use and waste management would be beneficial.

Riga has integrated the Calculator alongside other models, significantly supporting climate planning processes. Particularly, it could be useful and supportive for cities starting from scratch or revise their Sustainable Energy and Climate Action Plans (SECAP).

Overall, the EU City Calculator serves as a pivotal starting point in envisioning necessary actions and strategies”.



MĀRA REČA, PROJECT COORDINATOR, REA - RIGA ENERGY AGENCY

EUCityCalc provides a useful starting point for imagining what needs to happen. It is helping us to visualise different scenarios.

It is a work in progress and we are happy to be part of it.

The projections are very useful especially for cities starting from scratch.”

MICHAL BAČOVSKÝ, ENERGY PROJECT MANAGER, MUNICIPALITY OF ŽĎÁR NAD SÁZAVOU,

Michal Bačovský, Žďár nad Sázavou's, Energy Project Manager, provided insights into the process and the role of the EU City Calculator for the municipality of Žďár.

Local authorities embarked on this project primarily to modernise the district heating system and reduce carbon emissions. This initiative naturally aligned with the city's development goals and exemplified their commitment to sustainable development and modern energy solutions.

Despite its potential, the tool faced significant obstacles in practical application. One of the major challenges is that smaller municipalities often lack the comprehensive data and staff needed.

"New cities should be aware of these challenges and strive to make their impact more tangible. Peers might be low-motivated to use the tool because it requires some level of prior knowledge and might be perceived as unnecessary. Nevertheless, with enhanced data and adequate training, this tool could become very beneficial".

"While the results were not immediately impactful on city development, the webtool holds promise for future mandatory CO2 emissions reporting and strategic planning. The Czech Republic is already discussing the implementation of international standards for greenhouse gas reporting. As cities will be required to monitor CO2 emissions and their activities against these standards, the webtool will be very useful for familiarising themselves with this process.

IVANA DEREŽIĆ, ENERGY ADVISOR, REA SJEVER - REGIONALNA ENERGETSKA AGENCIJA

“The prospects of EUCityCalc look very promising. We do hope for meaningful progress and significant developments in the near future.

Ivana Derežić, Energy Advisor at REAN, reported on the experiences of Koprivnica, Varazdin, and Virovitica, three Croatian cities.

“Like many small to medium-sized cities, they have limited resources, making it challenging to get the most out of the tool. For example, a small team usually does not have access to an employee with data mining or data analysis skills. However, the tool's potential in helping cities address their carbon footprint is undeniable”.

She highlighted that the webtool would benefit from being more user-friendly for smaller teams and better oriented towards localized priorities.

“Additionally, international standard documentation on energy consumption would be a sensible benchmark to link with the Calculator. This would tailor the tool's concept to something directly related to their planning”.

For the municipality of Mantova, Italy, it was important to gain political support since the beginning of the project.

It was easy for politicians to understand this user-friendly tool. For example, the breakdown of categories illustrates how effective local policies are in achieving greenhouse gas emission reductions and reaching 2030 targets.

Elisa Parisi, a technician at the Municipality of Mantova, explained how the tool revealed that certain existing policies would lead to an increase in emissions. In response, their strategy has been updated, leading to new opportunities and collaboration with stakeholders across the province.

“The Calculator can still be improved. For example, when specific data is unavailable, the web tool does not adequately address gaps in knowledge, making it difficult to justify outcomes. Additionally, users should have greater ability to modify inputs to create their own scenarios.

Similar tools can be expensive, cover only certain regions, and be slow to update data. Others are less comprehensive, focusing on only one factor, such as transport. It is beneficial that the EU City Calculator is specific to each city and is free”.

ELISA PARISI, TECHNICIAN, MUNICIPALITY OF MANTOVA,

The benefit of this tool compared to others is that it is city specific.

Moreover, it is free of charge and it can give an interesting overview of how various sectors influence greenhouse gas emissions. This information can help policymakers to make decisions that will decrease the city’s carbon footprints.”

Hadrien Rouchette, Project Manager, Dijon Métropole

The webtool's projections show different departments and local stakeholders how to make climate-positive policy decisions. Dijon is integrating these ideas and is looking forward to gaining even more insights as the Eu City Calculator develops.

Hadrien Rouchette, Project Manager for the energy-climate transition at Dijon Métropole in France, believes the webtool is helping the municipality respond to environmental challenges and energy risks through a quantitative approach. The tool provides a useful solution, especially since technical modelling skills are hard to acquire.

“The idea and concept are strong. However, the challenge lies in building trust, as the Calculator currently offers insights rather than precise figures. It provides a probable range within the model's framework.
While the tool's lack of precision is asking for improvement, it is a work in progress aimed at representing local data as accurately as possible. Despite this, the insights are proving valuable”.

Dijon is working with a consultancy firm to integrate the Calculator's projections into local government policies.

HOW OTHER CITIES CANBENEFIT

THE CO-CREATION PROCESS, THE LEARNING PROGRAMME AND POLICY PUBLICATIONS: EVERYTHING CITIES NEED TO KNOW

STEPS TO BECOME PART OF THE WEBTOOL

BY VINCENT MATTON, CLIMACT, HEAD OF PRODUCTS AND TECHNOLOGY

During the EUCityCalc project, a series of new cities were trained to use the tool and benefited from the experience shared by the pilot cities.

As more cities use the tool, we can collect their feedback and develop a tool that better fits the needs of field actors. In particular, we have developed a system allowing any European city to integrate or update its data independently and free of charge, effectively supporting more European cities in their climate strategy, whether they are at the start of their journey or at a more advanced stage.

In the coming years, the tool will be kept functional and continuously improved, particularly as part of the LIFE Sparkle project (September 2024 – June 2028).

Several improvements are planned to provide greater autonomy for users and a more intuitive experience with the tool. As a priority, the data integration and updating system will be fully automated and further simplified for users. We will explore different solutions to improve connectivity with other tools or data reporting systems to save users' time.

Additionally, we will develop more default scenarios representing realistic and relevant situations for cities. These scenarios will be saved as a set of selected measures and levers (advanced mode of the web tool). Finally, other features may also be developed based on feedback from users.
Any improvement or development of the webtool to meet the specific needs of a territory or organisation can be discussed and evaluated with CLIMACT.

This webtool is our long-term commitment to support cities in their climate strategy. We will keep enhancing it with users' feedback and make sure that it stays user-friendly, transparent, and connected.

CO-CREATION

BY ISABEL RODRÍGUEZ FERNÁNDEZ
PROJECT MANAGER, ENA – AGÊNCIA DE ENERGIA E AMBIENTE DA ARRÁBIDA

Planning and implementing the transition of a city towards climate neutrality should always be a collaborative commitment involving the whole community.

The role of the municipality in decarbonising the territory is crucial but limited. The contributions, vision, and experience of key local stakeholders are essential for designing a successful city climate strategy.

The EUCityCalc project supported its 10 pilot cities (Riga, Dijon Métropole, Mantova, Žďár, Palmela, Sesimbra, Setúbal, Koprivnica, Varazdin, and Virovitica) in developing and implementing scientifically robust and integrated transition pathways and policy scenarios towards climate neutrality.

To achieve this, each pilot city engaged in co-creation processes with key local stakeholders, working together in expert working groups to plan their transition to climate neutrality more effectively.
Using the webtool, mitigation strategies for the pilot cities were collaboratively drawn up, analysing specific actions to reduce emissions and the impact of different choices. This collaborative approach helped cities make informed decisions.

The co-creation processes consisted of face-to-face sessions with key local stakeholders to build and refine different pathways and policy scenarios, making consensual decisions on the measures and ambition levels to be adopted in various sectors (transport, building, energy production, consumption, industry, agriculture, forestry, and other land uses).

During these 34 face-to-face sessions, the process involved more than 450 multi-sectoral stakeholders from 170 entities across the 10 pilot cities in 6 European countries.

The proposed pathways and policy scenarios, politically adopted as planning instruments to be integrated into the cities' SEAPs/SECAPs, City Climate Contracts, and other related strategic plans, should now be translated into concrete and tangible actions towards achieving climate neutrality.

THE EUCITYCALC LEARNING PROGRAMME

BY ILIJA BELJAN, ENERGY ADVISOR,
REAN - REGIONAL ENERGY AGENCY NORTH

The EUCityCalc learning programme, developed through the EUCityCalc project, offers an innovative approach to empowering cities and municipalities to tackle energy and climate challenges. Designed primarily for local self-government representatives, this programme imparts essential knowledge and practical skills for effectively managing energy transitions, utilising the web tool.

The programme is structured into three modules. The first two modules are online courses with interactive lessons, allowing participants to learn at their own pace. These modules cover:

- The use of the EU City Calculator for creating low-carbon development scenarios
- Selecting optimal energy efficiency measures
- Applying data collection and interpretation techniques
- Using the tool to develop and revise strategic documents like Sustainable Energy and Climate Action Plans (SECAPs).

This comprehensive learning programme is free and awards certificates upon completion of each module. It provides an excellent opportunity for both beginners and those with existing knowledge to enhance their skills in energy and climate planning.

The third module is a live workshop, offering hands-on experience with the EU City Calculator. Participants apply their knowledge to real-world case studies, bridging theory and practice.

The EUCityCalc learning programme is a game-changer for local authorities, equipping them with the tools and knowledge to effectively steer their communities towards a sustainable future.

Embrace this opportunity to drive impactful change and become a leader in sustainable energy planning with the EUCityCalc learning programme.
Enrol now: EUCityCalc Learning Programme.

THE SCIENCE BEHIND THE TOOL

BY HÉCTOR RODRÍGUEZ-CHÁVEZ,
SCIENTIST, PIK POTSDAM
POTSDAM INSTITUTE FOR CLIMATE IMPACT RESEARCH

At the Potsdam Institute for Climate Impact Research (PIK), we believe it's crucial to share the science behind the calculator to instill confidence and provide robust support during the training process. While making the sessions practical to encourage tool adoption is crucial, we also want to convey the extensive research and modeling efforts that have gone into developing this state-of-the-art resource.

Throughout the learning programme, PIK trainers walked participants through the key methodologies, assumptions, and data sources behind the calculator. Interactive discussions highlighted how the tool translates complex systems dynamics into quantitative scenarios to guide urban climate action planning. Hands-on exercises then allowed users to directly experience inputting local data, selecting their own ambitious scenarios, adjusting policy measures and levers, and interpreting results. This dual approach ensures the EU City Calculator becomes more than just a Tool - it's a bridge between cutting-edge research and tangible climate solutions at the local level.

A significant part of the learning programme involved peer-to-peer learning and practical application. In the data collection workshop, participants filled out their own city forms and learned from the experiences of other cities that had already gone through the process. This collaborative environment helped cities understand data collection and the importance of accurate data for effective modeling.

Participants selected their own measures to be implemented under different ambitious scenarios. They then presented these scenarios and learned how they could be practically implemented. This exercise not only enhanced their understanding of the tool but also provided insights into the real-world application of their policy choices. Finally, participants took different roles and discuss how various measures could be transformed into actionable policies. This interactive session fostered a deeper understanding of the complexities involved in policymaking and the importance of stakeholder engagement.

PIK will continue working closely with the pilot cities to refine the tool's capabilities based on user feedback, creating an iterative learning process that keeps science and urban policy tightly integrated. The goal is to make the EUCityCalculator an ever-evolving, co-created resource that can dynamically meet the needs of cities striving for carbon neutrality.

EMPOWERING LOCAL AUTHORITIES WITH THE EU CITY CALCULATOR

By Jonathan Crook, Carbon Market Watch, Policy Expert

Building on the EU City Calculator modelling tool's outputs, the policy work supported cities in communicating about their climate transition pathways to their national governments and EU policymakers to make the case for more holistic climate planning that takes into account the key role and needs of local governments.

While many cities have a high level of climate ambition and take real action, they cannot achieve the transition on their own, as the results of our analysis have demonstrated.

National and EU policymakers need to adopt a whole-of-government approach that can leverage the strengths of cities and provide them with the means to fully unlock their potential.

Among other things, this means revising the EU's Governance Regulation to strengthen its provisions for multi-level policymaking, on which we have prepared a set of comprehensive recommendations.

Our work has raised the importance of holistic climate policymaking on key decisionmakers' radars through the publication of three in-depth reports with tailored recommendations, several advocacy trainings to support cities in conveying their strengths and needs to national and EU policymakers, continuous engagement with EUCityCalc pilot cities and external partners, and more.

Click here to read our publications!

Without equipped and committed cities, there will be no green transition at all. However, in many cases, cities are not adequately consulted or involved in climate policymaking processes.

CONCLUSIONS

A greener EU needs equipped cities and committed citizens. This is why EU-funded projects such as EUCityCalc are a game-changer that can help relevant stakeholders overcome skill, knowledge, and data gaps.

At a national level, and despite the improvements still needed, EUCityCalc can empower local authorities to make effective policy choices towards the energy transition, as well as contribute to upskilling them in driving the green revolution. In addition, thanks to the policy work carried out within the project, cities are now aware of their right to be involved in the national decision-making process.

The broader desired impact is to contribute to the successful implementation of the Green New Deal by reducing GHG emissions, increasing investments in sustainable energy and decreasing the final energy demand.

Together, we can make our cities lead the EU green transition!

EU CityCalc

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