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SEVENTH FRAMEWORK PROGRAMME

TRANSFORM

High performance. Delivered.

Open Energy Data: a prerequisite for Cities to become Low-Carbon

Part of the TRANSFORM program

Preface : It's all about Data

If you want to consume in an eco-friendly way you want to know how stuff is made, where it comes from and what it contains. If you want to live in an eco-friendly way you need to know what the impact of your behavior is. If society wants to build eco-friendly cities we need to know the impact of city design decisions.

But do you get the right information if you are standing in your supermarket? Do you really know the fish is eco sound? Do you have the needed information concerning your energy and water consumption if you want to live sustainably? Do we have the proper information to design eco-friendly cities? I don't think so. We still lack important data.

In his great book "Ecological Intelligence", Daniel Goleman explains how this could work. If we lack the proper data we are not able to change our behavior and invest effectively in the right direction. Goleman states that businesses and governments need to give full and honest information so they and the citizens are able to make decisions for the better. Goleman calls it radical transparency!

By radical transparency, industry and trade will be able to change the supply chain of goods. By radical transparency governments and businesses will know the impact of changing energy systems and able to build the eco-friendly cities we are striving for. Transparency is of key importance and related data needs to be unleashed.

In the TRANSFORM program, data is one of the most important aspects. And as you will read in this booklet there is still a way to go. Amsterdam, one of the TRANSFORM cities, was able and maybe lucky to get a hold on all energy related data and connect it to the map of the city. A lot of hurdles needed to be overtaken to reach this goal and as you will read other cities struggled with this at the same time. It is not easy but time will show that this is possible for all other TRANSFORM cities.
But data alone is not enough. The big question is: now what?

This is why AIT and Accenture have built a "Decision Support Tool". With this tool the data comes to life and cities can run energy scenarios for future city design and (re)development. The tool is able to support city design decisions and is also extremely helpful in facilitating the dialogue of cities with all their stakeholders like businesses and citizens. If we would be able to free the data and start acting transparently we would be able to build the systems needed to move towards low carbon or non-carbon cities. we hope this publication will support the discussion about open data and the need to be transparent about it. Let's stop talking, let's get started!

Ronald van Warmerdam, Project coordinator of TRANSFORM, City of Amsterdam
Joost Brinkman, Accenture Sustainability Services

Executive Summary

- Data is key for fact based decision making
- TRANSFORM has developed an open source Decision Support Tool that can help cities to define and simulate low carbon energy scenarios. This tool can have significant value prior to low carbon investment decisions.
- During the TRANSFORM project we learned that energy data is in most cases available, but that opening these data-sets faces a number of legal, economic and quality challenges.
- Open energy data can however create both economical as well as social value. Those are largely driven by the level of openness and the cost of availability.
- TRANSFORM has found ways to overcome these challenges and to create value from open energy data.
- Cities play a central coordinating role in the opening of energy data and unleashing its potential.
- Data is not the issue, it's part of the solution. We simply need to cooperate and act.

01
Introduction

Opening of energy data is essential for cities to become low-carbon

> "Concerning energy policy, we always treated the city as being the same everywhere, but this is simply not true. We have to zoom in and look at the specifics of areas, or even buildings in the city." – Bob Mantel, Municipality of Amsterdam

Currently our cities account for more than three-quarters of the global energy demand. This is why cities, together with the multitude of their stakeholders, play a major role in realizing very ambitious local, national, and international energy and emissions targets. Examples of such targets are the current EU domestic greenhouse gas reduction target of 40% as well as the target of 27% increase in renewable energy and energy savings by 2030.

While playing a critical role in meeting these targets, most of the cities and their stakeholders have difficulties in defining and selecting long-reaching and financially feasible actions over more immediate business-as-usual scenarios. Short-term payback options are logically preferred over longer-term lifecycle approaches.

City governments as well as some key stakeholders have already defined their energy strategies, emission targets, as well as broader sustainability agendas, but these are generally a collection of well-meant intentions that are not easily translated into specific interventions or regulatory actions. The projected impact of these strategies is most of the time based on top-down estimates, without a clear insight into the cost-effectiveness of specific projects or policies and interdependencies between them.

The choices that need to be made in developing an actionable and effective transformational agenda, depends largely on city specific geo-spatial characteristics and the decision making context within and between different stakeholders in that city. For every stakeholder in an urban environment different instruments and options to intervene are available, and different situational factors, like the capacity to invest or the perception of benefits, determine the attractiveness of these options.

A complex urban system cannot be accurately described and analysed from the top-down perspective. The primary reason is that taking this perspective often assumes equal geo-spatial and energy related conditions across the city as a whole and omits local constraints and opportunities. This is the main reason why cities should move beyond the top-down and one-size-fits-all approach to transforming themselves to low-carbon cities and start basing their decisions on more detailed bottom-up analysis using location specific and granular geo-spatial and energy data.

Large stakeholders – such as municipalities, infrastructure and energy companies – own data about buildings in a city, with the resolution commonly available on the address level. Municipalities for example have data about the floor space of every address in the city, year of construction, and the building function (office, residential etc). Energy and infrastructure companies have billing data that refer to the energy consumption of their clients.

Using the city data at that level of granularity allows for much more effective analysis and a far more accurate estimate of the potential impacts interventions might have on the urban energy system. For example, knowing the ratio of gas consumption to the floor space provides an insight into the efficiency with which a building is heated, and therefore the possible gains by retrofitting that specific building.

This type of high granularity data about energy-related properties of buildings and city systems is what is referred to by the term "open energy data" – data related to the energy domain with the properties of being fine-grained, in a digital and machine-readable format, and free to use and reuse.

Analysing open energy data on a city scale can provide valuable insights about the current energy use and related emissions, but even more about the opportunities to make a significant impact in the future, with the aim of reaching city specific energy and emissions targets.

Open energy data can enable much more accurate and actionable insights into the impact of different projects or regulatory actions (e.g. one that aims buildings to have an energy label higher than a certain level). Harvesting insights from open energy data:

- enables more informed and fact-based discussion between different stakeholders,
- increases the speed and quality of decision making within the context of developing energy transformation agendas, and
- enables the continuous process of translating these decisions into specific actions.

TRANSFORM is an EU funded program aimed at utilizing the power of open energy data, partially in response to the EU PSI directive (2003/98/EC) on the re-use of public sector information held at national, regional and local levels. Having access to granular energy data plays a vital role in supporting cities in their effort to assess their decision options, define specific and actionable energy transformation agendas, reach their energy and emissions targets, and thus become low-carbon cities.

The Directive on the re-use of public sector information (Directive 2003/98/EC, known as the 'PSI Directive') entered into force on 31 December 2003. It focuses on the economic aspects of re-use of information rather than on the access of citizens to information. It encourages the Member States to make as much information available for re-use as possible. It addresses material held by public sector bodies in the Member States, at national, regional and local levels, such as ministries, state agencies, municipalities, as well as organisations funded for the most part by or under the control of public authorities (e.g. meteorological institutes). The Directive covers written texts, databases, audio files and film fragments; it does not apply to the educational, scientific, broadcasting and cultural sectors. (http://ec.europa.eu/digital-agenda/en/european-legislation-reuse-public-sector-information)

02

TRANSFORM PROGRAM

The EU TRANSFORM program is helping cities to accelerate the transition towards low carbon energy cities

Within the TRANSFORM program, six European cities - Amsterdam, Copenhagen, Genoa, Hamburg, Lyon, and Vienna - together with 12 parties, are working together to overcome barriers and capture opportunities for transforming these cities into low-carbon cities, thus contributing to the realization of their local, national, and international energy and emission targets.

The consortium of energy and grid companies, commercial partners and knowledge institutions support these six cities with quantitative and qualitative insights, methodologies, and tools to improve and integrate their current energy strategies and help them implement these strategies within their urban context.

In essence the program supports cities to turn their energy and sustainability ambitions into actionable implementation plans.

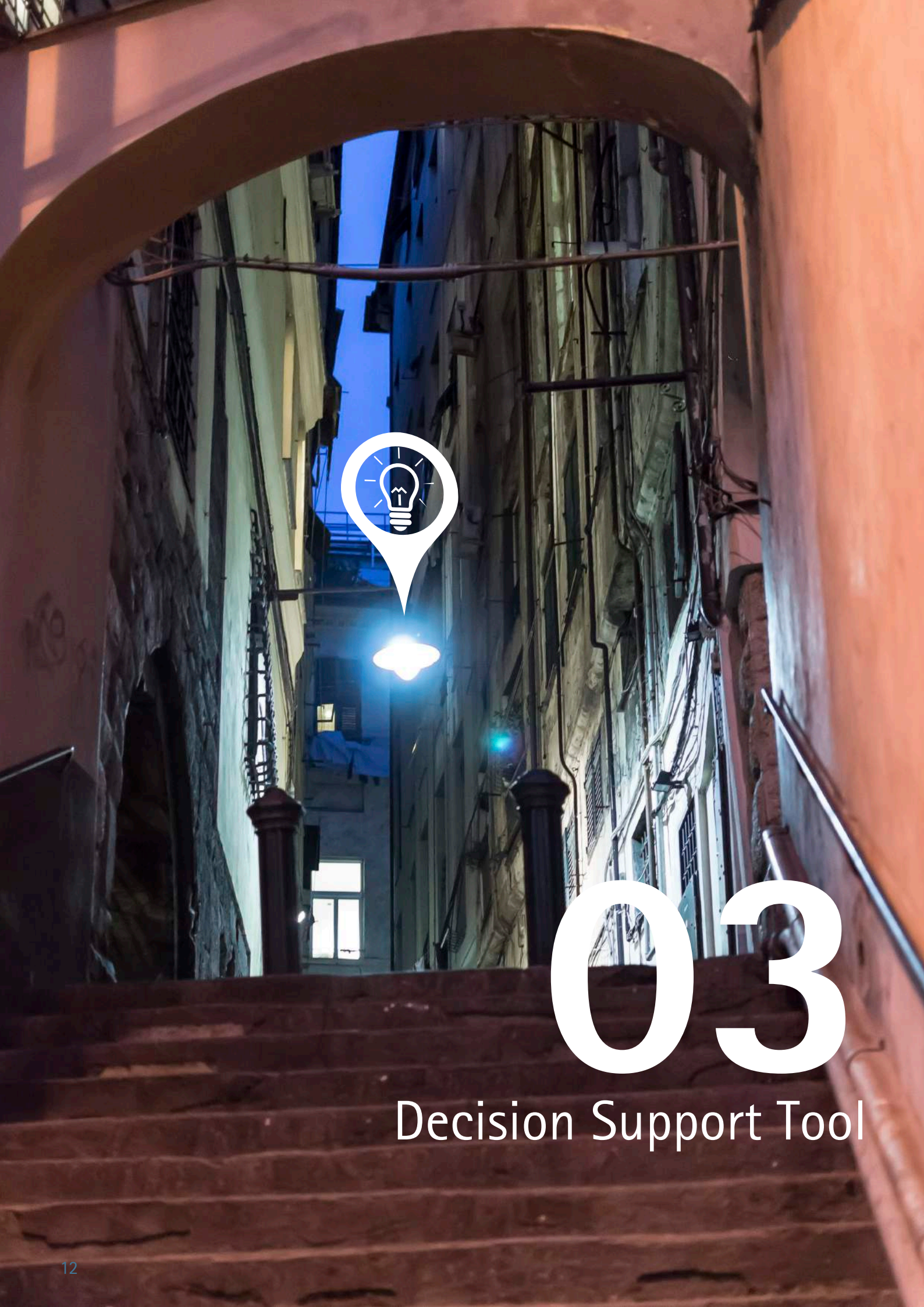
Enabling city stakeholders in fact-based decision making, within each city's specific transformation process, requires both qualitative and quantitative decision support.

The TRANSFORM program offers this support in multiple forms:

1. Helping cities define what does it mean being a low-carbon city
2. Organizing and facilitating interaction and sharing of ideas and knowledge between different city stakeholders
3. Drafting a transformation agenda for each city as a whole as well as drafting specific implementation plans for selected districts
4. Developing and implementing both qualitative and quantitative decision support methodologies and tools.

The key quantitative open source decision support methodology and tooling developed by AIT and Accenture is the web-based TRANSFORM Decision Support Tool.

The six cities participating in the TRANSFORM program



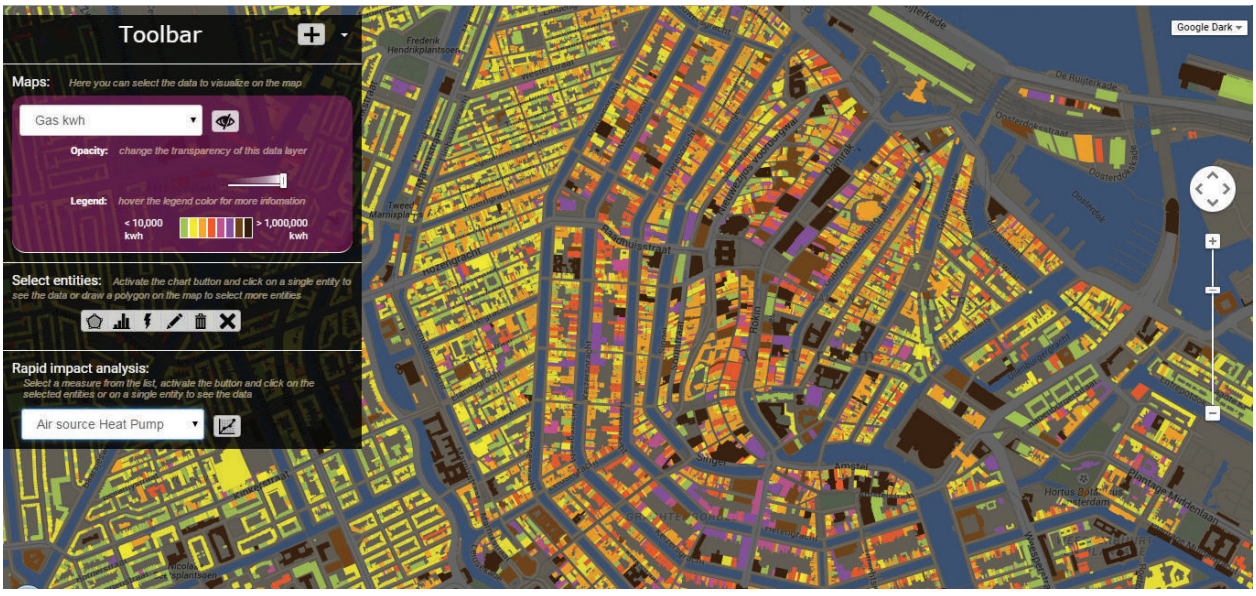
03

Decision Support Tool

TRANSFORM Decision Support Tool enables city stakeholders to make faster and better decisions.

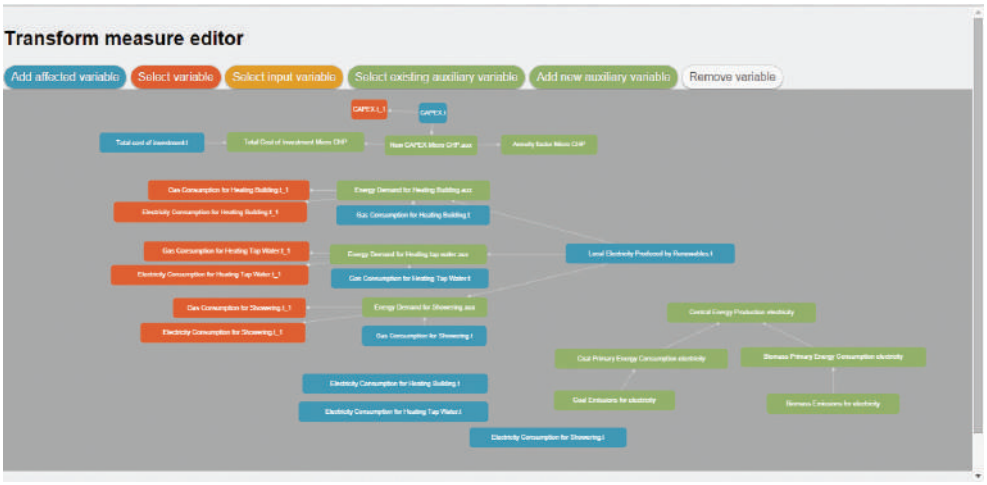
The highly innovative, comprehensive, open, and flexible decision support tool helps stakeholders to make better and faster decisions within the city's specific context. Due to its open structure and flexibility the TRANSFORM Decision Support Tool can be disseminated and used by many stakeholders in a wide range of cities with differing characteristics.

Visualise	Visualise and analyse the current energy performance of a city in detail
Analyze	Analyze local or city-wide opportunities for improving city's energy performance
Define	Define and implement a whole variety of detailed energy and emissions related measures at specific locations within a city
Simulate	Simulate the short-term and long-term impact of these measures under a number of future scenarios
Get insight	Get insight into which portfolio of measures will contribute the most to the city's energy and emissions targets

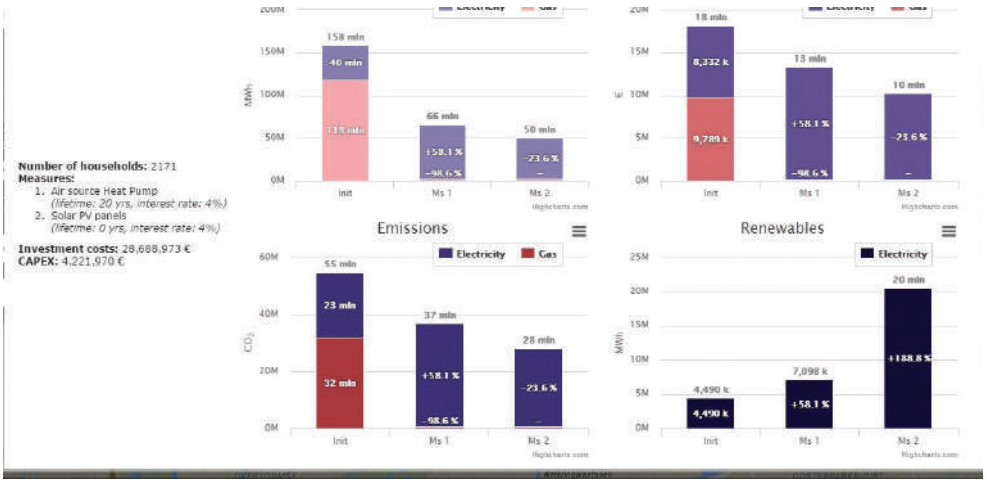


Different datasets can be visualized in the city. In this case gas consumption in Amsterdam

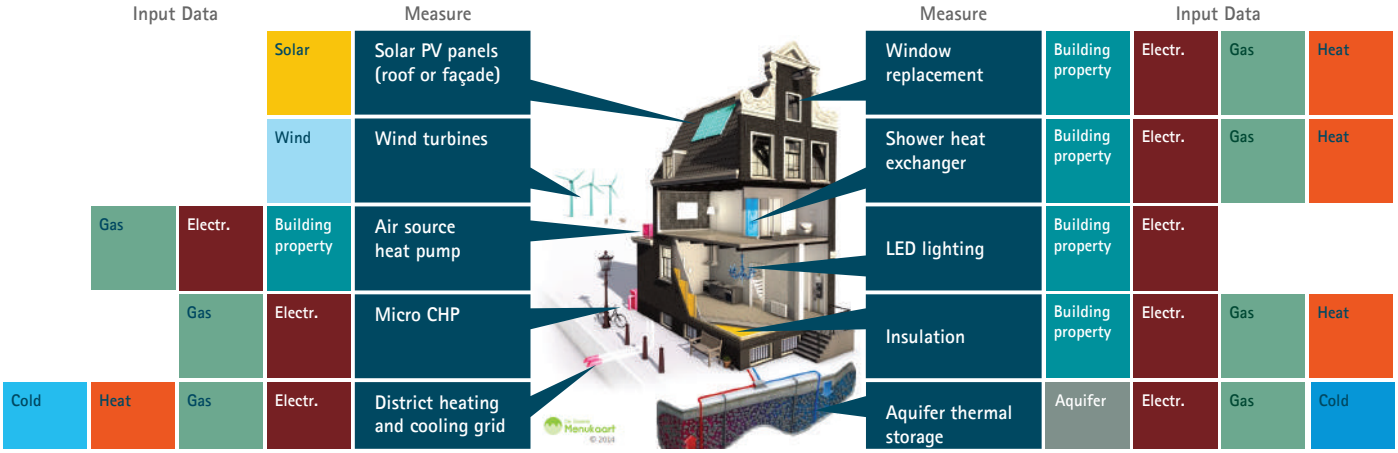
TRANSFORM DST – Measure editor component, enabling users to define detailed location and/or city specific measures for impacting different energy use and emissions KPIs



TRANSFORM DST – Impact of a large scale heat pump implementation on the gas consumption for a specific area of the city of Amsterdam



Getting the value by using the TRANSFORM Decision Support Tool strongly depends on the amount and quality of energy data that is available.
Running the DST with geo-spatial and energy related data at a granular level enables users to analyse in detail the potential impact of a number of very specific energy saving and/or emissions reducing measures. Some of the building-related measures, and the data required to analyse their impacts, are shown in the figure below.



Multiple measures already available within the TRANSFROM DST for simulating their impact on energy and emissions KPIs, and the data required.

Main data sets needed for using the Decision Support Tool.

Sort	Minimal*	Optional
Building	GIS-coordinates (shape files)	**Energy label, Surface, Function, Ownership, etc**
Energy Usage	Electricity, Gas	**Heating, Cooling, Water**
Energy Potential	-	**Solar, Thermal storage, Wind, Waste**

* The level of granularity of the input data determines the quality of the simulations

Because of its open and flexible architecture the Decision Support Tool allows its users to define a wide variety of measures and integrate all types of data, were it related to buildings, energy, mobility, public spaces, networks, socio-demographics, or any other subject.
A lot of effort has been put into gathering open energy data from the six participating cities within the TRANSFORM program, with the initial focus on energy consumption, energy potential from renewable sources, and building property data.

Our experiences within the TRANSFROM program, as well as insights from research on open data, tells us that main reasons for our limited success in getting the right data at the right level of granularity are mostly related to:

- Challenges that different data owners experience behind opening of their data and making that data accessible, and
- Data owners perception of the value behind opening of their data.

04

CHALLENGES OF OPEN DATA

Opening of energy data faces a number of legal, economic and quality challenges

Since many of the TRANSFORM stakeholders had difficulties to make energy data available, we interviewed the main stakeholders from different organizations about Open Energy Data. From these interview we found seven data related challenges.

Privacy issues were mentioned as one of the key challenges, the argument being that the data could be traced back to individual households.

The lack of a certain **governance framework, guidance and regulation** about open data is also seen as a hurdle. If a clear framework had been present, more guidance had been applied, and regulation had been more clear, it would be easier for organizations to open their data. Most of the stakeholders strongly emphasized the ambiguities in – and sometimes absence of – rules and laws, which made them reluctant to participate in an open data project.

Furthermore, the **cost** of creating and publishing open energy data was mentioned by many. Some of the DSOs (Distribution System Operators) even raised a concern that the cost of their operation would rise, leading to an increase in energy costs at the consumer side.

Competitive market has been also reported as a challenge – publishing open data is seen as potentially disadvantageous for the strategic positions of DSOs.

The lack of awareness and understanding that open energy data can be beneficial for the society as a whole is also seen as an important challenge. Many of data owners do not believe that others will re-use their data when made available. When data owners are not aware of the potential value and the possibilities of open energy data to themselves, the step towards publishing their data is not likely to happen.

Lastly, **data quality** issues and completeness of datasets can lead to misinterpretation, a damaging public opinion and/or liability issues.

Major challenges in opening the energy data as perceived by the TRANSFORM program stakeholders

Category	Challenges found
Legal	Privacy concerns Lack of regulatory framework or guidance
Economic	Cost of open data and who is paying for it Strong competitive market The lack of understanding that it can be beneficial to others
Data quality	Data quality issues Level of data completeness

05
VALUE OF OPEN DATA

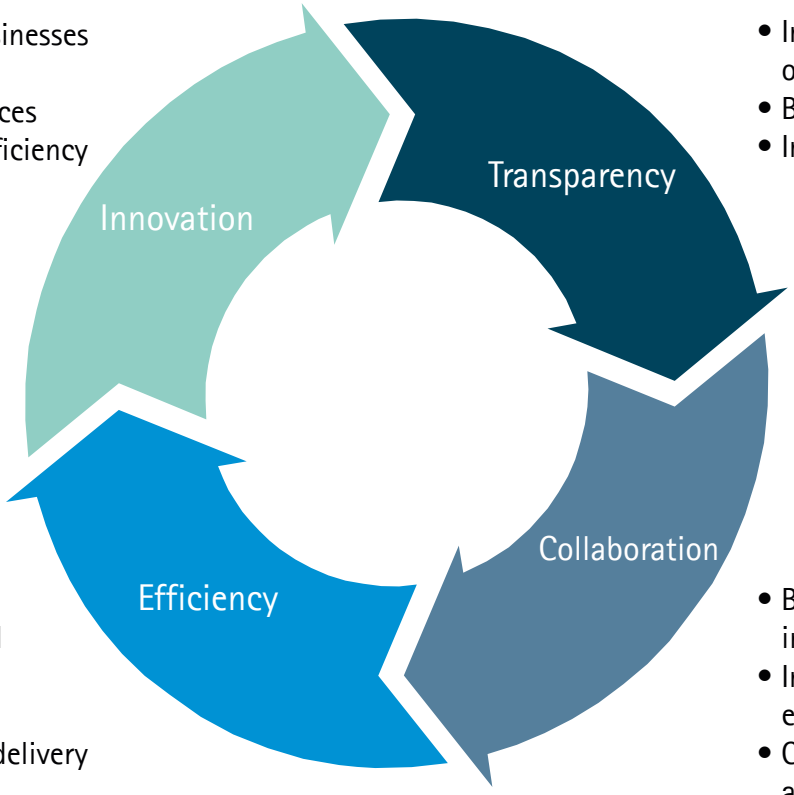
Opening of energy data enables creation of both economic and social value

The intention of opening the energy data is typically associated with two types of value: economic and social. The economic value could come from the increased economic activity and employment, while the social value could come from the improved social conditions within different communities of a city. In addition, some researchers argue that open energy data can also create two additional types of value: political and ecological.

Open energy data can stimulate and support democratic decision-making and active citizen engagement as well as actively encourage sustainable development and counteract societal problems such as pollution and global warming.

There are four main drivers behind all of these open energy data value types: Transparency, Collaboration, Efficiency and Innovation. These value drivers play an important role in the value creation process and lead to a number of prominent social or economic value effects.

Main open energy data value drivers and value effects



Transparency

Transparency effects of open energy data are twofold: firstly, open energy data provides consumers and suppliers with an insight in both private and public sector's activities, and secondly, it provides internal transparency within organizations from both sectors.
In general transparent processes result in less information asymmetry, the latter of which could lead to adverse selection and irresponsible use of available resources. Transparency simplifies and improves communication between private and public agencies in the energy sector. In the private sector, increased information symmetry is often perceived as a loss of competitive advantages. However, open data can also positively affect markets by encouraging competitiveness and creating opportunities, improved matching of demand and supply within the energy industry for example. In addition to this, private sector organisations may also benefit from internal transparency, meaning that various departments of a company can collaborate more efficiently.

Collaboration

Publishing open energy data could lead to a sharing community around these open data, with everyone being able to participate. Members of the community would be encouraged to contribute, in the form of ideas or experience, to both public and private sector organizations. These organizations can then improve their services, or provide new energy services tailored to those members as customers.
Participation also affects decision making and policy making on a smaller, local level (e.g. municipality). Collaboration within an open energy data community can play a large role by increasing the effectiveness of energy supply and demand, and by enabling different stakeholders to work together and accomplish something that could not have been achieved by a single entity. Open energy data may require the (local) government to play a central role in developing and implementing policies to alleviate concerns about the misuse of open data and to help set up standards that enable the materialization of the potential economic and social benefits.

Efficiency

This value driver enables creation of economic value through the better utilization of existing resources. Opening of data have the ability to lead to a greater government efficiency through an improved information structure, interagency coordination and better financial controls. Opening of data is also strongly related to digital or e-government activities where the goal is to modernize the government and improve service delivery with the help of information technologies.

Innovation

Open energy data helps companies and municipalities to segment populations and thereby customize their actions directed at them, spurring innovation and the creation of new or improved business and service opportunities. Innovation driven by open energy data leads to economic growth, especially for entrepreneurs and smaller forms of the public sector (e.g. municipalities). This is reflected in the economic value generated for the consumer, like cost savings, convenience, or better products as well as higher output and higher energy efficiency.

Main factors in value creation are the level of openness and the cost of availability

The ability of energy open data to deliver value through the four drivers identified before, is to the large extent impacted by the level of data openness and the revenue model behind it.

Firstly, the level of openness, which can be categorized as machine readable or non-machine readable format in which open energy data is published (e.g. in pdf versus excel format), and secondly, the cost at which the data is available (e.g. data which is freely available versus data with a certain revenue model).

To better understand the factors behind the open data value creation, as well as challenges faced in an attempt to make energy data open, we interviewed a number of actors from DSOs and municipalities of the six participating cities in the TRANSFORM program.

Level of openness

The level of openness can be determined by using the five-star rating system for open data publishing, as proposed by Tim Berber-Lee (http://5stardata.info/) and presented in the table.
The highest value will be created from open data with a five-stars rating, where the data is linked to other open datasets. Naturally, this type of open data is also the most challenging to implement and can be seen as an optimal situation.
As a first step, it is important that published datasets become available in machine readable format (a two-stars rating).

Five star rating for open data

Star rating	Description
★	The data will be available on the Web (e.g. PDF) but not machine readable
★★	The data will be available as structured data (e.g. Excel)
★★★	The data will be available in open file formats (e.g. CSV instead of Excel)
★★★★	The data will be available in open file formats and easy to refer to (in RDF)
★★★★★	The available data will be linked to other data to provide a context

Most of the actors from DSOs as well as municipalities expressed that there is a big gap between the perceived feasibility of releasing energy data in the near future versus the more distant future. Most actors deem it possible to publish energy data with a two-stars rating in the near future. In the more distant future, the optimal level of 5-stars is perceived feasible by the majority of interviewed actors.

Feasible level of energy data openness in the near and more distant future, as perceived by TRANSFORM program stakeholders

Revenue model

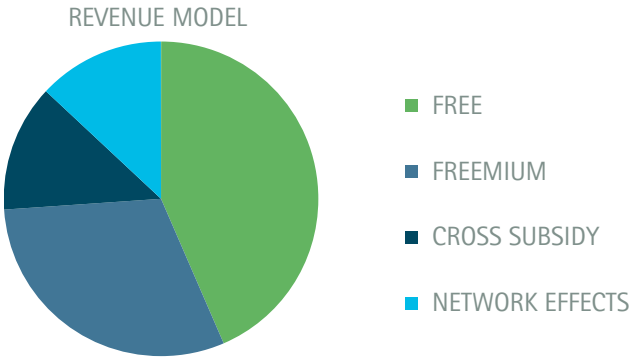
The revenue model behind open data will play a major role in the value creation process. Data that is completely free to use by everyone can potentially create more value than data that is available at a cost. Four different revenue models are identified.

Potential revenue models behind open energy data

Revenue model	Description
Free	The data will be freely available for everyone to use and redistribute
Freemium	Low quality data will be freely available but higher quality data will be charged for
Cross subsidy	A higher price is asked for one group of users so a lower price can be offered to another group of users
Network effects	Despite limited data accessibility the collaboration results in reduced cost of data and the value comes from the extended use and reach of data

According to most of interviewed actors from DSOs and municipalities, open energy data should be completely free to generate the most value. A free revenue model is not feasible and realistic for all types of datasets, as costs need to be made for publishing data. A freemium revenue model is seen preferable in some instances. The freemium model implies that some datasets will be available for free, while for others a certain amount of money needs to be paid prior to getting access. The revenue models of cross-subsidy and network effects were considered less suitable for most datasets.

Feasibility of revenue models behind open energy data, as perceived by TRANSFORM program stakeholders



06

SUCCESFUL STRATEGIES TO GET STARTED

There are five successful strategies for overcoming challenges in opening of energy data

> **"Open energy data proved to be less complicated and cheaper than initially anticipated, and can create lots of benefits for everyone in the long run." – Liander, DSO of Amsterdam**

In spite of all the challenges to open and share energy data, the city of Amsterdam has a success story to share. Due to an extensive cooperation between the municipality of Amsterdam and the DSO Liander, Amsterdam was able to provide the TRANSFORM program with electricity and gas consumption data of all 400.000 buildings in the city.

Alignment between these two parties proved to be essential. Based on the Amsterdam experience and the overall lessons learnt within the TRANSFORM programme, five mitigation strategies for overcoming the current open energy data challenges have been identified. The intent of these strategies, which can be implemented on a city, national, and/or European level, is to support other cities and their stakeholders in the process of opening their energy data.

1. Aggregate energy consumption data (city level)

A main objection against employing address-level energy data is the privacy of citizens. However, data on an aggregated level (building or building block) is just as valuable as data on the address-level, so the disclosure of privacy-sensitive information can be prevented by aggregating, while not compromising on the value of the data. Aggregation of data refers to averaging energy consumption values over groups of at least three comparable addresses.

2.Create incentives for data owners (national and EU level)

For most municipalities and DSOs, there is a lack of motivation and incentive, as well as insight in the real benefits of sharing their energy data. In comparison to the municipalities the DSOs are also far less motivated to share data. At the moment opening of energy data is by DSOs seen only as an added expense, without any tangible benefit. The benefits of opening data would become much more clear if there would be direct incentives for private parties to publish their energy data. One can think of a financial incentives, government enabled infrastructure support, or clear specification of the variety of potential benefits that open data can bring to an organization.

3.Create an open energy data knowledge sharing platform (national and EU level)

By developing an open energy data sharing platform, actors will have a stable framework where their data can be published, and where information can be shared about best practices and experiences during the data publishing process. Cities, their DSOs and other actors can learn from each other, so that publishing open data will be easier and can be done more efficiently.

4.Create EU-wide guidelines for releasing open energy data (EU level)

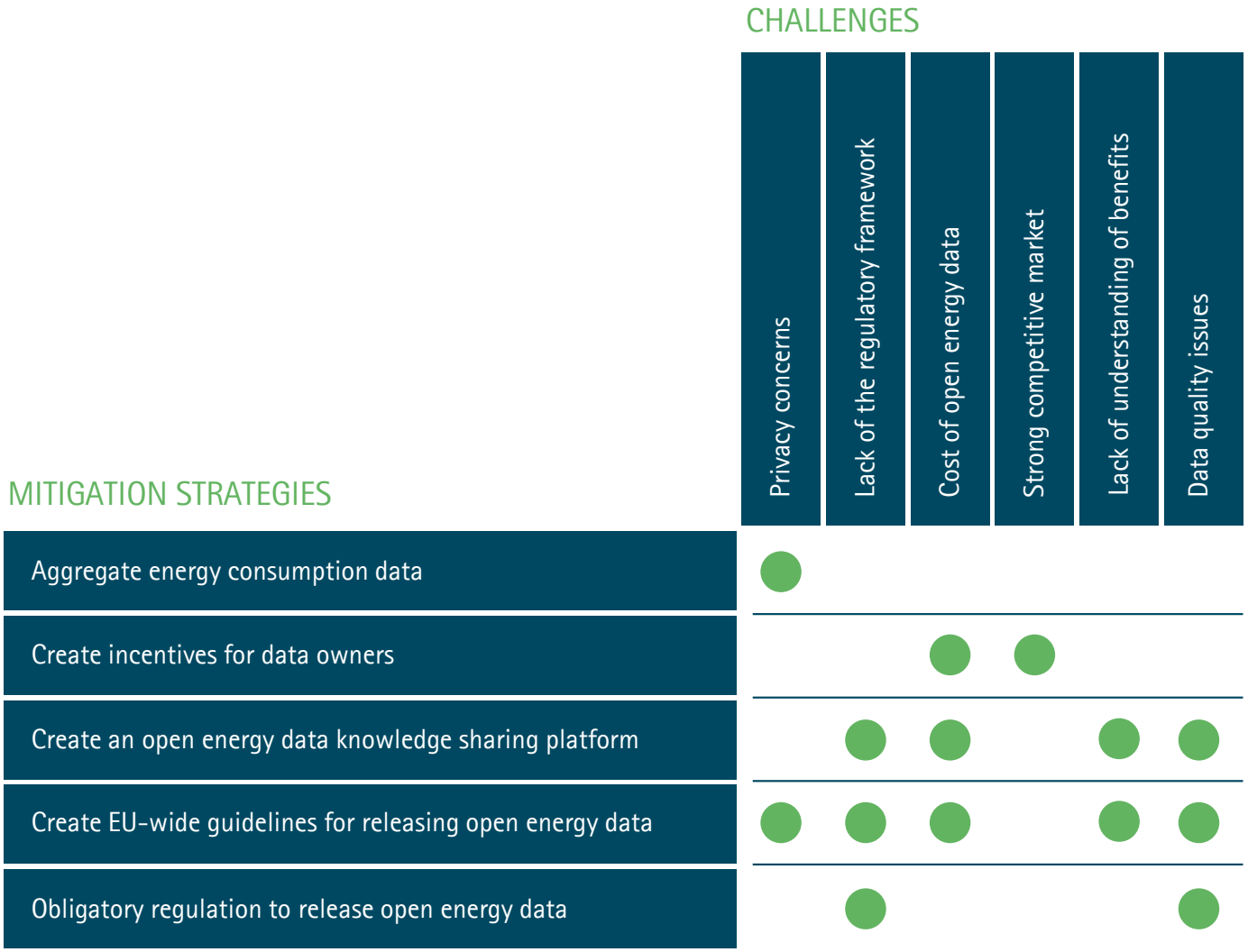
Current guidelines and regulations are unclear when it comes to open energy data. As the European Commission has set itself the goal of increasing the number of available energy datasets (IP/14/840), there is a need for these guidelines to be clear and more detailed. It would be important to describe these guidelines for each actor group, as different datasets need different guidelines. At the moment there are also difficulties in combining datasets from different data owners that are already available, mainly due to different data standards and aggregation methods used. The proposed guidelines would need to describe a standard method on how data should be published making it easier for all different actors within cities to share their data.

5.Implement regulation to oblige opening of energy data (national and EU level)

Within the European Union there is a regulation in place to promote the release of data to the open data community, which is regulated by the PSI Directive. However, this is only applicable to the public sector and every Member State is free to implement it in their own way.

For the value of open energy data to be captured, cooperation is necessary between every actor that is part of the value and data network. If the European Commission would include energy data in the PSI Directive and make publishing of energy data obligatory, different actors would have no choice but to release their data and make it available so as to unlock and capture the full potential value of it.

These rules would mean that the DSOs are obligated to release energy consumption data, but also the municipalities would have to release a considerable amount of data currently not available to the open data community. This compulsory regulation would also help reduce the competitive market barriers and create a level playing field for data.


CHALLENGES
Privacy concerns
Lack of the regulatory framework
Cost of open energy data
Strong competitive market
Lack of understanding of benefits
Data quality issues
MITIGATION STRATEGIES
Aggregate energy consumption data
Create incentives for data owners
Create an open energy data knowledge sharing platform
Create EU-wide guidelines for releasing open energy data
Obligatory regulation to release open energy data

07

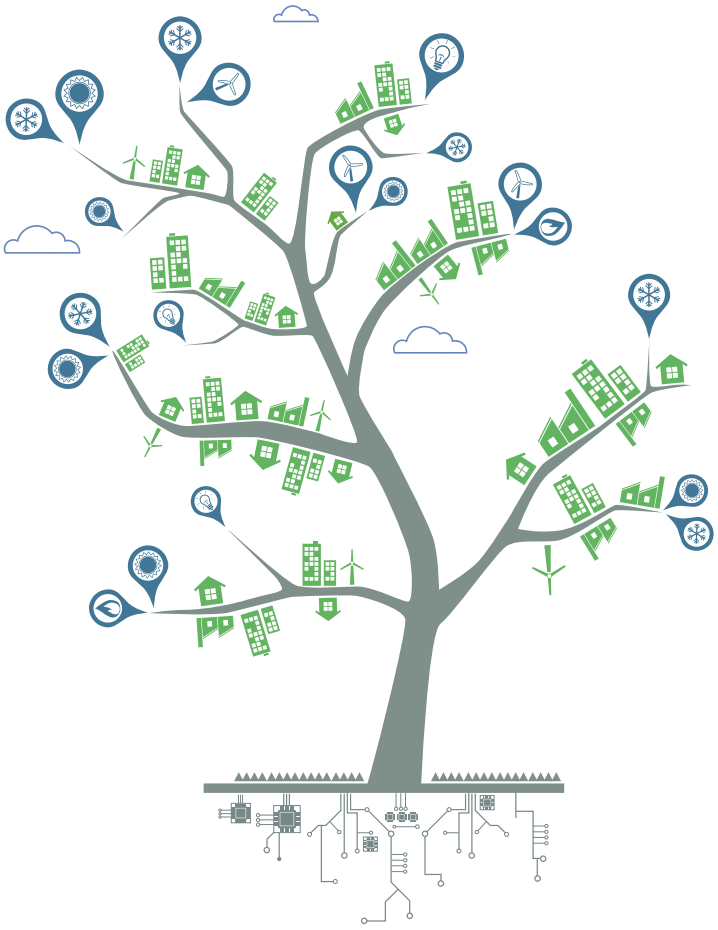
THE ROLE OF CITIES

Cities play a central coordinating role in opening of the energy data

The process of obtaining energy data, and making these available as open data, is very complex from a collaboration perspective. Most importantly, it requires alignment between multiple stakeholders with different and sometimes conflicting interests. There are various incentives for actors to collaborate in the process of opening up energy data, and every actor contributes and benefits in a different way. This complexity and multi-actor environment makes it hard to initiate a project that aims to make energy data open.

Participation and collaboration between municipalities and key players is essential in realising an open energy data network as a key driver for the creation of low-carbon cities. Alignment between the involved parties is of major importance. The key to initiating an open energy data project is a central body that communicates, coordinates, and brings parties together. Only when the relations between participating actors are good and likeminded, value can be unlocked with open energy data.

The stakeholder most suitable for playing this central, coordinating role is the municipality. Municipalities usually serve as the connecting actor within a city. They are neutral, they represent the interest of citizens as well as companies, and they have an important incentive to make energy data open as it will lead to opportunities for improving the liveability of their cities. For a successful open data project, municipalities must serve as the connecting actor as they can create cohesion and foster symbiotic relationships between all other actors involved.



08
CONCLUSION

Data is not the issue, it's part of the solution. We simply need to cooperate and act.

Current energy policy in cities is often based on top-down estimates, while a city could do much better with a bottom-up approach. Using high resolution open energy data and smart data analytics can lead to better understanding of impacts of sustainability agendas on city-wide emissions and energy consumption. Taking into account the specific local characteristics of areas and buildings in a city gives decision makers the ability to act in an impactful way on a shorter term.

Next to generating value for urban planners and city decision makers, open energy data is beneficial for society in general. Firstly, open energy data ensures transparency and improved communication between city stakeholders. Secondly, it enables citizens and customers to participate in the energy discussion. Thirdly, opening of data has potential for increased public-service efficiency. Lastly, open energy data stimulates innovation aimed at making cities smarter and more sustainable, primarily through new energy related insights, services, and products.

Publishing open energy data requires a collective effort, from municipalities, utilities, grid operators, research institutes, and others. The process of creating open energy data is challenging, and when not managed in the right way, simply impossible. The challenges in creating open energy data are varied – from the lack of understanding the benefits, risk of losing a competitive advantage, costs of publishing data, privacy of citizens, lack of governance framework or guidance, to the data quality issues.

Fortunately, these challenges can be successfully overcome by a number of mitigation strategies, such as aggregating energy consumption data, creating EU-wide guidelines for releasing open energy data, creating an open energy data knowledge sharing platform, creating incentives for data owners, and/or proposing an obligatory regulation to release open energy data. Lastly, for successful execution of open energy data release, it is very important that municipalities play central and coordinating role that brings parties together and initiates the process.

This booklet hopes to inform city stakeholders about the potential value of open energy data in the course of becoming a low carbon city. Furthermore, we hope to provide insights for utility companies, grid operators and municipalities, into the challenges they could face while publishing energy data. Most importantly, we hope to give motivated parties the confidence that these challenges can be successfully overcome. By emphasizing the important role of open energy data in creating smart applications and streamlined energy visions, we hope to play a part in accelerating the transition towards clean, fossil-free cities.

The TRANSFORM Decision Support Tool has been developed and showed it value in Amsterdam. It is an open source tool, ready to get used. Is your city ready to take the advantage? We are looking forward to support you!

About Accenture
Accenture is a global management consulting, technology services and outsourcing company, with more than 323,000 people serving clients in more than 120 countries. Combining unparalleled experience, comprehensive capabilities across all industries and business functions, and extensive research on the world's most successful companies, Accenture collaborates with clients to help them become high-performance businesses and governments. The company generated net revenues of US$30.0 billion for the fiscal year ended Aug. 31, 2014. Its home page is www.accenture.com.

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Key contributing cities and energy companies to this report