Larger, diversified and courted : the new triad of local firms of infrastructure in transition ?

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Abstract : Following Jaglin and Verdeil's argument (2013), this article considers that a certain obsession for energy transition may overlook important transformations of energy systems. A focus on largely understudies local utilities in three very different contexts (Grenoble, Magdeburg, Medellin) reveals important though silent changes that indicate new emerging infrastructure regimes and complete the literature on infrastructure firms.

Keywords : energy systems – rescaling – local utility – infrastructure regime

Over the last past decade, the dominant discourse on energy systems has been that of energy transition. This has taken the features of a political injunction to transform their practices for both energy producers and energy users (Broto and Bulkeley, 2013). At the centre of these new arrangements of socio-technical systems, local scales have been identified as the most accurate level to foster this transformation and cities have been encouraged to further develop innovative systems, be that through the production of renewable energy or the implementation of smart grids (Bulkeley et al., 2010; Broto and Bulkeley, 2013). This mainly reflects the fact that cities, as of 2008, do represent two thirds of the global energy consumption, 70% of CO_2 emissions and consequently a highly relevant place to develop such a transformation (IEA, 2008).

However important this transformation may appear, its evolution is far from monolithic, even though some representatives of the transition management literature (Rip and Kemp, 1998; Rotmans, Kemp and Van Asselt, 2001) advocate for a quite generic change of urban energy systems. Following Jaglin and Verdeil (2013), we consider that there is neither a unique and worldwide model of energy *transition* nor a convergence towards such a model. Considering energy transition as systematic would tend to depoliticise the transformation of these systems and to underexploit historical, geographical and socio-political elements that are integral to the understanding of local arrangements (Shove and Walker 2007; Jaglin and Verdeil 2013 ; Rutherford and Coutard, 2014). What can be observed, are rather *transformations* of energy or infrastructure regimes (Monstadt, 2009) that differ according to the local contexts.

Placed at the core of these transformations, energy operators (and utilities in general) have been understudied in the analysis of these ongoing changes. Scant studies have thus tried to unpack their specific role in this transformation and the strategies they have adopted to transform their practices and local energy arrangements (Florentin, 2014; Furlong, 2014; Gabillet, 2014; Hannon and Bolton, 2014; Lorrain, 2005). This article tries to fill that gap by providing some insights on fundamental, though mainly overlooked, changes that affect local firms of

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infrastructure and constitute the background of many crucial aspects underpinning the various energy transitions and the evolution of urban services.

Research on infrastructure firms has been predominantly focusing on multinationals and their role in globalisation as new actors of urban capitalism (notably in Lorrain's classic work, 2002). We would like to complete this approach by looking at the other side of the pipe, focusing on local infrastructure firms in cities that are not necessarily at the head of the metropolitan archipelago (Dolffus, 1996; Robinson, 2006). Over the last decade, one has easily noted a renewed interest on local infrastructure firms for mainly two reasons. First, they have been at the very centre of debates of political economy on their juridical status, and much attention has been given to processes of remunicipalisation of urban utilities with the flagship examples of Berlin, Grenoble or Bogota (Blanchet, 2015; Hall et al., 2013 ; Hüesker, Naumann and Moss, 2011). Second, they have been inserted in socio-technical debates, where local utilities are considered as levy of energy transformations at local level (Ambrosius, 2012; Nieswandt, 2012). Our contribution wants to go beyond these two arrays of debates to illustrate socio-technical transformations of a different kind. Our joint work started with the comparison of our respective case studies, all of them centred on local infrastructure firms but in much differentiated contexts.

To sketch it briefly, the first one is enshrined in the typical context of post-socialist transition (Golubchikov et al., 2014 ; Sykora et Bouzarovski, 2012) in the city of Magdeburg (Germany, capital city of the Saxony Anhalt region, 100 kilometres away from Berlin). Urban services are predominantly delivered by the local multi-utility, the Stadtwerk of Magdeburg (SWM), which is a typical case of the German strong municipal[2] model of urban services (Krämer, 1992; Barraqué, 1995). The Stadtwerk has had to face tremendous diminutions of consumptions of water, gas and district heating, which forced the utility to initiate a massive transformation of the urban water and energy system. The second case is situated in Grenoble, a French middle-sized city close to the Alps, whose energy system does not entirely reflect the traditionally state-led French model of energy governance. Due to political decisions of the early 20th century, the city is supplied by a local public utility (Gaz Electricité de Grenoble, GEG), while the regulation of gas and electricity markets remain national. This regulation and general organisation is currently questioned by the twofold process of liberalisation and the integration of climate-energy objectives in public policies and programmes. The third and last case is incorporated within the framework of the intensely liberalised energy market of Colombia, in the city of Medellin, the second biggest city of the country. The local multi-utility of the city (Empresas Publicas de Medellin, EPM), which historically had played a key role in the development of electricity at the regional level all the 20th century long, has managed to span unchanged the multiple neoliberal reforms of the 1990s that deconstructed the traditional model of municipal multi-utilities.

Despite the variety of institutional and geographical contexts of these cases, something seems to emerge out of their comparison. Their respective evolution tells a somewhat common story,

[2] The majority of the capital (54%) is owned by the municipality, the rest being owned by two private companies of the energy market, Gelsenwasser (originally a mix of public local entities) and E.ON Avacon.

and important similarities arise in the strategies adopted to deal with highly competitive energy market: this goes beyond the simple coincidences. Although they obviously do not represent all the local firms of infrastructures, they do embody a trajectory followed by numerous similar utilities, which translates into a new infrastructure regime (Monstadt, 2009) that constitutes the essential background to decrypt the modifications of urban energy systems. This transformation rests on three pillars, which constitute the three following parts of this article: a rescaling of their supply area, a diversification of their business model and a reconfiguration of their relation with the city. These three transformations are crucial to understand the context in which energy transformations are happening.

1. The rescaling of local infrastructure firms

The first pillar of this fairly silent but decisive transformation is relating to a modification of the territoriality of these firms. The liberalisation of energy markets and the increasing development of new forms of energy production and distribution have contributed to new spatial arrangements in energy systems: over the last fifteen years, new scales of governance have appeared, which accelerated the production of new geographies of local infrastructural firms.

This process translates into a form of rescaling, and echoes one of Brenner's hypothesis that state rescaling processes were accompanied by new forms of (spatial) redistribution occurring at regional level, which he coins as "neo-Fordist political projects" (Brenner, 2004:466). Through the various forms of rescaling they have carried out, local infrastructure firms are increasingly becoming multi-scale actors. Our three cases reveal a twofold expansion strategy, combining an expansion at a local level in continuity with existing infrastructures and an extension at a regional if not national level.

In the case of Magdeburg, this rescaling is quite striking, yet marked by the ambivalent alternation between processes of de-territorialisation and re-territorialisation. The first steps of liberalisation of energy markets were used by the multi-utility to develop its activities in other cities to expand their markets, like in cities in the Northern part of Germany such as Hamburg or Schwerin. This went so far as to provoke a form of de-territorialisation, as SWM was selling more electricity outside Magdeburg than in its traditional core of intervention. Such a trend was considered as potentially risky by some of the directors of the company, and the general strategy developed by the company now favours a regional scale and a form of re-territorialisation.

The utility's zone of influence has consequently been extended at a regional level, may that be in power, gas or water sectors. The utility has, for instance, taken over the technical management of Schönebeck's region water provider (South of Magdeburg, WZV Schönebeck) or the commercial management of Stendal's Stadtwerk. Similar evolutions have occurred in the power sector, as parts of other local multi-utilities specialised in the energy provision have been bought by SWM, in Zerbst or Stendal. This general expansion can be considered as a combined

territorial consolidation and upscaling of the Stadtwerk. Its goal is clearly expressed by many representative of the company: becoming a regional utility and not only a local communal one.

As in other similar cases such as Halle, the utility of the regional metropolis progressively extends its zone of influence by buying local Stadtwerke. This allows the company to compensate a somewhat shrinking or not-growing original market quite typical of post-socialist contexts, which are characterised by emerging cold spots (Moss, 2008) where demand has tremendously decreased and where the level of service has worsened. Such a strategy highly nourishes the economic viability of the company, as 40% of its benefits now come from this network of subsidiaries. To a certain extent, this also mimics a similar path adopted by one of the shareholders of SWM, Gelsenwasser, which has also largely extend its zone of influence in the water sector in other regions to compensate a declining demand in the Ruhr area. Local multi-utility such as SWM are progressively becoming regional political actors, and consequently unavoidable actors of possible energy transitions or adaptations.

The Medellin case tells a quite similar story, although the dialectic between de-territorialisation and re-territorialisation may be slightly different. The local multi-utility has largely exceeded its original territory and operated an impressive spatial metamorphosis. Its expansion has been both incremental and monumental. The utility first extended its network at a local level, in the Aburra valley (today's Medellin's metropolitain region) and in its surrounding region of Antioquia, anchoring its influence at a regional level. The primary goal of this change was to enhance the capacity of production of the utility to satisfy the growing demand of energy of the local market. Through these extensions, EPM managed to build a strongly intermeshed power network, which now comprises 24% of the national capacity of production for electricity and commercialises 23% of the consumed electricity at the national level. This helped the utility to become not only a local actor of the energy arena, but a regional and even a national one. During the energy crisis that affected the country in the early 1990s, EPM appeared as a key actor at the national level as they led the construction of an interconnected electricity network and drew a new plan enhancing the supply capacity at the national level (López Díez, 2003; Varela Barrios, 2010). Due to reforms liberalising urban services, EPM had to reshape its administrative structure and created a holding named Grupo EPM. This holding has, through its various subsidiaries, further fostered its spatial development, so that the utility is now active in seven Colombian regions and in six Latin-American countries[3]. EPM is thus by no small provider anymore, but rather an impressive firm owned by the municipality of Medellin, but whose tentacles are drawing radically transformed geographies of local firms. EPM explicitly follows a strategy of de-territorialisation of its activities: one of the objectives of Grupo EPM is that 40% of the total revenue should be generated through the subsidiary companies working at the international level. Yet, this form of de-territorialisation does not altogether mean that EPM has deserted the local arena: its spatial model has been twisted but the utility remains locally owned and deeply anchored in its regional native territory.

[3] Grupo EPM is constituted of 6 subsidiary companies in the water sector and 4 in the energy sector that operate outside of Antioquia at the national level. At the international level, EPM is at the head of 23 subsidiary companies, mainly in the energy sector, active in Mexico, Chile, Panama, Costa Rica, Guatemala and Salvador.

In the Grenoble case, the possibilities of a similar rescaling of the utility are lower, as the energy distribution remains a national monopoly and consequently locks many possibilities of extension. However, the utility has also adopted new forms of territorialisation (Jaglin, 2005) and tries to expand its initial frame of action. The utility has installed new sources of renewable energy outside of the city, and increasingly favour the regional scale to develop its various projects. The de-territorialisation is not a relevant issue in this case, but the utility really tries to strengthen and develop its spatial core of intervention, deploying its capacities and activities in concentric circles whose vibrating heart remains the city of Grenoble. The utility has also developed new products to be commercialised in the region, which leads us to the second pillar of the transformation of local infrastructure firms.

2 The diversification of the business model of local infrastructure firms : a new role in the urban arena

The rescaling of local infrastructure firms produces new geographies of infrastructure management. Yet, this does not exhaust the understanding of the change towards a new infrastructure regime. This geographical mutation is accompanied by a transformation of their business model, and more precisely by the diversification of their production of value. Local infrastructure firms are no longer limited to the lonely transport and supply of a fluid going through a pipe: they have become provider of larger urban services that largely exceed their traditional mission.

This diversification of the activity is the corollary of the rescaling, as both tend to anchor further the utility in a larger territory. This gives to the utilities a new role in the urban arena. To phrase it in a different way: one can even wonder whether these utilities can be characterised as simply infrastructure firms.

In the three cases, this alteration of their traditional business model follows two main lines: the expansion of services related to the provision of energy and the development of other services largely unrelated with the core mission of a utility. This process is particularly prevalent in the EPM case in Medellin.

Through its subsidiaries, Grupo EPM has developed a large range of activities and services, that include investment companies (Panama, Caiman Island, Guatemala) or the commercialisation of electric appliances (El Salvador). At the local level, EPM, like many other utilities, has started to enlarge its portfolio of services to downstream users, with offers ranging from advice to reduce consumption to the design of financial programmes to obtain credits in order to buy domestic appliances[4].

Yet, the most decisive part of this strategy of diversification has been carried out outside of the traditional role of energy provider, notably through its programmes of Corporate Social

[4] This goes up to the creation of a EPM credit card.

Responsibility (CSR). Most of them have been implemented through the Fundacion EPM. The utility is thereby involved in the management of public spaces and equipment, constructing and running some cultural or educative buildings such as the EPM Library, Parque de los pies descalzos or the new Unidades de Vida Articulada. Through this commitment, the utility participates to the fabric of the urban and to its physical transformation as well as its everyday management. Such a strategy reinforces the visibility of the utility within the city of Medellin, which could almost be named the EPM city. This image-based approach renders the utility both visible and closer to its inhabitants/users and strengthens the attachment of the inhabitants to the utility. In acting so, EPM accentuates its rootedness in the local context, compensating the rescaling of its management. Internationally, EPM also exports the image of Medellin, as if the utility had absorbed the city. This diversification is, in other words, a process of territorialisation, which legitimises the utility as a major player of the local governance.

If Medellin is converting into an EPM city, Magdeburg is also increasingly turning into a SWM city, as a result of a similar policy of diversification led by the utility. Beyond the expanding offer of services relating to energy provision that characterises the classic commercial turn in the energy sector, SWM has also diversified its mission by providing its customers a special card, the SWM card. This card is free of charge, yet offers no service at all as far as urban technical systems are concerned. However, this item provides its users with various commercial advantages such as discounts in some shops, or free access to several cultural events. The utility is also supporting numerous cultural events in the city. SWM is consequently slightly invading the everyday-life of Magdeburg's inhabitants, not only with the countless SWM cars of technicians that are crossing the city's streets, but also through various channels outside of the classic relationship between energy users and provider. This is primarily reinforcing the connection between the utility and its supplied area.

This diversification is slightly more limited in the Grenoble story, as the utility is diversifying its activities, but concentrates this diversification around energy issues. Amongst other projects, the company has invested in the production of renewable energy and on smart grids. The transformation of activities is, in this context, mainly driven by financial opportunities relating to national public policies encouraging an energy transition.

3 New regulations and reconfigured relations between the city and the utility

This twofold move of rescaling and diversification of local infrastructure firms reconfigure the political arrangements between the city and the utility. A growing tension emerges between the eminently political will expresses by utility heads to remain autonomous and the inclusion of the utility in the local political landscape. As public firms and representatives of public services, the local utilities are bound to the municipal authorities. Their transformation combined with a renewed interest in energy questions accounts for new forms of regulations (and conflicts) between local powers and the utilities,

In our three cases, the utility has long been conceived quite uniquely as a source of revenues for the local authority. In Grenoble, the utility certainly benefits from a certain autonomy to

establish its own strategy, but it substantially nourishes at the same time the city's revenues. The city's role has long only consisted of validating strategic choices of territorial expansion and economic diversification to ensure the continuity of the city's incomes, with little interest showed to the energetic dimension of the utility.

However, the implementation of new public policies on energy and climate have changed the context. Local political actors have seized this opportunity to reconsider GEG as a potential tool for these new urban energy policies. Within the city's administration, this new discourse is advocated by departments in charge of sustainable development, environment and urban affairs, and translates into the elaboration of local climate plans. In this context, GEG is encouraged to participate to urban projects such as eco-districts or innovative experiments of smart grids. Even though these changes remain marginal, they attest the emerging search to integrate the utility in urban policies, which provides it with new opportunities and are a way to acknowledge the eminently urban and political role of the utility. This transformed relationship may lead to intern frictions within the local authority, but also between the city and its utility. Conflicts arise mainly because the utility try to preserve a form of industrial and strategic autonomy in this context of growing politicisation of local energy issues.

Similar frictions can be observed in Magdeburg between the city and the utility, as a result of the transformation of the latter. A large part of the SWM benefits is now accumulated outside of Magdeburg, but 60% of these benefits are transferred to the city budget according to the number of shares owned by the city authorities. This epitomises possible complex relations between Magdeburg and its region, and the complex dilemma between a traditional communal mission, supporting the local development, and new economic strategies.

The reconfiguration of the role and place of the utility in the local arena also triggers new conflicts with the city in the Medellin case. This is particularly salient with regard to the supply of certain areas of the city when the technicians of the municipal authority disagree with the technicians of EPM. In spite of attempts to exert a larger control over the firm, the city remain often inferior, as the economic, technical and symbolic power of the firm practically dispossess the city's technicians.

Conclusive thoughts

The purpose of this short paper was threefold. First, by considering the transformations of energy systems as not univocal, and by integrating it into more urban and politicized contexts to take into account its diversity, it tries to go beyond the obsession of the energy transition.Second, our sociotechnical approach was centred on one specific and understudied actor, the local utility, whose role is largely underestimated in the emergence of new infrastructure regimes. Confronting a similar type of actor in three very different contexts seemed fruitful to delineate crucial though silent ongoing metamorphosis of local firms of urban services. Deciphering the elements of such a transformation is essential to analyse the evolution of urban energy systems and to reflect the political and social issues at stake in the various local contexts.

Last, by showing a manifold transformation of some local utilities, we have illustrated the fact that they have to be placed in a larger field of research than an area restricted to technical worlds constituted of pipes and afferent services. They become a decisive actor of the urban development, a quasi-structure of the urban fabric and not only a firm of infrastructure, whose evolutions are part of the energy systems' transformations.

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