Energy data sharing and usages

A comparative study of European projects

MASTER Governing Ecological Transitions in European Cities

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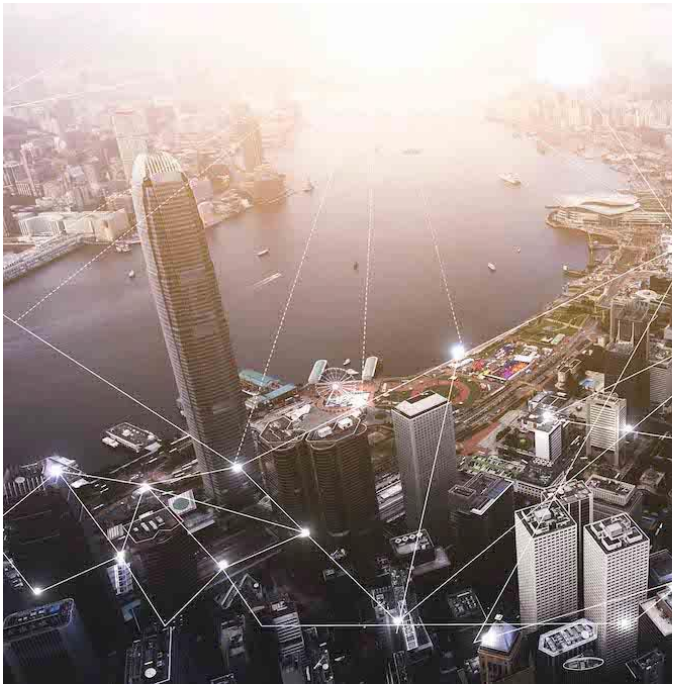
This project has been conducted for the Digital Cities Chair of the Urban School of Sciences Po. Since 2017, this chair – both by doing research and by providing teaching – focuses on the digital evolutions of cities.



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METHODOLOGY

This project relies on a strong fourfold methodology.

First, extensive research and analyses have been conducted, both in academic textual sources and in other types of texts, such as reports, newspapers, or websites dedicated to specific projects.

Second, numerous interviews have allowed a better understanding of the general stakes of the topic at hand, as well as an examination of the details of case studies. Very diverse actors have been interviewed, from grassroots civil organisations to administrative bodies of cities or private companies. Based on this insight, we developed a taxonomy classifying urban energy data sharing methods and usage.

Third, some data processing has been made, in order to get clearer insights from the data collected. In particular, tables and flowcharts have been built.

Fourth, a field trip has been organised in Vienna (Austria), to study this city in-depth.

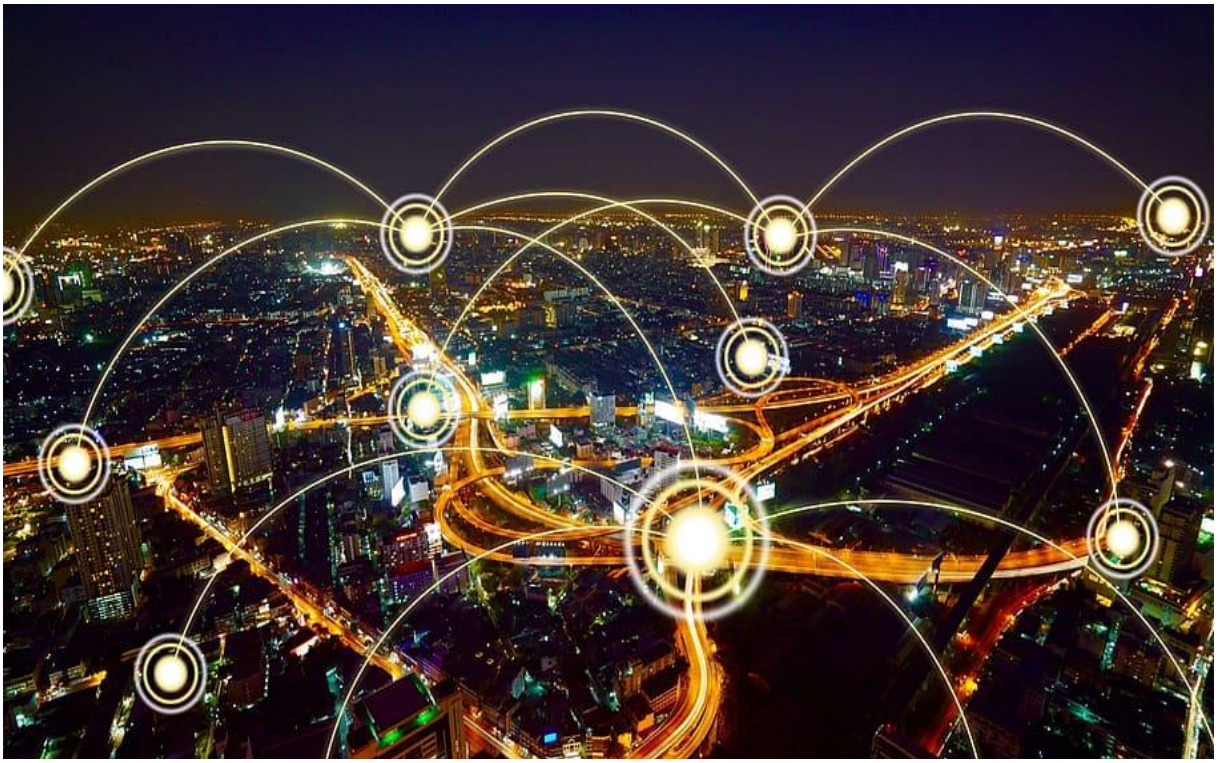
This methodology has led the team to the elaboration of solid typologies, interesting insights, and useful recommendations.

ISSUES

Our project studies the methods of sharing energy data, and the ways in which this data is used, in European cities.

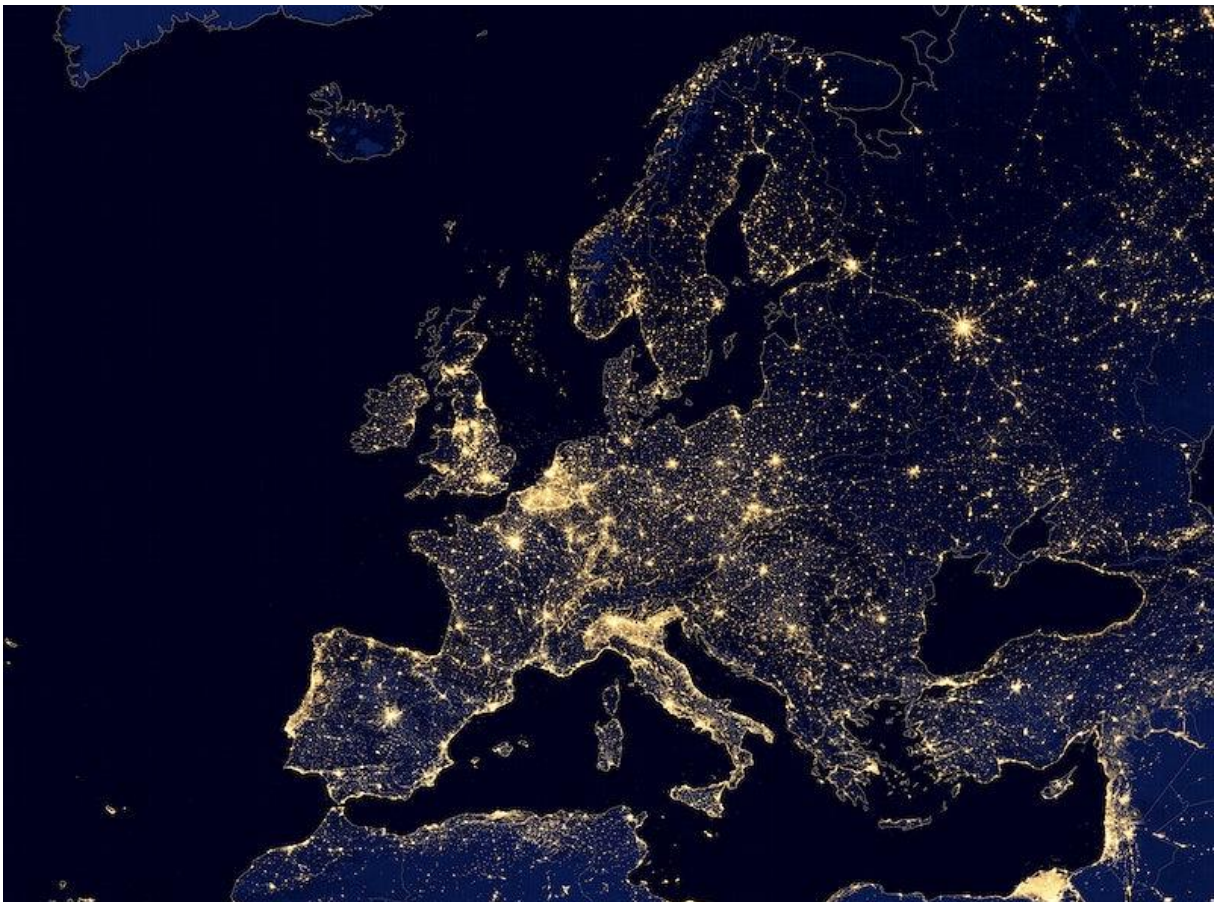
Why it matters

The ecological crisis and the Russian invasion of Ukraine are major contemporary threats that put into question our use of energy. If we want to live sustainably, we need to reduce our energy consumption and convert to renewable energy sources. As our ways of life became increasingly energy-intensive in the past decades, understanding energy dynamics is crucial to overcome the obstacles of today and face the challenges of tomorrow. Simultaneously, another dimension of the evolutions of our society is the growing importance of digital information and communication technologies. Local public services are increasingly becoming digital, and information exchanges happen online. The Covid-19-induced lockdowns only accelerated a previously established trend. Considering the importance of the energy transition, and the potential added value of digital information, the focus of this project has been put on one of the links between these two challenges: energy and data. More specifically, what has been analysed are the ways in which energy data is shared and used, to better understand local energy data governance dynamics. The purpose of this study is therefore double. First, looking at these methods of sharing energy data. Second, analysing how actors utilise this data. Doing so, most importantly, the *links* between the ways actors share energy data and the ways they use it are explored.



Research question

Energy data is thus a non negligible tool to help understand and tackle ongoing global disruptions. The research prompt of our study, conducted for the Digital Cities Chair of the Urban School of Sciences Po Paris, is the following. The aim is to conduct a comparative study, pointing out convergences and divergences in the sharing and use of energy data, in order to subsequently provide recommendations to the various actors involved in these policies, for the digitization of the energy sector. Based on this prompt, and following some preliminary research, we developed the following research question: *How is energy data used and shared with other actors in cities in the European Union? What are the challenges and opportunities of existing models?*



The work needs

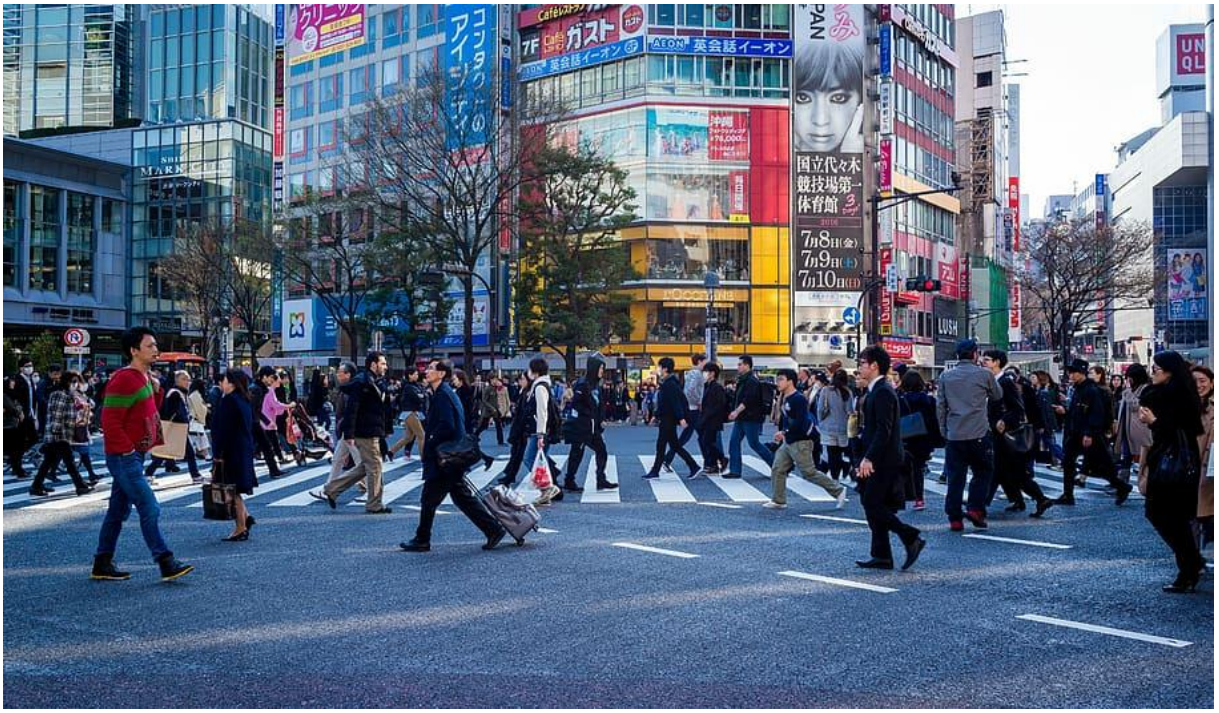
To answer these questions, a strong methodology was necessary, involving the development of a taxonomy classifying methods of urban energy data sharing and usage. Moreover, many different types of issues are studied: energy, digital, data, governance, etc., which requires a refined understanding of each, in addition to a general understanding of the dynamics between each of these types of issues.

MAIN RESULTS

Across the phases of our research, we have aimed to identify convergences and divergences in energy data sharing and usage in European cities. The aim of this section is to synthesise these similarities and differences in the challenges and opportunities faced by urban actors in effectively engaging with energy data. In doing so, a normative assessment of existing practices becomes possible. For the sake of clarification, when we speak of 'challenges' on the one hand and 'opportunities' on the other, we are assessing the efficacy of energy data usage and sharing as a *tool for facilitating a just ecological transition.* This means we are interested not only in the degree to which a given strategy may be conducive to realising the stated goals of an actor, but also whether these goals themselves are efficacious with regards to the execution of a socially inclusive and environmentally sustainable transition.

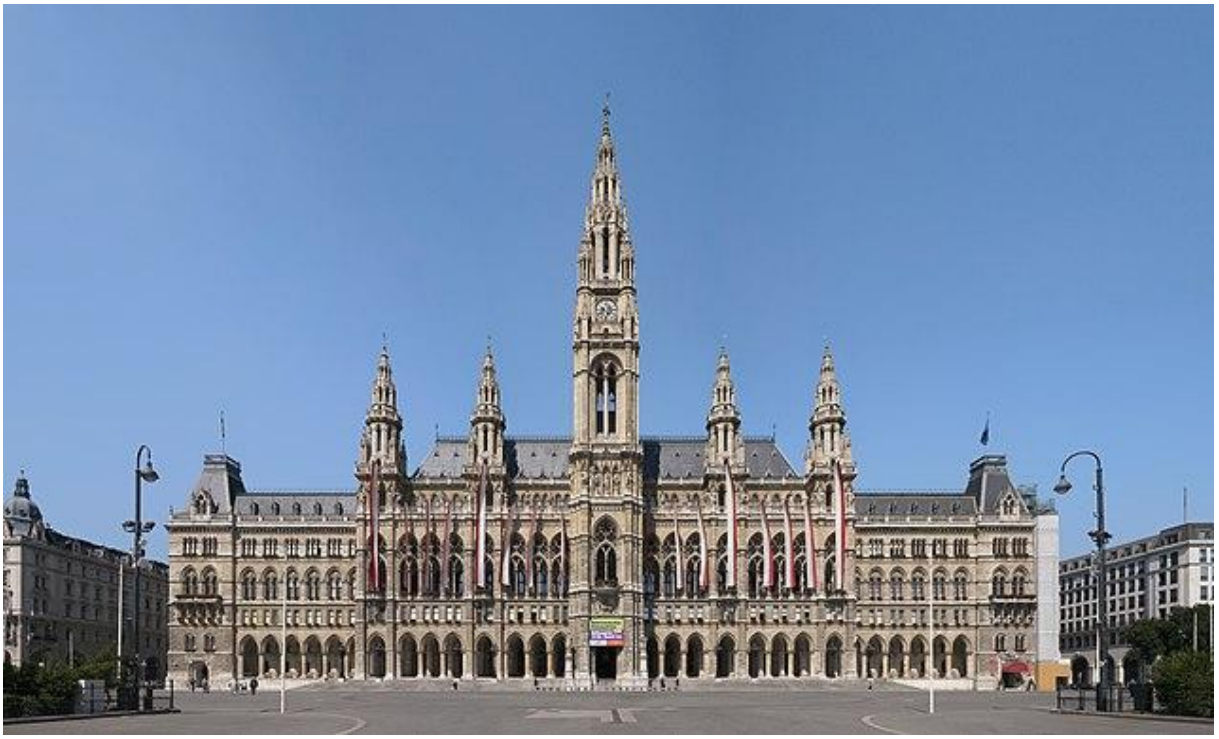
Divergences

This analysis has been conducted with an actors-based approach. Indeed, we have chosen to focus on the consequences of the *actor(s)* behind a given project. This is because, in view of proposing a set of recommendations (one of our purposes), it feels most logical to target these recommendations on the basis of who it is that would actually be capable of implementing them.



Firstly, when observing energy data projects driven primarily by public actors, a set of particularities become clear. Namely, the predominant focus on analytics identified leaves a large gap to action. By orienting a project towards the production of information for information's sake, analytic energy data projects presuppose the existence of other eager actors who can make use of the information provided. Our research has shown, however, that this cannot be taken as a given—the skills and knowledge required to engage with energy data are poorly distributed, and the focus of public actors on data for analytics only goes a small part of the way towards making use of this information for a just transition.

Effective engagement with the relevant stakeholders is at stake here—open access data lakes may be liable to languishing, underutilised by a disengaged and underskilled public. Relatedly, cities themselves are often confronted with limitations regarding their technical and staffing capacities: public-driven projects are constrained by the degree to which cities are prepared to invest in the training and development required to effectively engage with energy data. Simultaneously however, it must be noted that the regulatory power held by public authorities (even if weaker at the municipal level) offers a compelling lever for the mandatory procurement of data, as well as ensuring its implementation. Likewise, with regards to social inclusivity, the dimension of accountability afforded by public-driven projects poses a unique benefit.



City hall of Vienna

Energy data projects originating in civil society mitigate some of the challenges regarding participation that have been mentioned above. While engagement with a broader public may still pose a challenge, by definition a civic project must attract enough attention and engagement if it is to get off the ground in the first place. These projects may offer powerful ways to engage urban residents with questions of energy data at the micro level. This said, it is important to avoid a form of 'survivorship bias' here. On the whole, far less projects originating in civil society were observed than those in the private or public spheres, suggesting that the challenge of civic engagement is present even at the grassroots level. In addition, it is evident that the lack of financial or political power held by these initiatives invariably limits the scope and depth of civil society-driven projects. The lack of know-how and manpower felt by public actors is equally a problem here, constraining the potential efficacy of civic-led initiatives.

Lastly, public–private partnerships present their own unique challenges and opportunities. Across the projects surveyed, it became clear that public–private partnerships are more likely to be geared towards the production of a closed energy data ecosystem. This has its benefits (regarding the tendency towards more specific and applied uses of energy data) but it also

poses notable drawbacks regarding the visibility and accessibility of (at least in part) publicly funded projects that deal with questions of public interest. Questions of accountability must be raised. As the data these projects engage with is, in a sense, publicly produced by urban residents, what level of access should this public have to their own data? Simultaneously, in our research on Vienna another drawback of the partnership approach was highlighted. By engaging with private partners on a contractual basis to outsource energy-data related needs, cities may be prone to neglecting the development of the internal capacity necessary to ensure the continued implementation and maintenance of data-driven policy. One-time deals with private actors may work well in the short term, but can build a dynamic of dependency that inhibits the long-term viability of a given project. The other side of this, of course, is that public–private partnerships would appear to offer the unique benefit of harmonising regulatory authority and technical expertise. As stated, this can prove singularly effective with regards to specific short-term use cases.

Convergences

While the actor-based divergences in the challenges and opportunities to effective energy data sharing and usage in European cities have been developed above, it is important to note also that certain trends were found across most projects, *regardless of their position in the taxonomy that was developed.* We proceed by observing the convergences in the *stakes* of energy data sharing projects for each axis of the taxonomy: actors, regulatory status, accessibility (of the data), and motivations (e.g. profit or energy transition).

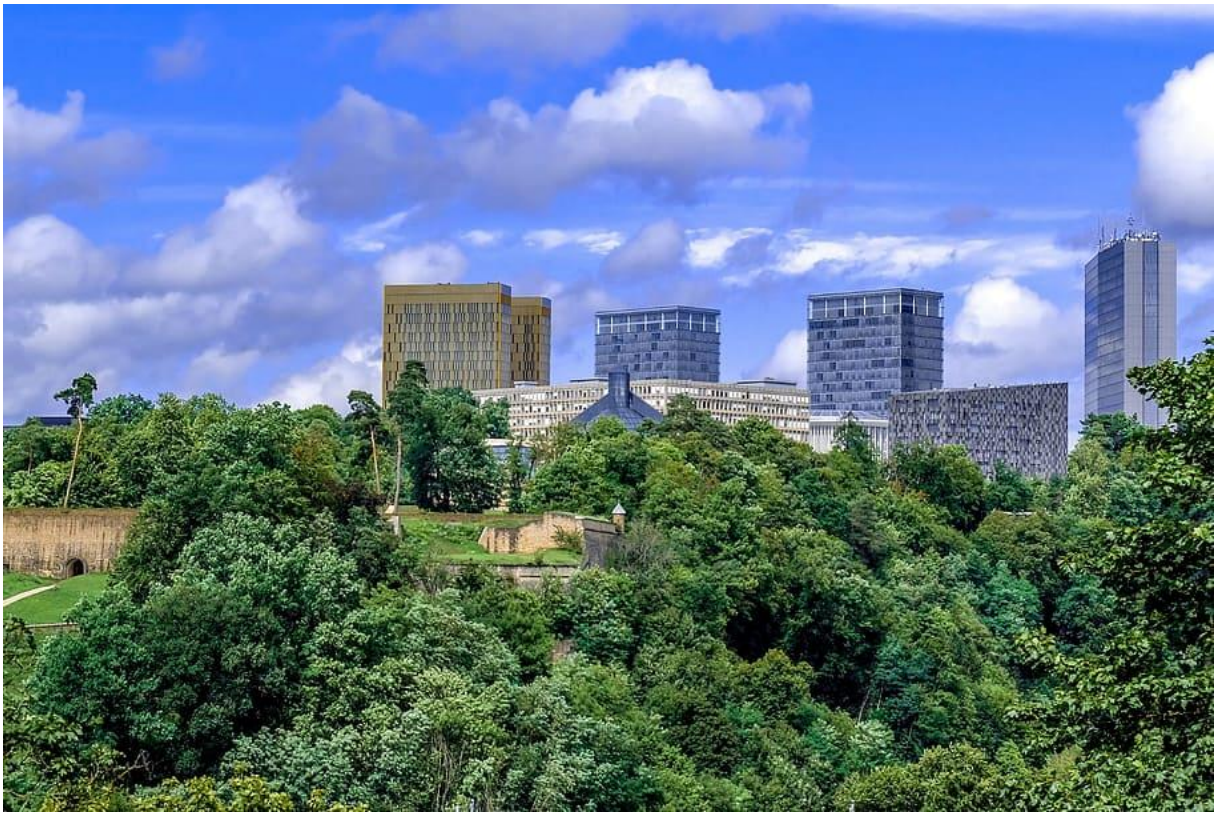
Regarding the similarities observed in energy data sharing initiatives across all actor types, it became clear that cooperation and inter-actor collaboration is critical to the success of a given project. Regarding civil society-driven projects, our research on Amsterdam illustrated the inextricable manner in which grassroots organisations must engage with external actors to ensure the viability of their projects. Setting up a solar-powered micro grid requires authorizations and access to public (and/or private) infrastructure, this invariably involves interaction with municipal, regional or state authorities, and potentially private parties. Likewise, funding must be secured. While in the case of Amsterdam a co-operative model was adopted, civil society organisations may equally wish to find private-backing or public subsidies for their bottom-up energy projects. In both cases, effective collaboration is critical to the success of these initiatives. Regarding partnerships between public and private actors, it has been demonstrated that there may be benefits in terms of short term and project-oriented efficacy. This is, in large part, a result of the collaborative approach baked-in to such a strategy; each actor can compensate for the weaknesses of the other. This said, the *nature* of collaboration must also be assessed. Actors must be careful to ensure an adequate alignment of goals and motivations—coherence in collaboration is critical. Lastly, even when collaborations arise between public and private actors, engagement with civil society may further strengthen the effects of such an approach. While our interviews revealed that the capacity and appetite to engage with energy data is sparse in civil society, many of the experts interviewed equally expressed their concerns that this apparent lack was also a result of an existing failure to engage civic actors, posing a chicken-and-egg situation. The apparent lack of current demand for engagement should not be taken as an indication that such engagement is futile; rather that adequate conditions must be built to cultivate it.

With regards to the convergences observed related to the regulatory situation of energy data projects (mandated sharing in the project, voluntary, or hybrid), our findings are less clear. Nonetheless, it would appear that mandates for data accessibility may benefit from being strengthened as well as clarified. By clarification, we refer to the way in which existing regulations at the level of the EU are often (perhaps strategically) ambiguous, allowing for a wide range of domestic, regional and municipal interpretations. In multiple interviews it was highlighted that this patchwork quality of regulation and mandates may pose challenges to effective project development. Strengthening the depth and scope of data accessibility requirements may also be a strategy, although such an approach must be carefully balanced with concerns over privacy and data sovereignty. Regardless, if such a strengthening of data sharing and publishing requirements takes place in a context of unaltered capacity for engagement, this development would be unlikely to have much of an effect. Here, voluntary projects (more likely to be privately oriented) may partially escape this trap, as the uncoerced publication of energy data suggests an existing interest and ability to work with said data amongst the implicated parties.

With reference to the dimension dealing with accessibility in our taxonomy—whether a data sharing arrangement is open, limited or closed—it would equally appear that a given project's position along this axis has little relationship to its efficacy. Successful data energy initiatives, as we have noted, are more contingent on the skills and motives of the ecosystem energy data is introduced into. Moreover, the different affordances of each access method renders them more or less conducive to the achievement of particular targets. This is to say, openness for openesses sake was not found to be a meaningful strategy for effectiveness. Rather, the sharing method employed will be most conducive to success when considered in context. Furthermore, our research revealed that the *type* of data that is shared may be a more relevant consideration. Raw numbers are, for most actors, functionally useless detritus.

What is important is that the data which is shared must be adequately parseable as *information*—it must be situated in context with a set of references that allow it to become meaningful to an interpreter. Accordingly, with regards to data accessibility, a more pertinent discussion may instead focus on the ‘openness’ or accessibility of *that which is shared*, as opposed to the sharing method itself.

To finish, certain trends regarding motivation were identified across most projects. That is, effective energy data initiatives were often distinguished by the *clear sense of purpose* they presented. Having a specific and clearly articulated direction and raison d’être underpinning a project would appear to facilitate implementation and engagement. This sense of purpose can be achieved in a variety of ways, both economic and political. Regarding private actors, the profit motive offers a clear and straightforward objective that can coordinate action. In the case of private–public partnerships, public authorities can find ways to harness this drive to notable effect. Nonetheless, political clarity can also serve this function. Our research on Vienna and the MA 20 revealed that the coherence and urgency of the municipal agenda on energy efficiency and transition facilitated targeted action and capacity development. The lesson here appears to be that specificity of intent in the development of energy data usage and sharing methods is an asset. This is not necessarily to say that more sweeping general programs should be avoided, but rather could benefit from being broken down into their constituent case-specific objectives and developed accordingly.



LEARNINGS

In light of this assessment, we wish to offer the following list as a set of potential guiding policy recommendations. We first outline some that are relevant for public and civil society actors, as well as for public-private partnerships, before delineating further recommendations that may be relevant to all actors concerned by urban energy data. This has been a deeply professionalising experience, since we understood the needs of all stakeholders better.

For public actors:

- Move beyond analytics. Data for data's sake is liable to going unused—target specific uses and design programs accordingly;
- Understand the constraints of capacity—match project ambitions to existing skillsets in the urban environment *or,* pair project development with capacity development, be prepared to spend what it takes;
- Leverage regulatory power. In the procurement of data and and their implementation in services, public actors possess unique legal levers with which to pursue a just transition. Use them.

For civil society actors:

- Prioritise a collaborative relationship with both public and private actors. When harnessed, their political and economic power can open new pathways for transition;
- Find ways to leverage the creativity of an engaged community—a unique asset.

For public–private partnerships:

- Find ways to engage with civil society. This may also involve stimulating demand for engagement itself, but civic participation will strengthen the legitimacy and staying-power of any effort;
- For public authorities, be careful not to let the ease of outsourcing distract from the need for internal capacity building—critical in the maintenance phase of any project.

The following are a set of recommendations derived from our study of the convergences in energy data sharing and usage and can be relevant to all actors:

- Don't fall into the openness trap. The level of accessibility of the sharing method should be coherent with the aims of the project. Sometimes this calls for open data, other times closed or limited;
- Simultaneously, recognize that the accessibility of the informatic quality of data is different from the accessibility of its brute material. Prioritise the 'openness' or accessibility of *that which is shared*, as opposed to the sharing method itself;
- Strengthening data-sharing mandates can only go so far. Focus equally on clarifying or harmonising existing regulations and practices;
- Prioritise collaboration and multi-sector engagement. This is a cheap way to strengthen capacity and expand the reach of a project;
- Most notably, work to build a clearly articulated sense of purpose for any energy data initiative. This can be accomplished by introducing other actors into the fold and aligning their respective aims, or by capitalising on existing demands and pressures. Data is a tool, and must accordingly be *put to use.* Expecting actors to put themselves to the use of data is a mistake.

FIND OUT MORE

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