

SMART CITY

Powered by data

In the next thirty years, approximately **68% of the world population will be living in cities, according to the UN¹**. To accommodate the rapidly-expanding urban population, cities need to act quickly to anticipate and overcome considerable challenges in many areas, including health and safety, environment, energy, water, electric utility, waste management, transportation and mobility, and service delivery.

To meet the ever-growing needs of citizens, many have turned to the concept of a **“Smart City”** as the ultimate solution to this immense question. But what exactly is a Smart City? Some might link it to IoT (Internet of Things) and connected devices, while others might imagine intelligent infrastructure on the city streets. Regardless of the nature of the projects, a Smart City is first and foremost **a connected city, powered by data sharing** among various stakeholders, city service providers, government administrators, and the citizens.

Whether to enable an intelligent product or service, to achieve transparency with governance and

performance, or to enhance territorial attractiveness, it is imperative to have a secure platform to collect reliable data and share them among stakeholders and the community.

The key question is: **what can open data do for the future of smart cities?** This page breaks down the question in ten relevant sectors and illustrates the role of data with tangible, real-life examples. From smaller cities like **Umeå**, Sweden (pop. 89 000), bigger cities like **Bristol** (pop. 463 400) and **Vancouver** (pop. 675 218), to mega metropolises like **Paris** (pop. 2.148 mil) and **Mexico City** (pop. 8.855 mil), open data can empower smart city projects in very diverse settings.

Smart city initiatives also **don't require a big team** or a large volume of raw data **to get started**. Cities around the world from Australia to France have taken on the open data transformation with just a handful of data sets. With data projects from all around the world, we hope this page will broaden your perspective and inspire you.

1. The 2018 Revision of the World Urbanization Prospects, Population Division of the United Nations Department of Economic and Social Affairs (UN DESA)

SMART GOVERNANCE: TRANSPARENCY & EFFICIENCY

TRANSPARENCY, POLITICAL ACCOUNTABILITY AND TRUST

For elected city officials, the most important way to establish political accountability and gain citizen trust is through transparency. To achieve transparency not only requires the availability of information, but also calls for a level of openness and accessibility - there needs to be an information platform that is easy to access, use, manipulate, visualize, and share. This is why many elected governments have

turned to open data to establish their legitimacy in a [transparent smart city](#).

Paris Mayor Anne Hidalgo has been serving the city since 2014. After her election, she and her team created an open data portal that clearly tracks and visualizes the progress they have made on policy areas like [housing](#), [mobility](#), [ecology](#), and [taxes](#). The dashboard helps her team communicate with constituents directly on how they are delivering Hidalgo's campaign promises. Check out the [open data portal of the City of Paris](#), with [277 datasets in 8 themes](#).

“Connectivity enables transparency for better government, education, and health.”
Bill Gates



Mexico experienced one of the largest election days in 2018, where the opposition candidate Andrés Manuel López Obrador won by a landslide margin, breaking the tradition of a PRI² win for almost a hundred years. The new government needed to quickly establish legitimacy and gain trust post-election through transparency. The **Mexico City Open Data Portal** was created in 2018, with the objective of “building a city of transparent windows and open doors.”³ Since then, the government has opened **185 datasets** available for download and visualization.

Open data doesn't only apply to mega cities like Paris and Mexico City. Small to medium cities have also taken on smart city projects via open data. **Gijón**,

2. Institutional Revolutionary Party

3. Construyendo una ciudad de ventanas transparentes y puertas abiertas

Spain, published their budget data in response to citizens' demand for transparency. **Umeå**, Sweden, opened their **data portal** and shared energy consumption data with the citizens. **French city Bordeaux** and **English city Leicester** have also opened their data portal with the transparency objectives.

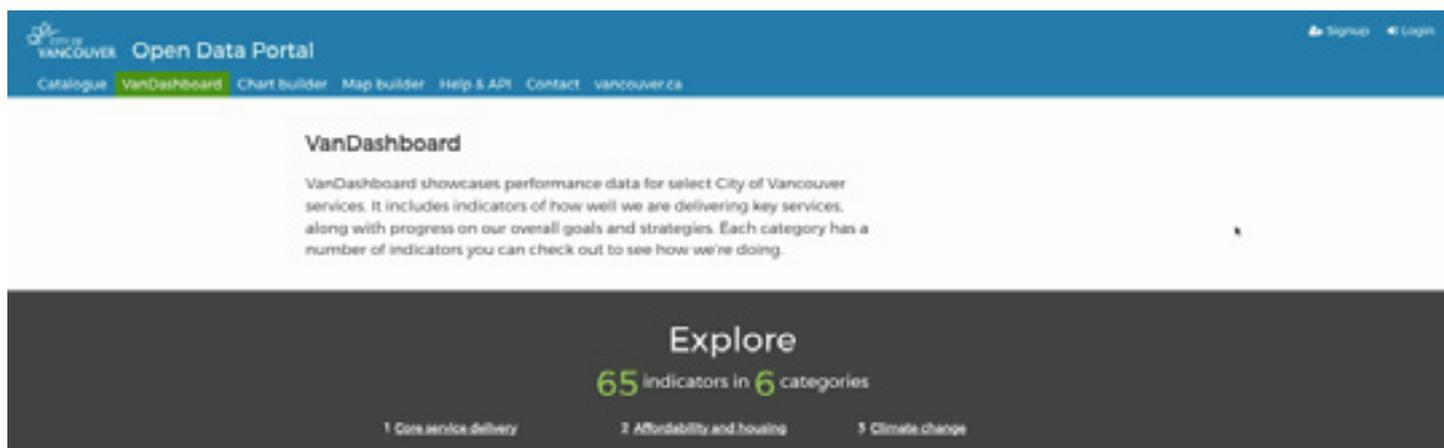
Read more **here**.

The digital transformation has ushered in a new reality for smart cities, regardless of city size: citizens want relevant information to be simple to understand and easy to access. **An open data portal is the quickest and simplest way to communicate information with constituents and establish political accountability.**

EFFICIENT ADMINISTRATION AND SPEEDY SERVICES

The cities of the future will be **efficient, sustainable, and smart**. For city administrators, this means providing speedy services for constituents, monitoring their efficiency, and improving underperforming areas. To achieve these objectives, many cities around the world have turned to creating an open data portal to communicate their progress with citizens. In the long term, a public portal can **showcase service performance and improve administration efficiency**.

The City of Vancouver opened **their data portal VanDashboard** to showcase performance data of the city services. With six categories of indicators in service delivery, housing, climate change, finance, equality, and culture, the portal is a key way to communicate how well the city is serving its community in different areas, like “medical incident response time” and “homelessness services clients.” The dashboard allows **intuitive visualizations** for citizens to see which areas are **meeting targets** and what areas **need improvement**.

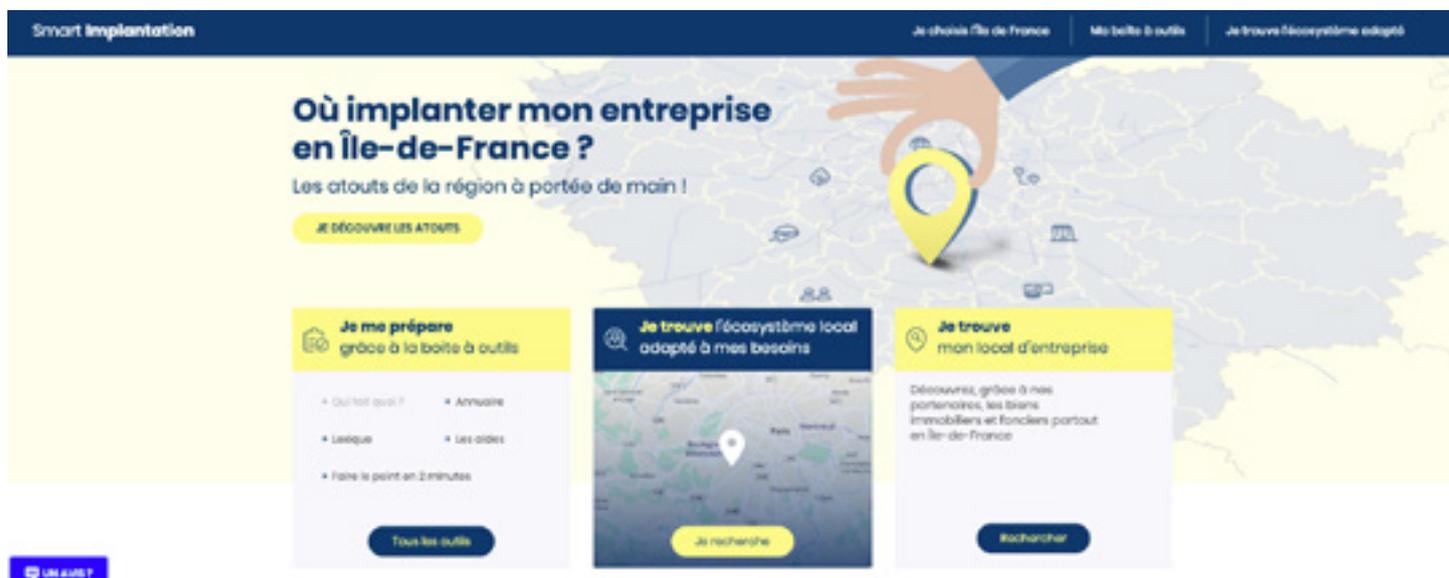


The French city of Angers has gone one step further in creating an app based on its data portal, “**Living in Angers**.” It not only provides information on existing services, but also provides real-time data on car park occupancy, meal menu of each school, air quality, and public transport timetables.

Read more about it [here](#).

“*In my opinion, a smart city thinks constantly about how to bring better quality services to residents.*”
Antoine Decourt, Open Data Project Manager, Angers, France

In addition to traditional city service delivery, there are various innovative ways that cities can use an information portal. The City of Paris dedicated a portal called “**Smart Implantation**” for people who want to set up businesses in Paris. With all the resources available in one place, the city easily facilitates business owners in the process of moving and opening shops. Bordeaux also set up a Messenger chatbot that helps citizens with waste management.



From these examples, it is easy to see that a smart city is not a futuristic concept with complex technologies. Cities of any size can benefit from creating an open data portal with just a handful of datasets.

To make a city smart, the key is to think about the needs of the people, provide efficient services, and encourage practical innovations.

HEALTH AND SAFETY

To keep the community healthy and safe, cities need to have [reliable metrics](#) and [long-term monitoring mechanisms to quickly expose potential risks](#). Because of this, having a trustworthy, open database that collects relevant data and keeps track of incidents is vital. With open data, cities can protect their citizens from crime, violence, drug epidemic, and emergency events.

This is especially relevant in the context of a global health crisis like [Covid-19](#). Whether it is the health professionals, citizens, or policymakers, people need to have access to real, tangible numbers in order to gauge the impact of a crisis and prepare accordingly. [The 2020 pandemic has exposed the weakness and lack of data infrastructure in health systems worldwide](#).

More on open data and Covid-19 [here](#).

[The town of Cary, North Carolina](#), is fighting the [opioid drug crisis](#) with open data. Town staff took an innovative approach and used sewage water sampling to detect opioid consumption. The data is then shared openly on their data portal for researchers, citizens, and public officials in order to raise awareness and help combat the crisis.

[Mexico City](#) opened their geolocalized crime data to inform citizens and improve public policy. In addition, the city has a daily-updated [violence against women hotline data](#). The continuing monitoring and sharing allowed journalists and community members to discover [the rise in violence against women during the Covid-19 lockdown](#).



In addition to everyday monitoring, [emergency assistance](#) and [disaster management](#) can also benefit from open data. The [Australian city of Kingston](#) is developing a Housing Assistance and Emergency Shelter data, a crucial first step in helping the urban poor. Civic tech organizations like One Concern Inc. and Ushahidi are [using open data to map out earthquakes](#).

Open data sharing is especially important [during a health crisis](#). Digital contact tracing has largely helped to [slow down the spread in East Asia](#). At the same time, worldwide real-time hospital data on

numbers of hospitalized and intensive care patients is helping public authorities adapt their strategies to the constant evolving situation. The German district [Rhein-Kreis Neuss](#) updated its [Covid data daily](#) on the portal. Opendatasoft has created [a health crisis observatory](#) with visual dashboards from France, Germany, Belgium, Switzerland, Spain, Canada, and USA.

“ The effective sharing of data has powered initiatives across a myriad of pandemic responses, from tracking the spread of the virus, to understanding the disease and developing treatments. ”
Anthony Cook, Regional Vice President, Microsoft Asia

INTERNAL CONNECTIVITY AND SHARING

Internal silos not only plague businesses, but also hinder administration efficiency. An “information silo” occurs [when information is not effectively shared among departments within an organization](#). And that can be extremely challenging for city administrators, who often have to sift through lengthy annexes to find the information they needed - outdated information management systems can no longer fulfill the needs of smart city-building. [Having a data portal for instant sharing can help break down internal silos and make use of untapped resources and knowledge across departments](#).

Often, the primary users of the data are the team members. [France’s city of Bordeaux](#) created a number of services for city residents, including mobile app,

chatbot, website, etc. [“It is essential that all our channels deliver the same information,”](#) commented Yann, Bordeaux’s Innovation Project Lead. Having a shared, internal data portal ensures that all team members are on the same page and can easily update information within the organization.

Internal sharing not only benefits within the organization, but it can also be used to share information between collaborators. For example, [eight city councils in Western Sydney are launching their open data portals](#). In addition to helping each city council internally, the portals will allow information sharing across the councils, enabling a regional synergy and connectivity that would not be made possible without open data.



For future smart cities, [administrators should no longer rely on outdated office software](#) for information sharing. Having an internal sharing portal is

a crucial first step to make sure that all the information is [available in one place](#) and [easily accessible for all departments](#).

SMART SERVICES: TRANSPORT, ENERGY WATER

TRANSPORTATION AND MOBILITY

City life is often **plagued by traffic congestion**, and with that comes extended commute time, air pollution, noise pollution, and even traffic accidents. With data and digitalization, one of the first things that global metropolises are turning to improve is transportation and mobility. By collecting traffic data, counting pedestrian and vehicles, updating real-time public transit data, and monitoring occupancy rates in parking lots, city governments and mobility operators can do a lot with a **shared, open data portal to improve urban traffic**. In addition, open data helps cities share information and maps that can enhance people's mobility experiences.

As early as 2011, New York City has **installed sensors around 110 city blocks in Manhattan** with the **award-winning "Midtown in Motion"** project. The city of Paris **is working with Cisco** to collect data on traffic, air quality and noise pollution. Mexico City, as the world's 8th most populated metropolis, uses low-cost tactical tools to **make urban streets safer for pedestrians**. Bristol recently **published its 6 million records of traffic data**, which increases by the thousands daily.

Traffic data not only benefits large metropolitan cities, but also smaller-sized cities. The French city of Rennes with its 200,000 inhabitants publishes real-time bus location data on its public transportation **open data portal**, which you can

read about **here**. **Chattanooga, Tennessee**, collects traffic data and runs simulations on its "digital twin" to test out new ways to improve public safety - more on that **here**. **Louisville, Kentucky**, **partnered with Waze** to take advantage of the massive user-generated traffic data - a perfect example of a synergetic public-private partnership.

In addition to traffic management, cities are enhancing mobility experiences in innovative ways. The Australian city council Eurobodalla is collecting bridge traffic data to inform future bridge designs. Global parking operator Indigo uses **mobility data to help local governments manage on-street parking**. In the US, **Jersey City** and the **town of Cary** publish their bike-related data to inform the biker community. 26 other bike maps are available to explore on the **Data Network** - a particularly useful tool to explore to **plan a Covid-friendly outing**. The French railway operator SNCF uses its open data portal to break down internal silos and provide **its engineers with a geographic visualization tool**. The Belgian railway operator Infrabel opened its **open data portal** to a **broad spectrum of audience** and held hackathons focusing on punctuality data. From small city councils to mobility service providers, having a dedicated platform to collect and share data will lead to innovative projects and data reuses, bettering citizens' everyday experiences.



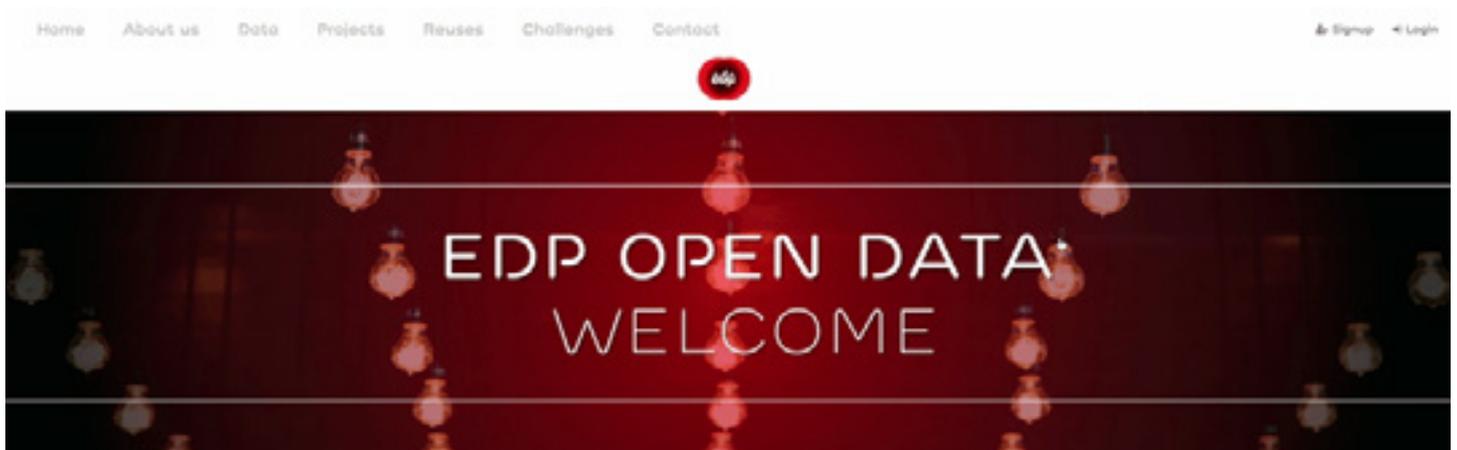
ENERGY AND ELECTRIC UTILITY

An intelligent and efficient energy management system is crucial for smart cities who have to **adapt to the ever-expanding urban population**⁴. This comes into play in various scenarios: **smart on-street lighting**, smart homes, **workplace consumption**, public facility energy management, **smart grid**, etc. The common thread that can connect and support these diverse functions is open data: many global energy

players have taken up the data solution to facilitate their energy management systems.

EDP (Energias de Portugal) is a global energy company with presence in 16 countries. It prioritized **an open data initiative** as part of its strategy to become a leader in energy innovation and sustainability.

4. Energy Management and Planning in Smart Cities. C.F. Calvillo, A. Sanchez-Mirallas, J.Villar. 2016.



EDF (Électricité de France) is the world's third largest electric utility company, with business representations worldwide. Since 2015, EDF has collaborated with Opendatasoft to create their data portal both for external publishing and internal sharing. With a reliable data portal, EDF has **optimized electric vehicle charging** by **encouraging charging at peak solar power production times and reducing CO₂ emissions** - just one innovative example of what you can do with data.

Other data initiatives can apply in **smart grid management** and **on-street lighting operations**. Having a data sharing portal has helped **natural gas company GRDF with greater control over the concessions** and enabled Spanish regional administration Junta of Castile and Leon to achieve better transparency via **its energy datahub**. From small cities to large energy providers, every organization can benefit from open data to adapt and innovate in the energy transition, an inevitable step towards the future of smart cities.

“ Thanks to our data project and the Opendatasoft platform, we can confidently continue along the path of energy transition. ”
Amalia Ouriachi, EDF SEI

SMART WATER AND WASTE MANAGEMENT

Water pipelines are the lifeblood of a city, but they are less talked about in public policy. Many cities are facing aging water networks and increasing pressure to deliver water to the ever-expanding urban population. For cities and water operators, one of the easiest ways to improve their service delivery is through intelligent monitoring and open data.

Smart city water management does more than detecting leaks and cutting wastage. Check out the [example of the city of Kalamazoo, Michigan](#). Their newly-installed smart meters no longer require city staff to go to residents and take meter readings. The instantaneous collection of water usage data also informs citizens

when there is a spike in usage, making it easy to save water at home. With IoT enabled sensors to collect real-time data, smart water management systems can save water both at home and at city level.

Read one of our water network use cases [here](#).

Waste management is also an increasing challenge for cities. A lot of them are [putting smart solutions in practice](#). Data-fueled Internet of Things (IoT) and Artificial Intelligence (AI) systems can make waste management more time, cost, and energy efficient while also contributing to the Sustainable Development Goals (SDGs).



SMART COMMUNITY: ENGAGEMENT & SUSTAINABILITY

CITIZEN ENGAGEMENT AND COMMUNITY BUILDING

Data is not just about publishing information, but much more about connecting to the community it is serving and making the most of the collective intelligence. An interesting anecdote comes from Grand Paris Sud, an intercommunal community in the southern suburbs of Paris. After making its **open data portal** available, the team was confronted with the reality on the ground - a beekeeper asked the team about the **dataset that lists all the trees in the area**, but the team did not have the answer. “This resident made us realize that beyond public data, we have to rely on citizen contribution and engagement,” said Frederic on the data team.

Since then, the Grand Paris Sud team has been focusing on **encouraging citizens to contribute their observations** for the community. The most popular dataset is about local businesses: local info is more important than ever. The Grand Paris Sud Project Manager Hacène commented that, “the people who know the city the best are the ones who live there.” In order to make better public policies, cities have to engage the locals first.

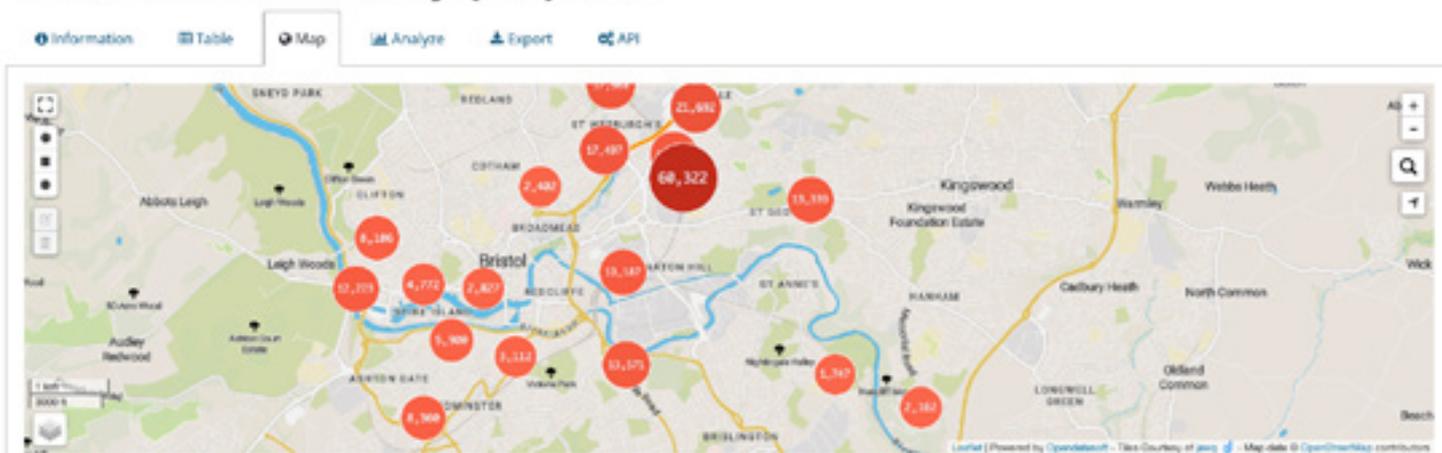
Similar community engagement objectives are seen across the world. City of Bristol is home to the **Luftdaten Air Quality data**, a dataset generated by individuals, who operate a low cost sensor at their homes and gardens that monitors and transmits air quality data every hour.

Read more [here](#).

“The people who know the city the best are the ones who live there.”

Hacène Cherfi, Open Data Project Manager, Grand Paris Sud

Luftdaten Air Quality (PM) data



In addition to community-generated data, open portals can facilitate other types of community building. Chattanooga, Tennessee's open data portal is **facilitating collaborations with local universities**. Bristol's open portal **funded data projects** from universities and local communities. The Belgian railway operator Infrabel opened its **open data portal** and held hackathons focusing on punctuality data. Portuguese utilities company EDP (Energias de Portugal) used their data portal to **open an ongoing exchange with the community**.

In addition to engagement, it is necessary to also **measure the impact** of these engagements. Mexico

City open data staff monitored Twitter to see exchanges with community members. **The result is very positive**. The Swiss city **Basel-Stadt** confirms the same outcome: **many residents are interested in data** and communicate regularly with the city's data portal staff on Twitter. In the ever-increasingly intelligent cities, citizens want to be engaged, connected, and heard - the most direct channel of communication is through data sharing.

“ We rely on citizen communities to share and enhance our data analysis methods. ”
Sofia Ganhila, Technology Analyst, EDP

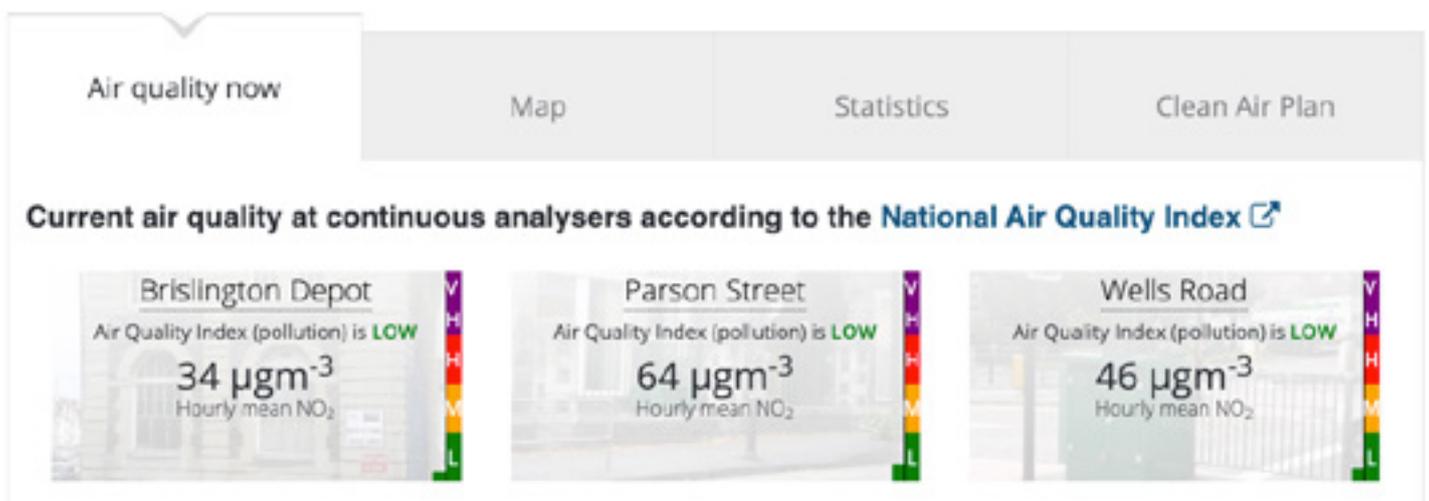
ENVIRONMENT, ECOLOGY, AND AGRICULTURE

Donald Trump announced in 2017 that **the United States would withdraw from the Paris Climate Accord**. However, cities around the world are increasingly taking matters into their own hands. Mayors and governors, as well as other institution leaders are vowing to uphold their climate responsibilities in solidarity. In terms of environment and ecology, many city-level administrations are using data as their weapon against climate change.

From Australia and the UK, to Canada and the US, cities are taking initiatives to monitor their environment with air quality and emission data. Bristol publishes real-time **air quality data** via a dashboard on **Open Data Bristol**.

Air Quality Dashboard

This dashboard will help you access real-time and historic **air quality data**.
Map, plot and download the data using the tabs to navigate.



Vancouver dedicates one of its 6 central data categories to **climate change**, striving to protect the city's ecology and natural resources. The visual dashboard clearly communicates which area is meeting the target and which area needs improving. **The Australian city council Eurobodalla's** wildlife monitoring recorded and exposed the impact of the historic Australia bushfire on its bat population. In the US, cities like Chicago and New York are **using open data to reduce building greenhouse gas emissions**.

Read more about **Why Open Data Is a Powerful Tool in the Struggle for Cleaner Air**.

In the realm of agriculture, data sharing has been used to monitor, inform, and market agricultural products. **The Australian Southern Grampians Shire**

city council shares real-time weather data with local farmers to help them make relevant decisions. The Ministry of Agriculture in France displays all companies that sell chemical agricultural products to farmers in **a simple, visual dashboard**.

From Copenhagen to Boston, data sharing has led to environment-friendly policies. With micromobility projects like electric bikes and scooters to using satellite images to detect logging encroachment and illegal mining, the use of data can be the one-stop solution to our urban environmental challenges.

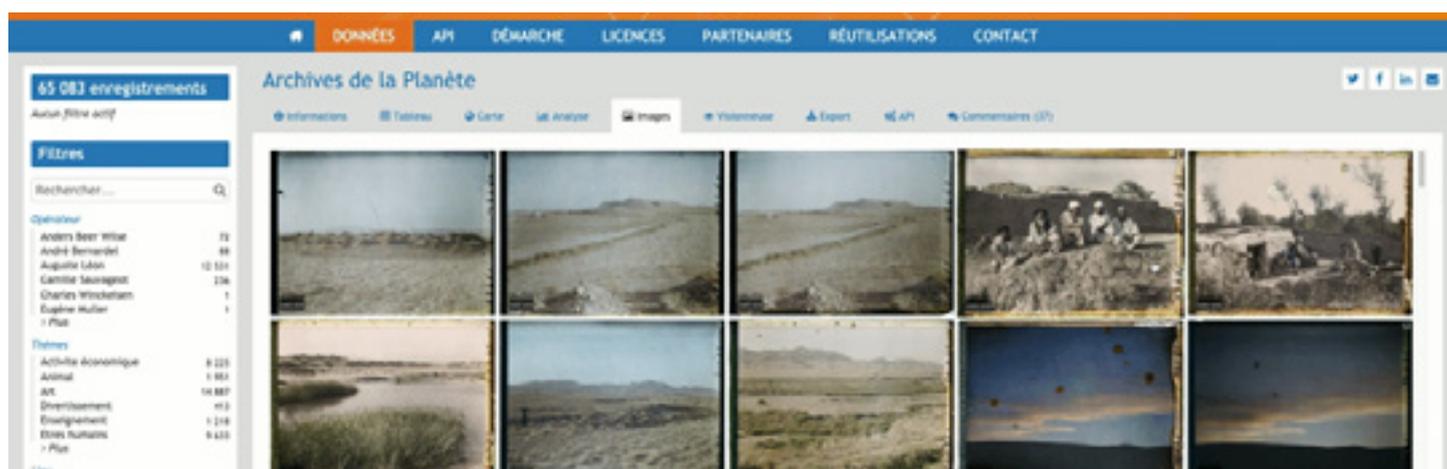
“ I know one thing for sure: the ecological transition will come through data. ”
Arthur Beauchesne, SRD Energies

TOURISM, CULTURE, AND TERRITORIAL MARKETING

From the world's most popular destinations like Paris and New York, to smaller communities like the town of Cary, NC, open data has been used as a tool for tourism and territory attractiveness. Not only can data help visitors better plan their travels, but open data also plays a crucial role for the regions' online presence. The latter case has been particularly relevant during the Covid-19 pandemic lockdown.

France's **Chambery region** uses its **open data portal** to promote eco-tourism activities. The region's **90km of bicycle paths** can be easily mapped out

for travelers. Australia's Randwick city council displays real-time data on their beach display screens, optimizing the visitor experience at Coogee Beach by providing data on weather, aquatic safety, parking management, and amenity servicing. In the US, **Town of Cary** and **Jersey City** use their open data portals to showcase various attractions, including bike routes, art and cultural venues, and park and recreation areas. With open data, **cities can market themselves to attract residents, students, tourists, and talented professionals**.

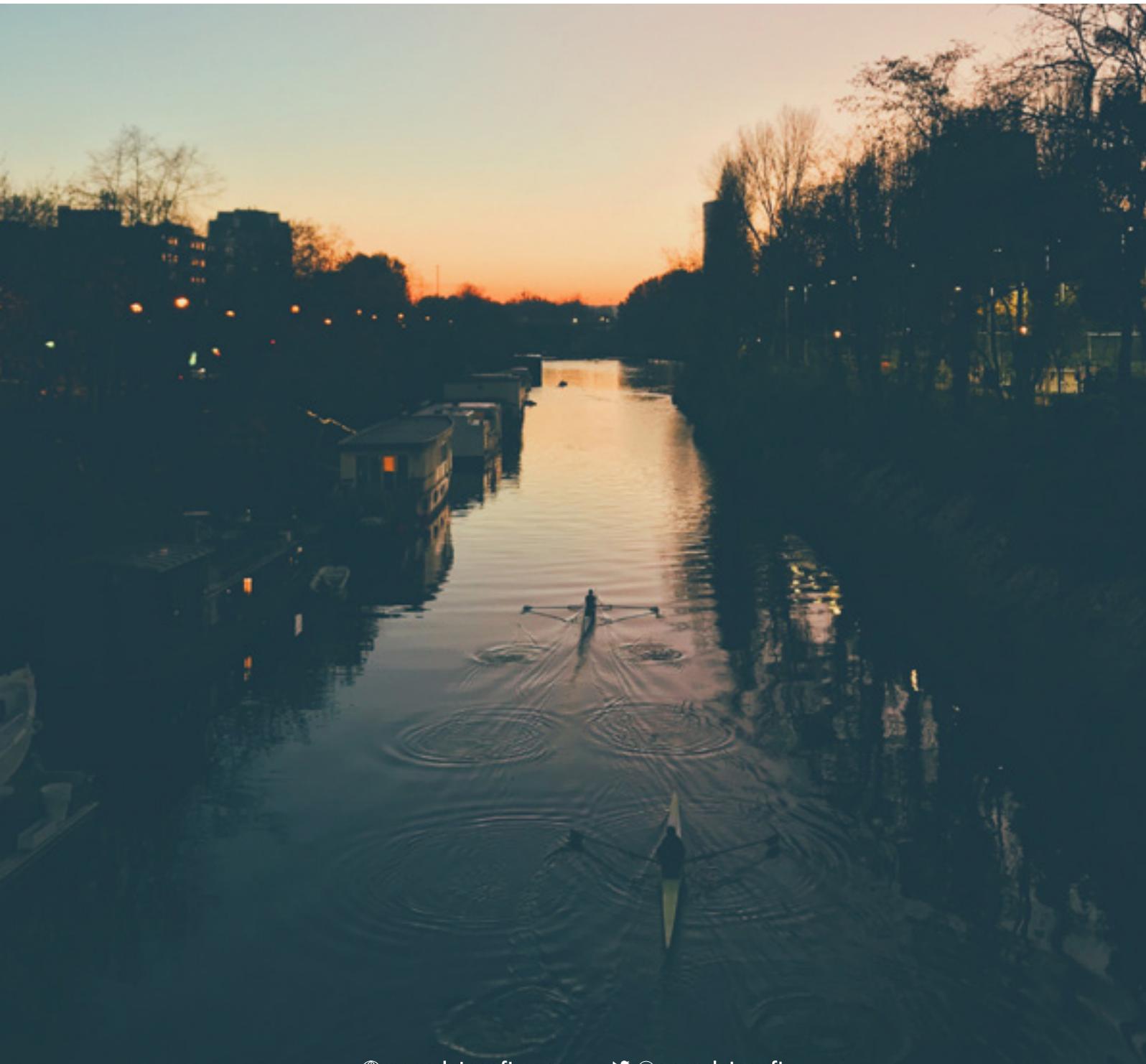


Open data has also been used to preserve culture and heritage virtually, an especially useful way to promote tourism during the pandemic lockdown. The French government kickstarted the #Culture-AtHome⁵ project that included **880 virtual exhibitions, concerts, documentaries** from archeology to art. Paris' regional government **Île-de-France** has launched **a website to showcase what you can do this summer in the region**, frequently updated to reflect the current Covid-19 situation. Lastly,

5. #Culturecheznous

a special shout out to **Albert-Kahn Museum** that used open data to create "**Archives of the Planet**" that records 72,000 autochrome plates and hundreds of hours of films taken around the world at the beginning of the 1900s.

Read more about this incredible project **here**.



CONCLUSION

After reading about the practical data projects from around the world, you probably learned that **data is not a futuristic idea, but tangible information about city lives. Nor are smart cities a distant concept, but about providing electricity, delivering water, managing traffic, monitoring safety, and saving the environment.**

Regardless of the size of the city, **data allows us to understand our cities better**, in ways that are more objective, quantifiable, and workable. A city powered by data means a city that is more **connected,**

efficient, and sustainable. With an open data portal to collect, share, and monitor various aspects of urban lives, cities can also unleash the potential of the **collective intelligence of the community.** This means **citizens, researchers, and business owners can enable innovative projects to improve their daily lives,** with the help of accessible, reliable information shared by the city.

If you want to give it a try, don't hesitate to contact us and request a demo for free.

ABOUT OPENDATASOFT'S DATA SHARING PLATFORM

The Opendatasoft market-leading data sharing solution allows users to easily publish, manage, combine, analyze, visualize, and share real-time data in a variety of formats on a single platform. Opendatasoft operates in 18 countries with clients ranging from small companies and towns (including the City of Paris, Brussels, Bristol, Eindhoven, or Vancouver in Canada) to large multinationals (Schneider Electric, Indigo, Energias de Portugal (EDP), Veolia, Total, Enedis, Saint-Gobain).