

The state of European municipal energy transition: an overview of current trends

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Summary

Municipalities as agents in sustainable transitions

- Municipalities are increasingly perceived as key players in meeting the challenges of working towards a sustainable future. Municipalities vary a great deal in size and capacity so progress comes in many different forms. This includes developing new forms of public ownership and capacity, utilising supra-national funding opportunities, and attempting to democratise energy and increase citizen participation in transition initiatives.
- As the layer of government closest to citizens, municipalities can play a critical role in facilitating energy transition, and in particular wider public engagement, but they require much greater resources, national and EU support, and decision-making power to realise this potential.
- Europe-wide progress towards decarbonised energy is hard to assess as the appropriate data is often difficult to access, while publicly facing documents are often merely plans or are over-celebratory of a few iconic examples without robust evidence of wider systemic change.
- Municipalities have highlighted their preference for examples to follow and demonstrate an inclination to learn from one another. Some good examples of best global practice do exist across the continent. However, there are limitations to the replicability of municipal successes, bound as they often are by national context and local conditions, including the impacts of slow to change organizational cultures and deeply embedded infrastructures.

The state of municipal transition

- The vast majority of municipalities in our survey (92%) were generating some of their own energy from renewable sources, for example, using biomass alongside combined heat and power (CHP). Reducing energy need was also common through mechanisms such as public building retrofits. Progress was strongest where there was both municipal ownership and capacity.
- Best practice case studies are often located in northern and western Europe, but this may be primarily due to historically uneven development including the impacts of the financial crash and experiences of austerity which have straitened capacity to fund transition in some municipalities across the continent. In particular, Nordic countries have benefited from sustained policy shifts away from oil and long-term planning and investment.

Blockages and opportunities in the sector

- There is a great deal of political will at the municipal level to work towards decarbonisation. Large-scale international collaborations of cities and municipalities suggest this is a broad emerging pattern.
- The biggest blockage to municipal transition is finance, although some innovations in this area (eg ESCOs, international collaboration) have had success. There are issues faced around the over-emphasis on novelty – with funding available for pilots but not the more sustained roll out of successful and proven initiatives.
- Peer-learning across municipalities has had some success in regional knowledge sharing, eg in Slovenia, around the complicated models and processes involved in finance, allowing smaller municipalities to access European-level funding.
- The continued framing of responses to the climate challenge through market-based solutions and private enterprise raises issues for municipal innovation. Municipalities may not have the capacity or understanding to create complicated economic models that demonstrate return on

investment; and the EU's emphasis on private investment limits municipalities' ability to explore alternative models of ownership and citizen democracy in decarbonised energy provision.

Challenges for responding to the climate crisis

- Given the scale and urgency of the climate crisis, there is a need for action towards decarbonisation across all levels of government. The municipal level can be a fruitful ground for innovation, but there is growing evidence that dominant policy agendas that are over-reliant on stimulating the private sector to meet the challenge through the market will not be a fast or deep enough approach.
- The biggest challenge cited by municipalities and evident throughout the grey literature² is the difficulty of securing funding for transitions. Particularly, this is related to the availability of national and international funding, which, along with political support, is intermittent rather than sustained, offering periodical windows of opportunity that municipalities have to seize.
- Municipalities have set lots of often-ambitious targets for carbon neutrality and many have declared climate emergencies. A concern that arises from observers and our respondents in municipalities is whether there is capacity at municipal level to meet those targets.
- Municipalities are working to address their often-limited capacity through networks of cities and regions working together to share best practice. This has been particularly valuable for municipalities (particularly in Southern and Eastern Europe) that lack supportive national environments for achieving energy transition.
- Remunicipalisation (return to local public ownership) of key energy infrastructure and services have been an important means for some local authorities to facilitate a faster transition in the face of slow progress by private firms.

² By 'grey' literature, we are referring to non-academic published literature such as government and NGO reports and papers.

1. Introduction

If the ambitious targets set by European countries (both within and outside the EU) to transition away from fossil fuels towards renewable sources of energy are to be achieved, it is now widely recognised that action at the local, municipal level will be essential and possibly decisive. Securing a transition that delivers on the broader energy policy trilemma of sustainability, affordability and security will need multi-scalar action. Such action requires international and national frameworks and agreements to be developed and adapted but crucially much of the implementation will be reliant on the local (municipal) level. It is here - at the scale of everyday life for basic services, utilities and infrastructures - that many of the key decisions need to be taken.

It has been recognised in the academic literature that barriers and constraints to innovation can be both technological and social, and that the local scale is important for innovation and social action.³ However, a multi-scalar perspective is critical, recognising that successful energy transition requires supportive structures, relations and processes at higher geographical scales, notably the national, European and even global. For example, one recent comparative study into path creation in the offshore wind sector⁴ found considerable divergence in the successful development of local renewable complexes between Germany, Norway and the UK. Differences in national governance frameworks, existing energy and technical regulation and infrastructures, and the capacity for local action were all critically important factors. More broadly, the extent of the transition is highly uneven across Europe,⁵ due in part to differences in municipal capacity, political context and existing energy infrastructures. There is still much that needs to be done to support municipalities and to encourage sustainable transitions.

Getting a clear picture of the extent of action taken at a municipal level across Europe is itself a difficult task. Accurate, up to date and extensive macro-level data (both quantitative and qualitative) on actions being taken, on implementation, and on outcomes towards transitioning to low or zero carbon energy solutions are not readily available. Many documents are written with the purpose of encouragement, demonstrating possibilities and trajectories through focusing on the successes of key municipalities.⁶ Meanwhile, academic literature on cities and transition either tends to be theoretical, pitched at a higher level of generality or case study-based.⁷ This has been widely recognised as problematic in developing macro-level assessments at local and regional levels.⁸

Given these important caveats, in what follows we present a critical account of municipal energy transition across Europe based upon both our own research, and a wider mapping exercise of secondary literature and data. As part of this process, we consider and assess the available data on energy transitions, highlighting the limits and relative scarcity of this data.

³ These insights have been developed in relation to the 'multi-level perspective' eg Geels (2002), Truffer and Coenen (2012)

⁴ MacKinnon et al (2019).

⁵ See for example de la Esperanza Mata Pérez et al (2019).

⁶ See for example the informative collection published by Worldwatch Institute (2016).

⁷ See for example the edited collections of Bulkeley et al (2011), While and Whitehead (2013), Rutherford and Coutard (2014), Rutherford and Jaglin (2015), Fuenfschilling et al (2019). One exception is the study by Croci et al (2017) that assessed CO2 mitigation strategies in 124 European cities although it only records intended rather than realised mitigation strategies among Covenant of Mayors signatories.

⁸ See for example Coenen and Truffer (2012), Hansen and Coenen (2015).

We also discuss our findings from the ongoing mPOWER project. This report reflects on an online survey of municipalities that provided a baseline for creating groups for peer-learning to facilitate the translation of best practice across Europe. Rather than presenting the ranking exercises (which were heuristic rather than externally meaningful), this report reflects on the challenges from that exercise and the constraints and opportunities mentioned by municipalities as part of this process. To date, we have undertaken 30 telephone interviews and four research visits (involving interviews, data gathering and observations) to case study cities, with more planned once travel restrictions arising from the COVID-19 pandemic allow.

Our focus here is on municipal action towards sustainability in the energy transition, across a wide range of areas covering both the production and consumption of energy. This encompasses a broad sphere of activities and policy-making, ranging from energy efficiency to municipal renewables, but the underlying ethic remains much the same. This report is interested in municipal energy projects aiming towards reducing emissions and ultimately decarbonisation.

For our purposes here municipalities have been defined broadly as all sub-national local authorities (below the regional administrative level). This 'soft' definition is pragmatic. In practice, local level governance varies considerably across Europe. Utilizing a broad definition has meant that we are able to catalogue a range of experiences; from rural small-town (and in the UK, 'county') jurisdictions, to large capital cities (such as London, Vienna, and Amsterdam). This is helpful in understanding the dynamism of the phenomenon at hand and its place-specific articulations, which are often a product of historical and geographical development.

The next section of the report offers a broad mapping of trends towards energy transition at the municipal level using the secondary data and literature that currently exists, followed by our own primary research findings. We split this research into three sections: the first reflects on the different stages of transition highlighted in our survey; the second, the reporting of results from the survey on progress towards transition; and the third, an assessment of the broader context, possibilities but also constraints on transition. We then conclude with a brief summary of overall themes and their implications for municipal energy agency.

2. European municipal progress

A clear picture of localised municipal action can be hard to discern from the somewhat rose-tinted view of Europe as an aggregate leader within climate action, seen as ahead of a global curve in investments and transitions towards renewables.⁹ This progress of the EU towards a sustainable future has been questioned,¹⁰ but this report is more concerned with understanding how this putative progress translates into action at a municipal level across the region. The grey literature tends to highlight celebrated municipal sustainability actions and iconic cases, rather than offer a more systematic and robust analysis of the broader evidence. The aim of this report is to get beneath the surface of success narratives in order to probe the challenges and constraints present across a varied range of municipalities, many of whom are hamstrung in working towards emissions reduction.

⁹ BloombergNEF 'New Energy Outlook Executive Summary'
<https://bnef.turtl.co/story/neo2019/page/3/3?teaser=true>

¹⁰ eg TUED (2017).

The Covenant of Mayors, an initially European-wide scheme to coordinate localised actions towards emissions reduction, provides something of an overview of municipal actions. With almost 10,000 signatories across Europe, the Covenant (which is now part of a global programme of coordination known as the Global Covenant of Mayors) in theory brings together action plans and data from across Europe. The Covenant's summary data suggests an abundance of enthusiasm for the scheme, but considerable variability in terms of the focus and progress of the plans of municipalities across the continent.

The enthusiasm of the almost ten thousand signatories of the Covenant of Mayors has yet to be translated into concrete action in many cases. Almost 184,000 'actions' have been submitted through drawing up a Sustainable Energy (and Climate) Action Plan, yet this constitutes only 65% of European signatories.¹¹ Covenant signatories are also required to submit monitoring data every two years on their plan, but data is only available for 23% of European signatories' plans (though this still amounts to quite a corpus of evidence across 2,311 cases). The Covenant of Mayors available data on mitigation efforts within the plans suggests a variety of approaches to both mitigation and adaptation.

Perhaps reflecting constraints in other areas of action, energy efficiency appears to come high on the list of local priorities (mirroring the EU's charge that it be considered the 'first fuel') but, in the main, the picture that the Covenant of Mayors reporting presents is of a great deal of variable local actions. Indeed, the complexity of the issue becomes apparent in the adaptation actions which encompass a wide range of foci from tourism, water treatment, biodiversity, health and land use planning. With the multiplicity of these actions, and the specificity of individual municipal needs, there has been recent recognition of the need to think and act with the 'local DNA' of a place when thinking about emissions reduction and moving towards sustainable futures.¹² Such a kaleidoscopic array of action themes indicates the breadth of intervention required and the necessarily widespread impacts of moving away from business as usual.

The Covenant of Mayors data is also limited in that it reflects only what is *intended* – rather than what has necessarily been achieved. Indeed, as one interviewee within our case study research noted, whilst it is possible to make a multitude of plans, implementation is not always as straightforward: 'this is perhaps the key barrier, the lack of capacity for good implementation of programmes. Because we already for decades have quite ambitious action plans, but they are not implemented'. This concern is echoed in academic literature, where limited municipal capacity has been linked to challenges implementing emission reduction plans.¹³

In its partial and performative way, the Covenant of Mayors does demonstrate the apparent political will to move towards the collective horizon of emissions reduction and a more sustainable Europe. Certainly, a great deal of work has gone into producing plans, aims, goals and setting targets. However, some of the relevant action remains to be taken. Since 2020 was a key year in many emission target plans, it should become discernable in the next few years how much of this agenda-setting has come to fruition.

¹¹ Figures here are up to date as of 27th March 2020, and include Europe – EU, Europe – non-EU and Eastern Europe in order to provide the broadest possible picture of European action at a continental level, rather than simply action by EU member states. This includes plans from Georgia and Azerbaijan.

¹² Schurig and Leidreiter (2019).

¹³ Nochta and Skelcher (2020), Peterson (2018).

For now, suggestive progress can be gleaned from other data sources. A database of global (re)municipalisations gathered by the Transnational Institute (TNI) points to an increasing agenda of bringing assets back into local public ownership. TNI reported in their recent publication, *The Future is Public*, that 374 energy projects were brought into city or municipality ownership globally. Of those, 352 were in Europe, with a concentration in Germany of 305.¹⁴ Because of Germany's specific pro-transition policy context, the Energiewende, and the considerable political pressures to tackle climate change, not surprisingly it has the lion's share although the report does capture a broader shift for municipal authorities to reverse privatisation or set up new public energy companies where they have the capacity to tackle energy transition. A key issue is the lack of integrated public capacity for many places to effectively manage a transition process, as a result of fragmentation produced by marketisation and privatisation of the energy sector.¹⁵ Nonetheless, this baseline figure is primarily about ownership per se, rather than climate action. Within the broader dataset, (re)municipalising a public service for the purposes of tackling climate change was only found to be the main reason in 119 of the total number of global (re)municipalisations though the majority of these cases were within the energy sector.

Within Europe, cases of energy (re)municipalisation contributing either to reaching policy goals including environmental goals or adapting to or mitigating climate change numbered 59. This amounts to 17% of the energy (re)municipalisations within Europe.¹⁶ TNI's data is useful for pointing to the increasing enthusiasm for municipal ownership as a governance mechanism for moving towards transition, and potentially frustrations at the failings of privatisation¹⁷ suggesting as its data does an increase in municipal ownership actions in the past two years since its last report of 2017.¹⁸ Indeed, remunicipalisation is a potent enough trend that the Privatisation Barometer, a non-profit source traditionally advocating privatisation in Europe, included in 2016 an article exploring the relative benefits of public ownership at a local level.¹⁹

As such, the remunicipalisation data and the available aggregate data are suggestive of municipal action towards energy transition. Yet there is a need to understand more concretely the challenges and potentials inherent in this work, something the mPOWER survey can begin to illuminate.

3. Assessing transition processes in European municipalities

Energy transition is undoubtedly a multi-faceted process. The survey data gathered as part of the mPOWER project illuminates the variety of pathways to energy transition that municipalities are traversing, though the metaphor of pathways is perhaps too linear and tidy a description for what is often a more complicated back and forth process²⁰. The municipalities surveyed are largely a self-selecting group, drawn initially from the Energy Cities network of over 1,000 local authorities across 30 European countries that have (at various points since 1990) registered their commitment to energy transition in the battle against climate change. Hence it is a convenience sample of a set of

¹⁴ Kishimoto et al (2020).

¹⁵ See for example Cumbers and Traill (2021).

¹⁶ L. Steinfort and L. Stegemann, personal communication, 2020.

¹⁷ See Cumbers and Traill (2021) on this with regard to the energy sector more broadly. See also Halmer and Hauenschild (2014), Kishimoto et al (2015), Wagner and Berlo (2015), Hall (2012).

¹⁸ Compare Kishimoto and Petitjean (2017) with Kishimoto et al (2020).

¹⁹ Hallinger (2015-16).

²⁰ Cowell et al (2017).

municipalities already nominally committed to transition.²¹ This list of municipalities was then supplemented with other municipalities and cases supplied by the project team and the Advisory Board. It is evident that whilst all municipalities were interested in energy transition, by virtue of the selection bias inherent in the survey mechanism itself, there were many different forms of progress, with different indicators demonstrating progress along different axes.

A number of indicators were used to assess how far municipalities had come, in order to be able to construct peer-learning groups. These indicators included, for example, experience with renewable energy, retrofit and demand reduction, local finance initiatives and citizen participation. The peer learning was intended to allow for those setting out on the path to transition to learn from those already working towards that end. The rankings were tailored to understanding across different areas of transition where municipalities were in their transition journeys. As such, these rankings were a heuristic device rather than an independently meaningful set of metrics and are not useful in themselves, but there were some suggestive trends within the different clusters of municipalities that are worth exploring further.

Firstly, the leading municipalities in our exercise tended to be northern and western European, with only one Eastern European municipality represented in the top thirty. The leading municipalities in this exercise were based in France, the Netherlands, the UK, Germany, Austria and the Nordic countries (Finland and Denmark). Extending this to the top 30 ranking municipalities, other municipalities from other countries, such as Italy, Portugal, Switzerland and Spain, enter the picture with the sole Eastern European case noted earlier. Table 1 demonstrates the national distribution of high ranked municipalities.

While Germany’s municipal energy success in this exercise is unsurprising, this artificial hierarchy of municipal progress must be understood within the networks it was sourced from. The Energy Cities network spans mostly European cities, including a large contingent from France, and a few cities from Armenia, Morocco and New Zealand. When one compares the list of respondents to the survey to both the Energy Cities membership and the top 30 municipalities, it is striking that the only Danish and Finnish cities that are members of EC are also top ranked and indeed that 75% of the German respondents to the survey ranked in the top 30. Nordic countries are not especially well represented in this ranking exercise, but they do well where they are present. This pattern then perhaps represents not a lack of progress there, but a lack of engagement with the network. Given the generally well-

Country	Number of municipalities in top 30
Germany	6
France	5
Spain	5
UK	5
Netherlands	2
Italy	2
Finland	1
Denmark	1
Austria	1
Portugal	1
Switzerland	1
Bulgaria	1

Table 1: National distribution of high-ranking municipalities [Source: authors’ survey]

²¹ We should note that our survey was translated into four languages (English, French, German and Spanish) in order to make it more accessible. Not being available in other European languages may have constrained our sample further.

considered progress of the Nordic countries, we might speculate that they feel less need to engage with collaborative networks to help advance sustainable transitions.

Lower rankings from southern and eastern Europe would seem to tell another story. Broadly speaking, this could be illustrative of wider processes of geographically uneven development, and the lack of institutional support and capacity in Eastern Europe. Many of the central and eastern European countries have suffered from a historic lack of resources and hence capacity issues, not least as the result of the Cold War and more recent ethnic conflict. A representative from an Irish municipality presciently noted that these differing national contexts are very important for understanding potential best practice replication pathways, going on to suggest that the experience of Nordic municipalities, hinging on a social democratic model and an energy transition pathway from fossil fuels from the 1970s, may not be a suitable exemplar for countries with vastly different political and regulatory contexts as well as differing climates and natural resources.

In our project, setting up learning streams highlighted not just the complexity of matching cities in a peer-to-peer learning exercise but also the different moving parts involved in assessing sustainable energy transitions. The interconnection of energy poverty, local economic performance, historical geopolitical tensions, political alignment, governance structure and privatisation, all play into how, whether and to what extent transitions are occurring. Some municipalities within our survey did rather well in involving local people but had limited experience with renewables. For example, Cadiz which, following the election of a progressive local government in 2015, has set up two roundtables of democratic participation to tackle energy poverty (including establishing a social tariff) and invest in more renewables through the local municipal energy company.²² Because of this twin dynamic of both sustainable energy and municipal action, and the vagaries of alignment across the two, different opportunities and blockages emerge, as will be seen below.

What looking beyond a hierarchical understanding of transition success illuminates is a multi-directional movement of local authority actors across different facets of a municipal energy transition. It raises questions about the transferability of success from municipalities of 'best practice' to those merely 'following'. As much as anything else, these suggest possible further lines of research in order to understand the particular shape of the results.

What remains to be seen is whether there are new pathways created by those who have begun to decarbonise that can be imitated or adapted by those still at a more aspirational phase. Peer-to-peer learning, which is used extensively within municipal transformation projects and is indeed called for by cities themselves,²³ might be limited by differences of geopolitics and governance structure, or indeed any other of the blockages explored before. Circuits of policy mobility have long existed, often with strong critique from academic commentators for their tendency to produce policy tourism.²⁴ The promotion of policy learning between municipalities by NGOs and international policy organisations such as TNI represents a variation on this theme geared specifically towards a progressive agenda. Yet secondary research on this matter is likely to be hindered by a positivity bias in materials produced by

²² Details are available through the podcast undertaken by the MPOWER Energy Cities team here: <https://www.energy-democracy.net/?p=1121>.

²³ This was a theme within the survey and interview research, but is also recognised within the grey literature, eg C40 Cities (2016)

²⁴ Eg González, S. (2011).

those involved in such projects.²⁵ Peer-to-peer learning and ‘best practice’ documents need perhaps to acknowledge the complexity of the interplay of municipal action and environmental sustainability, and the different axes of potential action that exist in different contexts.

A research agenda for pursuing such questions would include an investigation into how peer-to-peer knowledge transfer does work, what can and can’t be transferred, and where scope does and does not exist for international transference. These are broad questions that go beyond the scope of this report, although they are raised here to point to future research avenues that might be explored.

Furthermore, while an enthusiasm for peer learning is demonstrable across the survey and elsewhere, it must be recognised as imposing an extra burden on municipalities. If municipalities are feeling the strain, some of this might be located in the downscaling of action on the climate crisis – that is, in the enthusiasm for seeing cities and municipalities as the solution allowing more powerful actors at other scales to evade responsibility.²⁶ There is also recognition that coordinated action is required between different governance actors, which itself presents challenges.²⁷ Municipal authorities, even in more decentralised states, can only do so much and the onus must lie also with national governments and the private sector to commit resources, and in the case of governments pursue strong legislative action to empower municipal actors. Devolving responsibility to cities without accompanying national and supranational institutions and legislative mechanisms will ultimately fail to produce the necessary steps to transition.

4. Experiences of municipal renewable energy

4.1 Involvement in renewable energy production

In order to gauge the extent of municipal activity, the mPOWER online survey asked respondents a range of questions in relation to renewable energy production and energy efficiency, the type of activities undertaken, the forms of ownership and organisation involved and the mechanisms for realising and financing them. Respondents were, for example, asked about whether municipalities produced their own local renewable energy, had experience of smart grid technology or setting up and running municipal energy companies.

The self-selected survey suggests that there is a great deal of enthusiasm for and willingness to pursue municipal projects in renewable energy. Ninety-two per cent of municipalities (88 out of 96) are involved in producing their own renewable forms of energy. However, the precise data supplied on renewable energy in the survey by individual cities is quite erratic, with many cities not filling in the quantitative details on types of energy, often because of a lack of data or even knowledge.²⁸ Indeed, an issue municipalities often face is that this data is privately held.

Nevertheless, from the responses given in the survey (see **Figure 1**) to a question about the types of renewable energy generated locally within the municipality, we can see that solar power (PV) is by far the most common source of renewables (83.4% of respondents), followed by biomass (52.5%) and hydro (40%). Only 8 out of the 96 municipalities had no experience of local renewable generation. Regarding biomass, it is also worth recording that over half of those producing energy through biomass

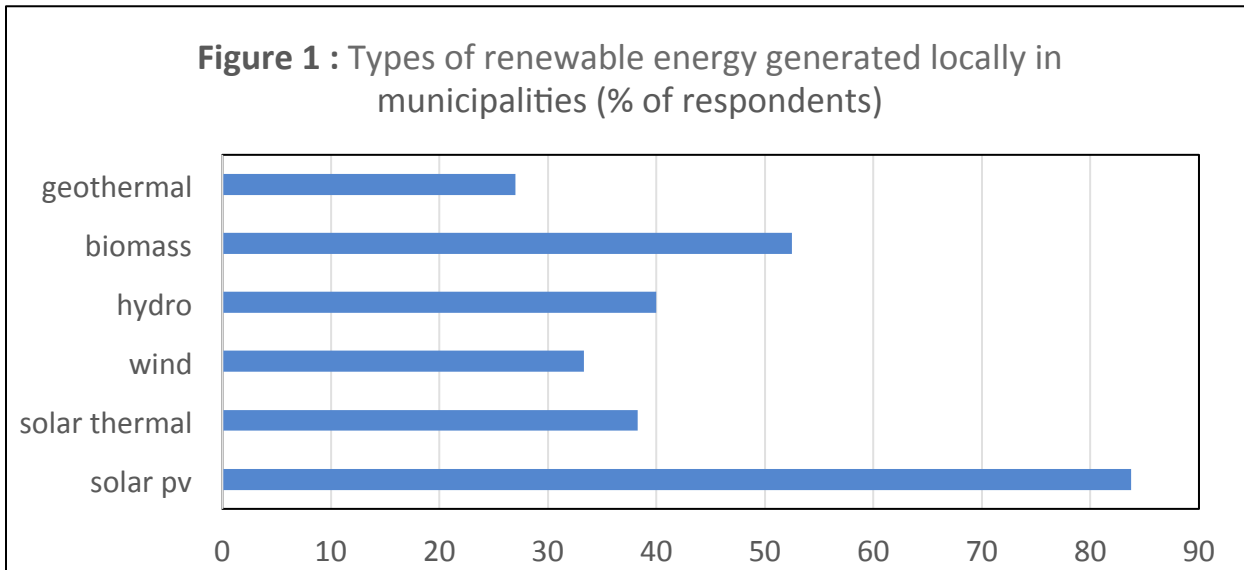
²⁵ See Wathne and Haarstad (2020) for similar dynamics in smart cities.

²⁶ See Angelo and Wachsmuth, (2020).

²⁷ C40 with Arup (2015).

²⁸ See Villamor et al (2020).

(24/42) were also doing this through combined heat and power (CHP) district heating systems, suggesting that this technology is proving a popular way for municipalities to produce renewable energy and make energy efficiencies.



[Source – authors’ survey]

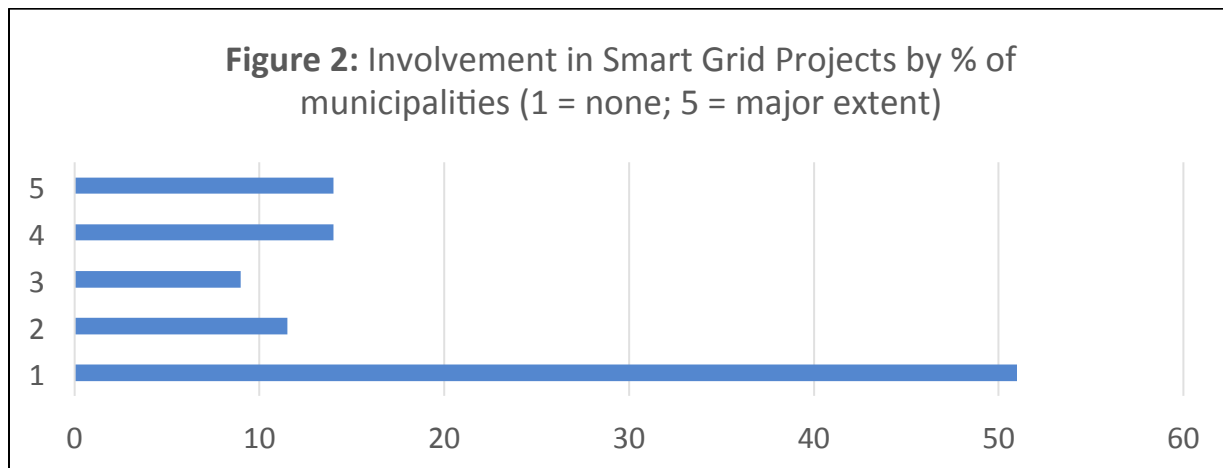
There are municipal authorities who have made progress specifically in the area of renewable energy, especially in Nordic countries. Växjö, Sweden, for example, is outstanding with regard to renewables, with 65% of all energy currently derived from renewables and a target of being fossil free by 2030. Växjö gains its renewable energy from the forest (biomass), with taxation of forestry owners additionally recycled holistically into transition initiatives and provides a useful case study in local capacity.

It is notable that Växjö’s transition away from fossil fuels started in 1980, in response to the oil crisis and price rises of the 1970s, when the municipality decided to reduce its external dependency. A major element of their transition strategy has been switching heat and power away from oil to biomass, through the waste from local timber resources. This delivers the bulk of the 65% figure cited above. Ninety percent of the city’s heat and 20% of its electricity comes from a large combined heat and power plant. As well as biogas, the city also has solar photovoltaic and solar thermal generation.

Further, because the city owns many municipal buildings and its own social housing stock, it has also been able to undertake significant energy efficiency and retrofit projects, alongside setting very high local standards for energy efficiency in new building projects. The decentralization of political power in Sweden, and the continued ownership of the municipal energy company, were seen as important facilitators by our respondent in providing the local capacity and agency to be a pioneer in setting urgent fossil free targets. Notably, Växjö did not rank finance highly as a transition constraint, reflecting the favourable national context and the ability of Swedish local authorities to utilise discretionary spending over income tax revenues and to raise finance through public bonds. They have also been able to successfully bid for national and European Commission funding, based on their exemplary and innovative approach to transition. Thus, exceptional progress in renewables in Växjö is rooted in specific conditions of local agency and capacity, long-term investment and first mover advantages in attracting innovation funding.

4.2 Energy reduction, efficiency, supply and organisation

Alongside generation, energy efficiency is an important terrain for municipal action. As noted earlier, it is one aspect of transition where municipalities often have the power and capacity to make substantial changes. However it is perhaps one of the harder aspects to assess. The data supplied for this quite broad category in the online survey encompassed a range of indicators including energy efficiency, retrofit and demand reduction; smart and decentralized grids; sum of innovative finance types used; and local finance initiatives. Unfortunately, this was the part of the survey where responses were fewest in number, making it difficult to get an accurate impression of the state of play of energy efficiency across Europe. The evidence that does exist suggests that most municipalities are not involved in more technically advanced projects such as smart grid development (see **Figure 2**).



[Source – authors' survey]

Innovation towards efficiency has the potential to make a real impact on carbon emissions. Residential energy demand has been highlighted as higher than that from commercial and public services.²⁹ Energy efficiency is also a key goal of the EU, being seen as the 'first fuel' and one of the five pillars of the EU's energy union.³⁰ Yet there are concerns that energy efficiency actions are slowing down despite being a key aspect of many plans for remaining below the 1.5 degree climate threshold.³¹ In this context, it is worth considering what can be learned from municipalities who have managed large scale retrofitting and energy efficiency measures.

The municipality of Dobrich is leveraging energy efficiency to attempt to meet carbon reduction goals, working with partners across Europe to forge networks for support and dissemination of advice and to access sources of funding in order to pursue energy efficiency transitions. Because of the Bulgarian national government's approach to carbon emission reductions, which places much impetus on local authorities and yet offers little support for renewable energy production, there is a distinctive focus on energy efficiency, improving local government capacity and finding alternative sources of funding.³²

²⁹ Teske et al (2018); Schurig and Leidreiter (2019).

³⁰ EC (2019).

³¹ IEA (2019).

³² IMAGINE Low Energy Cities project, Dobrich case study

(2014) http://www.imaginelowenergycities.eu/IMG/pdf/140822_case_study_analysis_dobrich_final.pdf

A number of projects have been completed to facilitate energy efficiency across the municipality, focusing primarily on municipal buildings and assets. Street lighting was retrofitted with 90% luminance of the old light bulbs but using only 47% of the electricity, which is projected to save nearly €20,000 annually in its 15-year lifetime.

4.3 Data difficulties

Whilst we can draw some conclusions about the enthusiasm and extent of municipal action for sustainability transition from the aggregated sources above, there are significant drawbacks to this corpus of data. As has been noted, the data available is limited and skewed often by self-selection criteria or use of snowballing and networks to assess the extent. Our survey provides a snapshot of 96 municipalities across Europe in 2018, but it contains biases and limitations, as acknowledged earlier in the report. Gathering data in order to estimate the extent of sustainability transitions also runs into issues with measuring projects' impact, for example, through difficulty accessing or calculating baseline data;³³ or with regards to questions about how results of grant-funded projects are often presented as more coherent and successful than they actually were.³⁴

It is worth noting too that during the process of contacting survey respondents, and the interviews which followed, we have become aware of research fatigue among many respondents and participating local authorities due to the many demands made on their time by researchers and policymakers.³⁵ There is therefore sometimes a reluctance or inability to engage in these kinds of projects—rather than a lack of positive will to achieve transition—because of capacity constraints in responding to research queries. This limits what data it is possible to collect. If a genuinely thorough survey was required, the data would likely have to be gathered systematically at a national or supra-national level. Some of this data may well exist at the national scale but is at present unavailable for European-wide analysis. In the years to come, the Covenant of Mayors data might become better for such a purpose but at present it is decidedly limited.

There are questions then which emerge about whether data is available and what the grey literature actually tells us. Given that figures available at aggregate sources (such as Eurostat and nationally published data) are given at the level of countries, and that Covenant of Mayors and European Green Capital data, while available, are patchy and probably prone to a positivity bias (and a certain amount of blue-sky thinking around goal setting); there seems to be a data gap which cannot be adequately accounted for through aggregating estimates, plans and patchy data.

As such the key limitations become apparent. In the subsequent accounts of blockages, challenges, successes and lessons that might be learned, there is thus a skew in the data towards celebrated case studies and enthusiastic supporters of sustainability, and this may not capture some of the problems faced by many other municipalities that are less well represented in existing networks and data.

5. The broader context for energy transition: facilitating and blocking municipal action

This section now turns to consider the interaction of municipal energy transition with its local and specific contexts in order to begin to untangle the challenges and successes present in the many known

³³ C40 Cities (2016), Villamor et al (2020).

³⁴ Wathne and Haardstad (2020).

³⁵ González (2011).

cases of local municipal action. In what follows, it becomes clear that not only is there a great deal of enthusiasm for local action, but also that it is stymied primarily by a) limited local capacity, b) financial constraints and c) political blockages, primarily in terms of lack of coordinated action across levels of government. What the analysis also suggests is that municipal action offers innovation at a local level and possible benefits for democracy, citizen participation and energy poverty.

5.1 Municipal control and capacity

What scope there is for local action is constrained by what municipalities are themselves able to do. Whilst it has been suggested that a major challenge for local communities wishing to engage in transition projects is a lack of political will³⁶, from our research this would not seem to be a major barrier at the municipal level. Energy Cities highlight political vision as the 'main driving force' of remunicipalisation, that is, of bringing assets back into local public ownership.³⁷ There are increased skills, access to data and knowledge of the energy context that come from having direct control over energy assets, which are also helpful in working towards transitions (especially since, as explored above, data on energy use can be hard to obtain).

Yet local capacity is a stumbling block: what scope there is for local action is constrained by what municipalities are themselves able to do. Notably, it was deemed that there was more opportunity for transitioning municipal buildings, particularly with regards to retrofitting to improve energy efficiency and energy generation (typically solar panels and CHP), than having much control over the private sector. A few outlier authorities had also managed to introduce greater energy efficiency measures into private residential housing and private buildings (such as offices and commercial buildings), but it was rare to see municipal government action targeted at the private sector. A similar story was evident in measures to reduce carbon in the transport sector, where energy efficiencies were more easily introduced in public transport services and more difficult to establish in privately managed transport services. This suggests that while the motivation to decarbonise is strong, the realm of possible actions imagined by municipalities is restricted to those they have closest control over - primarily municipal assets - whether buildings or transport. Utilising and replicating the more limited experience of successful strategies for carbon reduction by municipalities in the private sector would seem to be vital for breaking new ground in carbon reduction practice.

Transition problem solving at municipal level is thus a constrained affair, and limited then in its capacity to make change. Several authorities cited gaps between municipal aspirations for transition and national and EU policy constraints. As the city of Frederikshavn notes in its Covenant of Mayors' action plan for 2030, its plan is restricted to areas where 'where the municipality has real influence'.³⁸ Certainly, the focus of municipal authorities in transitioning would appear to be limited in many cases to locally owned assets, but this also suggests the development of realistic goals that make best use of existing capacities and resources.

5.2 Infrastructural barriers and public ownership

This naturally raises the twin issues of slow shifting infrastructures and, indeed, who owns these key levers for energy transition. Indeed, finance is such a big issue because of the embedded infrastructure

³⁶ Schurig and Leidreiter (2019).

³⁷ Energy Cities (2017), p. 19.

³⁸ Frederikshavn Action Plan for 2030 (2014) Covenant of Mayors.

of carbon-based energy, making the scale of necessary investment substantial, but beyond this too there are issues around path dependencies and time scales. The pace of change can be glacial and frustrating, in part because of the lag times and long-future projections involved in the infrastructures of energy. Furthermore, decisions taken to pursue nuclear or indeed shift to gas, rather than pursue renewables, are themselves political, and become difficult to reverse once enacted.

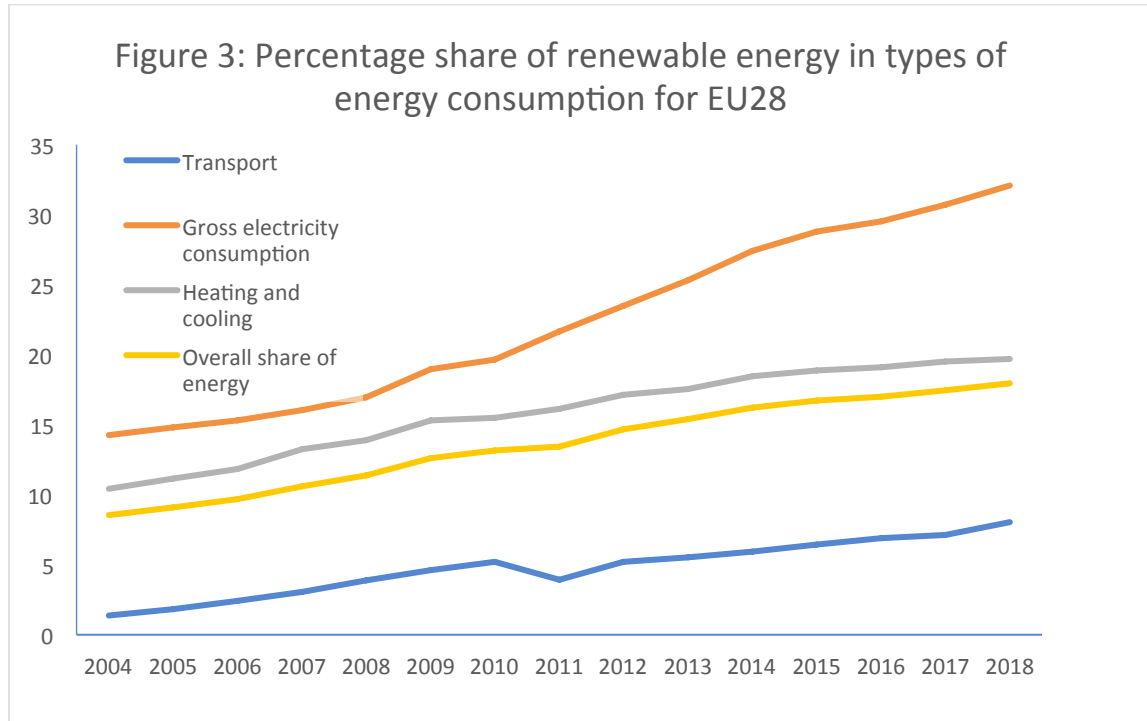
Even for otherwise green municipalities, there are difficulties with tie-ins to longer-term contracts (typically with contracts for energy supply from large private carbon or nuclear producers). Even at a more local scale, the infrastructures of energy can pose problems even while they are lauded as a solution. One respondent from Slovenia noted that it is impossible to buy out of the district heating system in order to pursue greener alternatives, because of the inefficiencies of district heating without large numbers bought in to the scheme. However, this stymies local and community action to integrate renewables at a lower level into the energy system if they are already connected to district heat – creating frustrations for some activists. Nonetheless, district heating systems were praised by many municipalities – especially Nordic countries but also in some UK municipalities. They can be low emission, especially if gas-powered, but could be better obviously if they fully utilised more renewable sources of power. There are therefore pay offs to different municipal approaches.

A further challenge is also who controls the infrastructure. This has been highlighted in particular in relation to renewable energy. Many renewable energy projects are ‘operated and managed centrally’ by organisations that are not local to the projects.³⁹ In some countries, the disaggregation of grid and assets complicates this pattern of ownership further.

Control over these assets is important for municipalities wanting to push the pace of renewable transition. Public ownership models, particularly those involving democratic participation, are often found in best practice case studies for moving towards a decarbonised local energy infrastructure. Ettlingen is a good case study in how ownership of key infrastructure allows for progress in urban transition. The municipality of Ettlingen owns an integrated water and energy services company: Stadtwerke Ettlingen (SWE). SWE supplies water to 250,000 people in the surrounding region and since 2011, Ettlingen have also controlled the local energy grid, taking control back from private utility giant, EnBW. The municipality has set the ambitious target of halving CO2 emissions by 2030. Having full control of the energy network is an important advantage and has allowed SWE to invest in some important new initiatives to realise this aim, including in a wood-burning heating system that uses renewable wood supplies from a local forest.

Yet meeting emissions targets will be hard without tackling sectors beyond the low-hanging fruit of municipal retrofits and municipal in-sourcing. There are difficulties in tackling emissions particularly around transport. Ettlingen has excellent public transport, but faces the common rural challenge of car-dependency. That this is a broader trend is highlighted in Figure 3, which shows the percentage share of renewable energy across different sectors. While progress has clearly been made by the EU-28 across electricity consumption, transport and heating still lag behind.

³⁹ Energy Cities (2017), see also Bridge et al (2018).



[Source – derived from Eurostat database: <https://ec.europa.eu/eurostat/data/database>]

While energy policy and infrastructure are often centralized and removed from democratic participation,⁴⁰ ownership and thus control of key assets at a local level can be a municipal lever for urban transitions. Where this is absent, it raises the speculative question of how to either pursue such ownership or to engage across the private sector. There are also challenges raised in sectors such as transport where engaging with consumers and private partners will be necessary. Municipalities need mechanisms that could be employed to reach those who wish to pursue business as usual if they are to be responsible for localized transitions. Whether the municipal level is appropriate or capable of this action remains to be seen.

5.3 National contexts

Municipalities are also dependent on a much broader national context for support, embedded within national agendas that do not always lend themselves to coordinated action. While Ettlingen, like other German municipalities, benefits from a generally supportive national political and legislative environment, other municipalities sit in more challenging contexts. C40 Cities highlight a series of ‘system governance challenges’⁴¹ including both internal challenges, like working across departments, and vertical and horizontal coordination – which is to say, the difficulty of coordinating across regional and municipal boundaries, as well as coordinating with the national level state. Most damningly, the C40 report also points to a lack of long-term vision and leadership at a national level as a serious blockage to city actions to mitigate climate challenges.⁴²

⁴⁰ Bridge et al (2018).

⁴¹ C40 Cities (2016: 9).

⁴² See also Schurig and Leidreiter (2019).

As such, municipalities must navigate the shifting political terrain of both local authorities and national level governments (as well as in some federal and non-unitary state cases intermediary regional governments). Windows of opportunity open and close depending on the alignment of national legislative contexts and political moments. An example of such a closure might be the 2015 removal of UK government subsidies for renewable energy projects that all but stalled renewables development, outside of large corporate-driven offshore wind projects, especially at a community level.⁴³ Data from the BloombergNEF investment tracking tool suggests that after the removal of the subsidy, the overall number of renewable energy projects across the UK fell by around half.⁴⁴ This is likely to have put a hold on smaller projects, simply due to being unable to compete across the energy market without subsidies and being forced in essence to compete with major fossil retailers at a national scale.

5.4 International context

The national level is itself constrained by supranational dynamics. Within Europe, the EU offers a strong and often legally binding guidance across many spheres, including via instruments such as the Paris Agreement 2015, where the EU pledged to achieve a greenhouse gas emission reduction of at least 40% by 2030. According to the EC in 2019, the EU is broadly on track to meet its shorter term 2020 goals,⁴⁵ though nations often report shortfalls themselves.

Yet queries have been raised in the grey literature about the logics of the EU with regard to energy transition. The market-led 'normative position'⁴⁶ of the EU, which leads to pressures for competition, cross-border cooperation and integration, for example, has been questioned for its ability in providing a strong pathway for energy transition. Although there is room for individual countries to define their own priorities, the emphasis on market liberalisation and narrow definitions of stakeholders (which seem often limited to states and private business actors) ignore a potential plurality of other energy actors, including communities, municipalities and individuals.⁴⁷ A move towards protecting prosumption⁴⁸ through reducing red tape in 2019's *Clean Energy for All Europeans* package seems to begin to address this, although again the focus is less on supporting local level initiatives and more on integrating them into the broader energy market, where smaller private and community actors struggle to compete with established multi-national corporations.

The EC also has, particularly in the Service Directive (often known as the Bolkestein Directive), insisted on market liberalization and so-called fair access for foreign private investors. For example, Iceland are considered in breach of EU law, having legislated to restrict access to geothermal energy to address the short-term approach of the private sector.⁴⁹

⁴³ Brauholtz-Speight, et al (2018).

⁴⁴ See: Vaughan, A (2018) 'UK Green Energy investment halves after policy changes' *The Guardian* Available: <https://www.theguardian.com/business/2018/jan/16/uk-green-energy-investment-plunges-after-policy-changes>. Accessed April 23rd 2020.

⁴⁵ EC 2019.

⁴⁶ Energy Cities (2017).

⁴⁷ See *ibid* for a thorough analysis of the difficulties of this for municipalities.

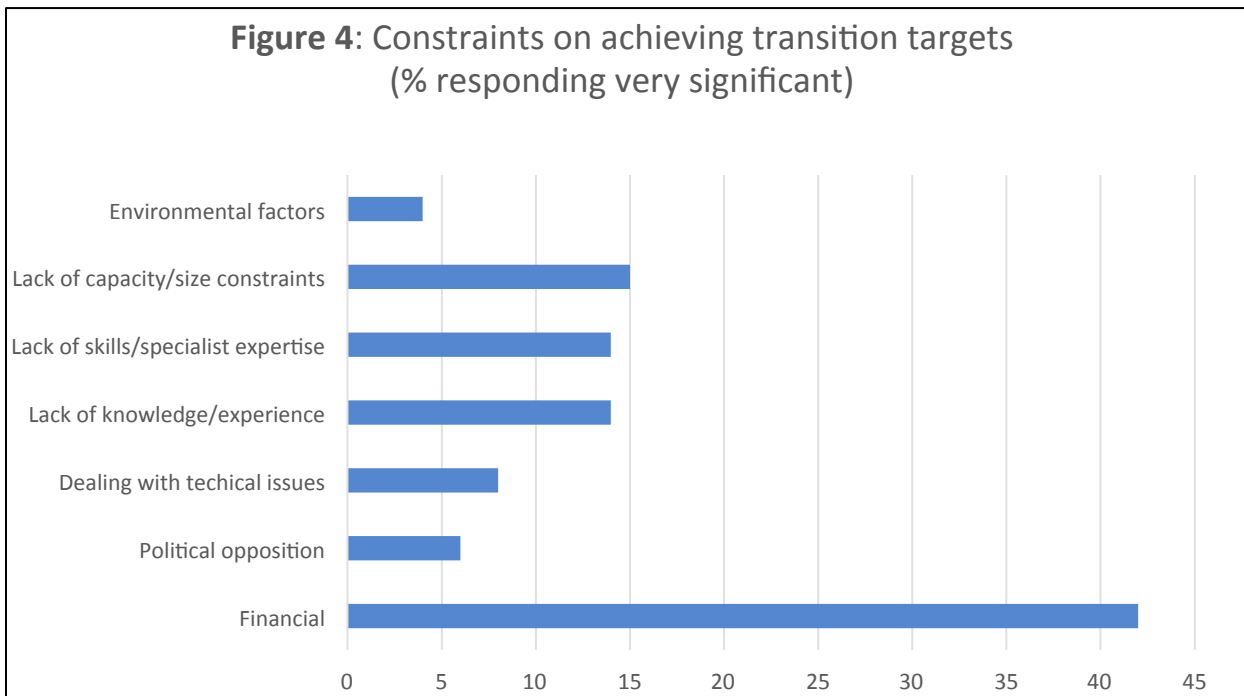
⁴⁸ Prosumption is a hybrid term for both producing and consuming, in this case energy (usually electricity).

⁴⁹ See Corporate Europe Observatory (2018) <https://corporateeurope.org/en/power-lobbies/2018/11/bolkestein-returns-eu-commission-power-grab-services>. [Last accessed January 2021]

5.5 Financial constraints and political support

Nevertheless, the mPower online survey suggested that political context was not seen as the primary constraint on municipal action: rather, the leading constraint was identified as the difficulties of financing municipal transition. When asked to rank the relative constraints on municipal action from 1 to 5, with 1 being little to no constraint and 5 being highly constrained, finance was highlighted as the most significant with an average of 3.98. Over 40 municipalities (of the total 96) highlighted finance as a very important constraint on transitions work (see **Figure 4**). As one authority in Italy expressed it: ‘The great constraint is to find the finances.’ This was followed in terms of importance by lack of capacity and size constraints (3.44), lack of skills (3.1), political difficulties and constraints (2.6), dealing with technical issues (3.05), lack of knowledge-experience (3), and, finally, environmental factors (2.17).

That financial constraints are overwhelmingly the highest scoring theme here is perhaps indicative of a disjuncture between well-meaning discourse at national or European leadership level and the concrete financial support necessary for transition at local level. It would also appear in many cases to be a result of the wider context of austerity and the de-prioritisation of transition in the face of declining fiscal budgets.⁵⁰



[Source – author’s survey]

Yet not all municipalities are as constrained. Växjö, discussed above, is one example that bucks this trend, where the motivations of the municipality in terms of transition are matched and supported by all political parties in Sweden, who are unified on the need for carbon reduction and the green transition. With few political or electoral blockages, and a very strong internal motivation, Växjö has been described as the ‘greenest city in Europe’.⁵¹ Another example is Tampere in Finland, where one

⁵⁰ See Geels (2013) on how despite an initial window for opportunity, austerity following the financial crisis has had a negative impact on sustainability investment.

⁵¹ See Slavin (2015). Also, Emelianoff (2014).

municipal official explained in an interview that, given the typically cold climate and resultant high-energy needs, energy efficiency was a critical financial issue as well as an environmental one. Energy, they contended, was therefore a very practical problem for everyone in Finland and that may explain why there is relative political unity on the question of transition. In less supportive national contexts, local leadership and a sustained strategy can create important policy innovations in spite of national constraints, but without political commitment and financial resources, municipal transition initiatives often struggle to become sustainable.

5.6 Economic rationale as a capacity issue: the knock-on effects of prioritizing economic value
Given the lack of resources and the wider context of austerity, several officials with the responsibility for transition within municipal authorities have described how they have been under pressure to convince municipal leaders that any transition process will be economically worthwhile for the authority (over and above environmental benefits). In response to this pressure, several authorities cited the need to develop robust evidential bases for transition implementation in order to ensure investment and to find convincing framings for their plans. Accordingly, they argued, this speaks to the need to develop innovative financing mechanisms and a robust replicable set of criteria to aid and legitimise the rationale for investment in transition. Indeed, as has been highlighted in the literature, the legitimacy of renewables projects often relies on the capacity of advocates to frame projects in ways that appeal to economic logics via cost reduction and value creation⁵².

Yet several respondents stated that there is a lack of knowledge about how to develop such innovative financial mechanisms. As one municipality in the Czech Republic stated, at the city council level ‘there’s a lack of knowledge about these new approaches, and about energy transition and so on’ and thus good examples from other municipalities in Europe were required to show how transition thinking and investment can be normalised for those who have decision-making power locally. Another municipal authority from Greece, said: ‘Well it’s really important to gain the experience of other people. It’s how they transitioned their local energy policies, how did they manage to get involved with some private partners, and what was their profits. How did they decide which company they were going to utilise?’

Municipalities working towards energy transitions often cannot rely on state level funding for transition, and certainly not of the scale required to reimagine entire energy infrastructures. To this end, municipalities often must use alternative sources of funding and support, from the EU and research projects at a super-national level to working alongside private partners in Energy Service Companies (ESCO) and Public-Private Partnerships (PPP). This is often novel terrain for municipalities and becoming familiar with working alongside the European Investment Bank (EIB) for example is a steep learning curve for those such as Ljubljana, who have drawn down multiple phases of funding from the EU level in order to activate localised private-sector funding.

A key source of funding for Ljubljana’s transition work is the ELENA project, which stands for European Local Energy Assistance. As a joint European Commission and EIB funding project, ELENA provides technical and financial help for projects relating to energy efficiency, renewables or transport infrastructure. Interviews in Ljubljana highlighted the learning curve involved in accessing the funding. They learned to balance ELENA funding against money from the EU’s Cohesion Fund, in order to minimize the amount that the municipality themselves had to invest at the outset. They had to use a

⁵² MacKinnon et al (2021).

model of Energy Performance Contracting, a kind of Public Private Partnership mandatory through the ELENA project, which a local administrator described as ‘a really interesting approach because the City does not need so much money, they are just paying from the savings they have done’. Thus, across three phases of work, Ljubljana has successfully retrofitted 48 buildings completely by 2018, and hopes to retrofit between 80-90 municipally owned assets.

Funds can thus sometimes be accessed from a European level. Funding from the ELENA project comes from the European Investment Bank and is a prime example and has now supported 39 ‘non-profit making’ energy transition projects (typically over €30 million and running for 3 years) across Europe since its inception in 2009.⁵³ Yet the main focus of the support is for project development, with the principal aim of drawing in private sector investment. Thus, whilst there is a block of money available to municipalities, accessing it hinges on an approach heavily oriented towards the private sector.

This highlights the logic at the level of the European Union and its various associated bodies that money available is to provide support in order for the private sector and the ‘market’ to provide the bulk of the funding,⁵⁴ but there are serious questions about whether the private sector is able or willing to fill the gap in funding for the size of longer term strategic investments required. ELENA is the prime example here, but it is notable even when one considers the scale of funding available at a European regional level. In relation to Just Transitions funding, questions have been raised about the sums of money that are actually there to support work towards transitions. Given the estimates about the need for somewhere in the region of €1-3bn per major European city,⁵⁵ the announcement of an extra €7bn as part of the Just Transitions mechanism seems woefully inadequate.

5.7 Research funding and private collaboration pathways

When state and supranational level funding is missing, municipalities often turn to research grants and private partnerships to levy funds. Yet relying on international funding and collaborations through research grants is also an unstable path. Dobrich, for example, has been highly successful as a municipality in drawing down funds from EU research projects, including at least 6 between 2005 and 2019, and yet the municipality are not expecting to meet their 2030 target of a 32% reduction in carbon emissions. This despite being an exemplar city in pilot projects for transition and being a strong example of Eastern European leadership in energy efficiency. This highlights a concern for novelty and piloting, which, whilst it often includes a concern for scalability on a technical level, doesn’t necessarily translate into money for sustaining projects into the longer term. This also recalls the suggestive critique of grant funding itself – which is a tendency to over-inflate the often more fragmented successes of the project.⁵⁶ There are also concerns around the focus on novelty, with funding more available for testing new solutions than spreading already understood ones.

The situation within which many Eastern European municipalities find themselves resonates with broader geopolitical concerns articulated in a recent global report: ‘The survey indicates that developed

⁵³ For more details, see here: <https://www.eib.org/en/products/advising/elena/index.htm>, last accessed 10th May 2020.

⁵⁴ The language of the recent energy policy reforms is typical here in calling for ‘revision of electricity market design [...] aimed at making Europe’s energy market more competitive and accessible for new energy technologies’ (EC 2017).

⁵⁵ Ledée et al (2019).

⁵⁶ Wathne and Haarstadt (2020).

cities need to access private sector capital in order to progress their climate agenda. Cities in emerging economies indicate that they are more reliant on international development and environmental agencies for their funding. Their access to finances was more often challenged by **funders' governance arrangements**, which prevent them directly working with cities, or by the city's own poor credit rating or financial performance'.⁵⁷

Nevertheless, injections of funds from grants and EU level funds like ELENA can pave the way for increased investment from the private sector. Whilst there are noted discussions of the \$17 trillion economic opportunity in developing low-carbon cities,⁵⁸ as Ljubljana's experience and the mPOWER project more broadly suggests, the project development work required to access this can prove a challenge. Indeed, it is a question again of local capacity. But using ESCOs and PPPs can create conditions wherein municipalities can successfully leverage private investment and pay developers via savings made in energy efficiency. Despite concerns from activists that this involves creaming off the savings made without actually contributing much aside, this has allowed municipalities, particularly across Slovenia, to roll out similar programmes where smaller municipalities can band together to draw down ELENA funds and retrofit municipal buildings for energy efficiency, learning directly from and drawing on the expertise from the Ljubljana model.

As such, building capacity at a municipal level is a key concern not only for projects like mPOWER whose work tries to encourage peer-to-peer learning to support municipal energy transition; but also for the EU through offering technical support and within countries such as Slovenia, where there can be a positive snowball effect; successes in one municipality can be replicated elsewhere.

5.8 Democratic pathways to building capacity

There is now an established consensus, reflected itself in recent EU policy,⁵⁹ that citizen engagement is critical to developing successful transition strategies. In this respect, an alternative more democratic pathway to transition involves utilising cooperatives and innovative public ownership models in order to raise funds. This has a parallel benefit of addressing concerns around who is benefitting from transitions, and is articulated in wider concerns about just transition and energy democracy.⁶⁰

Yet, given the choice of four learning streams within the mPOWER project, municipalities overwhelmingly chose renewables, energy efficiency or local energy communities over democracy and participation. In interviews, it was clear that many municipalities were concerned about democracy and participation yet given financial and resource constraints they had to de-prioritise these concerns in order to frame the transition argument in a way that was deemed more practically viable in terms of economic imperatives.

Nevertheless, some interesting mechanisms exist across Europe for enhancing democracy and public engagement to enable transition. For example, some German municipalities have increased citizen participation through the setting up of residents' cooperatives, or by developing hybrid public-cooperative models, which have also been common in Denmark. Ettlingen set up a citizens' cooperative in 2013 in partnership with local social entrepreneurs to invest independently in renewable energy

⁵⁷ C40 with Arup (2015), p. 41, emphasis in original.

⁵⁸ C40 (2016).

⁵⁹ See Oroschakoff (2020).

⁶⁰ See for example Healy and Barry (2017), Szulecki (2018), Heffron and McCauley (2018).

capacity: BürgerEnergiegenossenschaft Karlsruhe Ettlingen (BEKE). The establishment of the cooperative has become an effective means of both raising extra finance (in this case for solar PV schemes) and encouraging citizen involvement on a democratic basis. To become a member, citizens need to invest a minimum of €200 (up to a maximum of €20,000) but in turn every member has an equal vote.

Beyond individual case studies, it was notable in the survey and interviews that the problem of constraints to democracy and participation was addressed by several municipalities in, and through, their engagement with collaborative trans-local networks across national, European and even international boundaries. Such bodies typically seek to overcome intransigence to transition by developing a broad-based lobbying and exchange network for democratic and participatory transition. Several interviewees were either already involved, or wished to become more involved, in such networks. Examples cited by survey respondents and interviewees included: URBACT, UK 100, Fearless Cities and Energy Cities,⁶¹ a European association of local authorities in transition and one of the main mPOWER project partners. One representative from a municipal authority in Denmark said that such collaborations were required in order to develop 'the political capital to encourage the shift from fossil to renewables at national legislative level'. Another representative from a UK based municipal authority said that such networking between municipal authorities across Europe and beyond was necessary 'to envision and create better national legislation and funding'. Thus, in order to support citizen democracy, municipalities often lobby for the political support to do so.

Such comments illustrate that a growing number of authorities register the policy and ideological limits facing municipalities arising out of national, European and global constraints and the need for a trans-local policy approach to counter these constraints. This is reflected more widely in what has been called the new municipal agenda or new municipalism, a key component of which involves municipal authorities creating their own mutual support networks for greater social and ecological justice to overcome intransigence at national and even international scales. Notably, this agenda is strongly supported by municipal authorities both with relatively progressive national transition policies (e.g., municipalities in the Netherlands, Sweden, Finland) as well as those with more constrained national policy and funding frameworks (e.g., municipalities in the UK, the Czech Republic, Greece). Such developments should be monitored with interest in the coming years in order to investigate how, or whether, they are able to effectively lobby for carbon reduction and greater participation and democracy at the municipal level.

6. Conclusions

If the local and municipal level is seen as increasingly critical to achieving the energy transition that Europe needs to combat climate change, this report suggests that municipal actors within local government and civil society are ready and willing to play their part. Particularly, given the problems arising from energy privatisation and in particular the sense that the investment required is not happening swiftly enough,⁶² local action is recognised as an important lever for change. Municipal

⁶¹ URBACT: <https://urbact.eu/>; UK 100: <https://www.uk100.org/>; Fearless Cities: <http://fearlesscities.com/en/about-fearless-cities>; Energy Cities: European Association of Local Authorities in Transition: <http://www.energy-cities.eu/-About-us-7>.

⁶² See Cumbers and Traill (2020).

ownership can be an important part of that, and indeed remunicipalisation is an emerging trend with concrete benefits for local authorities trying to make changes.⁶³

Collaboration at a municipal level is an increasing phenomenon, encouraged by projects such as mPOWER which is working to connect up hundreds of municipalities to uncover difficulties and routes to sustainable municipal action. It also happens organically, as the example from Slovenia noted above illustrates. Nonetheless, the vagaries of national policy contexts raise a question mark against any easy transferability of best practice. Municipal projects often work within and against difficult contexts successfully, but given their embeddedness in national contexts and cultures, how useful is best practice drawn primarily from northern and western Europe to very different political and historical contexts in southern and eastern Europe? Municipal actors in the Nordic countries – and to a certain extent Germany – are relatively empowered through strong national consensus, decentralised governance structures and the availability of finance to pursue a range of renewable energy, energy efficiency and other innovation projects. However, those in other parts of Europe find themselves in a less fortunate position.

Yet it is precisely this less fortunate position that provides one reason why municipalities – particularly those from southern and eastern Europe – are willing to engage in trans-continental learning and knowledge exchange activities such as mPOWER, and are also keen to seek funding support at the EU level beyond often limited national level resources, competences and political commitment. In reaching out, often beyond national borders, municipalities encounter new ways of seeing problems and can draw in examples of successes from elsewhere in order to persuade other governance actors to take action to address the climate crisis.

Municipal action can be limited in its terrain. Action to reduce emissions reflects the primary need to comply with international and national targets for carbon reduction (as well as a strong conviction in many cases that meeting such targets is right and proper), aligned with the potential or actual control that comes with *ownership* of buildings and assets, and the relatively important energy efficiencies that can be achieved through retrofitting and energy efficient new-build construction. What emerges here is a strong tendency towards the management of existing public buildings and assets for transition.

A major obstacle to transition is increasingly the continuing use of carbon sources of energy in heating and cooling systems and the difficulties that municipal authorities have in exercising any control over private buildings and assets, even if the political will for transition is present. The major constraint on transition is undoubtedly finance according to our survey, and this feeds into the other categories of constraint, including capacity and resources for transition, and skills and knowledge base for transition. In recognition of this, there are calls for cities to be able to access funds directly, amongst other things in order to circumvent national level blockages.⁶⁴ Where transition was most evident in general, there was less external constraint at regional or national level (cf. Nordic countries) in terms of political will and finance, and again it is important here to be alert to differing historic political-economic structures and the natural resources and wealth that are available to certain countries and not to others.

Thus, municipal innovation meets a great deal of contextually specific constraints and benefits. There are uneven distributions of the capacity to innovate at a municipal level and finances continue to be a

⁶³ Kishimoto et al (2020), Hallinger (2016).

⁶⁴ Reuters (2020)

challenge, given the limit flow of resources from a super-national and national level. A reliance on private sector funding might not lead to innovation at a pace fast enough to combat the climate crisis. Municipal leadership offers a possible way forward when supported by finance and the capacity to make decisions and follow them through. There is strong evidence that the motivation for municipal transition in Europe remains powerful and what is sometimes referred to as new municipalism has an opportunity to bear itself more thoroughly on the delivery of national transition programmes.⁶⁵ What remains to be seen, in the face of the coronavirus crisis and the post-pandemic recession likely to come, is how far hard-pressed municipalities will be able to balance recovery against the need for local action to address the increasingly urgent climate question.

⁶⁵ See Thompson (2020) for a useful review of the new municipalism.

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