Governing the smart city

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Governing the smart city: How Lyon Metropolis managed to steer a heterogeneous ensemble of public and private actors towards sustainable climate-energy policies

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Paper presented at the International Conference of Smart City at Herleen University, Netherlands, November 2018

Abstract

In 2012, Electricité de France (EDF) launched one of the biggest smart meter experiment in the Greater Lyon Metropolis. The innovation project constructed a consortium named Smart Electric Lyon (SEL). SEL was established as a pilot project in France to scale out new smart meter device in the city level. SEL hybrids the funding from national government, EDF and dozens of private enterprises that latterly acknowledged as 'smart city' for Lyon Metropolis. In the meantime, Lyon Metropolis is reshaping their institutional governance to catch up with smart city program promoted by its private partners. The metropolis itself have experienced its territory as fertile ground for private investment on smart city innovation project. As for SEL, Lyon Metropolis seems to harness its presence as part of the city campaign to leverage the new city branding of attractiveness as 'smart and sustainable'. Thus, such reconfiguration disclosed the opportunity to investigate unprecedented effect of smart city in different cities particularly the governance model. An in-depth interview with dozens of Lyon Metropolis actors and SEL initiators constituted as the mains sources of this work. The findings illustrate that Lyon govern a central role to steer private smart city program in favor of territorial attractiveness branding. It confesses the growing investment on smart city have driven the city to promote the label of "smart" and "sustainable" to congregate international benchmark indicators.

Keywords: Smart city, governance, city branding, smart, sustainable.

Introduction

This article did not address to quantitatively measure how smart city could contribute to sustainable city. "Does smart mean green?" is not at the stake of article's core problematic. The principal ideas were to analyze the heterogenous approach carries out by local government around the world in which the conceptual models of smart city are evolving (Anthopoulos, Janssen, & Weerakkody, 2016a)

It has been an interesting debate among the urban sociologist discipline that smart city is a challenging topic in urban studies. The 'intelligence of the city' is an ancient utopia that has taken on many faces over the ages, as historians offer us the perspective (Picon, 2015). In recent years, this utopia has been directly associated with the rise of "new information and communication technologies" (NICT) revolution, promoted notably by Cisco through *Urban connected development* program (Gabrys, 2014) and *Smarter cities – smarter planet* introduced by IBM in 2008 (Townsend, 2013). The "American" passport of these technologies largely explains the English language in which this last episode developed. Around the world, the question for intelligent city has settled under the banner of the smart city. The phenomenon has been very rapid, as the absence of these words in a critical dictionary of fashionable urban words published only a few years ago (Reigner, Brenac, & Hernandez, 2013). In many cities all over the world, the concept of smart is thus used everywhere embedded on global urban agenda without, more often than not, the nature of the suggested 'smart' word being deeply explained (Kaika, 2017).

In practice smart city era bears with the shift toward a new perspective of the cities densified, rewired and networked with the architecture of digital information systems (Offner, 2018). The omnipresence of interconnected digital devices such as smartphone, smart watch, tablets, being integrated to the macro system of the whole cities could produce a 'responsive and real time city' thanks to its big data considered as principal materials in smart city ideas (Batty, 2012; Kitchin, 2015) For example, the contemporary rapport between the city and its citizen are being defined through the influence of real-time data service such as geolocation, or an 'event near you' (Picon, 2015). The supply of information from apps and the rise of the alternative services from a platform provide the new form of governmentality role that troubling the established traditional publics services, that lately popular as 'uberization' of public action (Teboul, 2016) such as the case of *Waze* platform in Paris (Blok et al., 2018).

For many authors, the current digital transformation that pushed by the role of IT industry have deeply unveil the city and its ecosystem as digitally embedded. We might directly cite here how smart city since it first appearance in early 2000 is becoming more and more subject for critics from urban planning scholars such as industrial rhetoric (Hollands, 2015; Söderström, Paasche, & Klauser, 2014) or global marketing discourses (Joss, Sengers, Schraven, Caprotti, & Dayot, 2019) that came to penetrate city as virgin terrain for such interested group (Townsend, 2013). Thus, smart city in which the entry of global leader IT industry into the field of urban planning marks a new, inviting a polarize discussion among interdisciplinary fields of academics.

Despite the critical waves, pro and contra, smart city ideology has anchored firmly as new reference in the digital era that appear to surpass traditional doxa of urban planning (Cowley & Caprotti, 2019). As explained some authors, local government around the world have developed various approach in engaging smart city, notably as tools for a smarter government (Anthopoulos, 2017; Anthopoulos, Janssen, & Weerakkody, 2016b). Smart city ideas are upheld through different global agenda such as IBM smart city ranking (Albino, Berardi, & Dangelico, 2015), IBM smart city grants dedicated to train city officials around the world to develop smart city programs (Alizadeh, 2017) and through international urban organization such as the Un-habitat SDG's (Kaika, 2017) etc. Thus explained how the 'smart city mentality' are dispersed evenly around the world particularly among local stakeholders (Vanolo, 2014). The local municipalities have in its disposal various institutionalized timetable to legitimate its action on smart city agenda and thus, perhaps, investigating particular local smart city policy would provide a novelty in this field.

Now that this article has clarified the way it's intention to articulate the contextual understanding of the word 'smart city', it is necessary to present the fragmented approach of different discipline on smart city. As analyzed by numbers of authors, there existed no single definition of smart city among academic discipline (Gabrys, 2014). Suggesting smart city as urban phenomenon, it holds in fact the interest of many academic disciplines: sociology (urban), geography (urban), urban planning (more applied), economics (urban) or even political science which, for its part, proposes the object of "urban governance". It should be noted that a very developed academic tradition around the world concerning the subject of the urban phenomenon, claims an interdisciplinary approach combining the aforementioned disciplines and takes the name of "urban studies". So thus, to avoid the bias of the actual debate among researchers due to fragmented interpretation on smart city, this article proposed to contextualize its regard on smart city under the concern of urban governance studies.

Urban governance came up as urban studies topic since late 80's. The rise of urban entrepreneurialism saw a transformation in which the growing interest to engage private investment in city services that unfold neoliberal ideology on city management (Harvey, 1989). For some authors, such new form of urban governance related to the privatization were determinedly developed in urban policy during the Thatcherian era in Great Britain (Le Gales, 1995; Parkinson, 1989). Urban governance then described as lesser hierarchy of public actors vis à vis of its private counterparts, erecting the new terms of "heterarchical" relation between the two (Kooiman, 2003; Mayntz, 2003). Urban governance latitudes has now progressed toward a complex array of urban studies analysis such as public private partnership (Ysa, 2007), urban governance through strategic infrastructure project (Pinson, 2006) etc. Some authors demonstrated urban governance as instrument that strategically explain specific approach exercised by city actors to address urbanization issues, socio-environment and politico economics (McCann, 2017). Therefore, smart city should constitute contemporary topics faced by the local government. A preliminary research on smart city governance pointed out how smart city transcended technology issue to step on institutional transformation subject and political issues, interrogating in turn the governance model (Meijer & Bolívar, 2016). Bearing with the latest, this article should provide a critical thinking and novelty at the same time in which smart city of EDF's Smart electric Lyon program are subjected of the governance model of Smart city in a city level. The Greater Lyon Metropolis benefited the presence of the project to redefine its "smart and sustainable" city branding. Accordingly, the urban governance perspective should be at the interplay of such phenomena.

The historic State company on "Smart City"

To ignite our discussion, we intended to elaborate our conception about the engagement of historical actors, such as EDF toward Smart City. Most of the studies in Social Science have defended the idea of the role of IBM, Microsoft, Siemens and Cisco as the pioneer to advocate the advent and the global campaign of Smart City (Townsend, 2013: Picon, 2015, 2016: Söderstorm, 2014). In the first place, the arrival of Smart City is challenging the traditional way of how cities are fabricated. On Smart City, we are bearing with the shift toward a new perspective of the cities that is being densified and networked by the flow of information systems (Offner, 2018). For example, the contemporary rapport between the city and its citizen are being defined through the influence of real-time data service such as geolocation, or an event near you (Picon, 2015). The supply of information from apps and the rise of the alternative services from a platform provide the new form of governmentality role that troubling the established traditional publics services, that lately popular as uberization of public action (Teboul, 2015) such as Waze in Paris (Courmont, 2018).

From a specific perspective, we are noting the embeddedness of Smart City into the historical actors like urban utility services company are somehow escaping the attention of many researchers. In the case of EDF, Eiller (2013; 2015) and Boulanguer and Yannick (2017) argue how Smart City has attracted the mobilization of historical actors as a new promoter of Smart City (Ibid, 2013). These phenomena have fueled the current debate in which Smart City is sort of an auto-claim (Picon, 2015). Despite the global common understanding of a big company like IBM as the role model, the multiplication and heterogeneity of actors that turn

toward Smart City are all in search of their own form. The least certainty is that the topic of 'Smart City' is primarily at the core of discourses. Thus, it contributed to the growing fragmentation of Smart City's typology.

Figure: Comparison of traditional actors of cities and the embeddedness of Smart City

Figure: Identification on the typology of "Smart City" cities (Boulenguer and Yannick (2017)
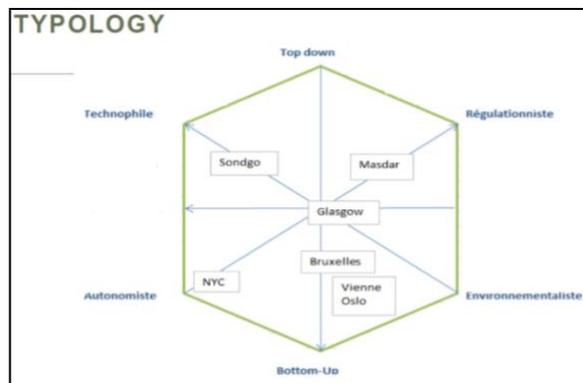
Despite a strong tendency of historical actors to engage in a Smart City program, Townsend (2013) argues on his hypothesis by pointing out the cities are always being the spot where the multiplication of Smart City projects is taking place. According to his interview with Collin Harrison, the guru and the founding father of IBM's Smarter Planet, for him, the cities across the world are the virgin terrain of the market that are not being exploited yet by most TIC Companies. Through IBM Smart City business plan, a 100 million dollar market potential was targeted. From this diagnosis, if the initial idea of IBM were to be stick with, then the Smart City program should be a bilateral relation between cities and IBM or another TIC company.

The acculturation of the Smart City notion by EDF could probably be considered as a phenomenon of riding a similar prospective market like the one IBM has constructed. The involvement of such actor like EDF towards the subject of the Smart City testifies that the Smart City will no longer be a simple relationship between the cities and the TIC enterprise like IBM, but we are expecting the new aspiration of historical actor. This phenomenon stark the actual critics that state the TIC Company as the only legitimate actors of the Smart Cities. On the contrary, the notion of Smart City has been spreading ubiquitously and is being embedded into various fields of activities (Eiller, 2015).

"Linky Smart Meter": The digital electricity network modernization!

Since 2004, EDF Group through its affiliate company on electricity distribution networks, Enedis, has begun their program to modernize the electricity meters. A more digital architecture of the new devices was chosen to replace the traditional one. The leading digital device constructors such as Atos Origin, Landis+Gyr, Itron, and Iskraemeco comprised the appointed consortium to develop the new smart meter for EDF that was later named "Linky". The technical approach of the new device was to promote the flow of information more rapidly, real time, and to collect individual data consumption without human intervention. On the general plan of Smart Grid development, the "intelligent decision support systems" was dedicated to pedagogically attract more awareness for the consumers to associate to a more flexible and dynamic electricity pricing (Sianaki et al., 2010). Such "by design" capacities might be well framed into the Big data category (Townsend, 2013; Kitchin, 2014).

The discussion on big data has gone beyond its simple definition of triple V: Volume, velocity, and variety (Boyd & Crawford, 2013). The Social and Human Science discipline have started to take a role in contextualizing big data, which provides some critical element and at the same time suggests for a comprehensive understanding on big data and its surrounding features. In the era of big data, data and information production are becoming more and more decentralized on the individual level (Einav and Levin, 2013). These phenomena opposed the traditional method of data collection in which a centralized State administration such as census bureau registry, survey, and inquiry were the main legitimate resources of data (Desrosières, 2008). The hybrid of the individual and the internet of things are also a means of data production (Brown, Chui, and Manyika, 2011). Every aspect of life and daily activities are now being numbered significantly, which gave rise to the term of "datafication" (Cukier & Schonberger, 2013), "statistical individual" (Bouk 2015), "self-quantified" society or "the society consumer of data". Self-quantified explain how people and their personal gadgets control, measure, and probably govern their daily life activities (Lupton 2013). To a certain extent, the Linky smart meter are deploying these fundamental principles.

EDF Group announces that within the horizon of 2030, the objective was to replace the traditional electricity meter to Linky. As part of the socialization and democratization steps, Lyon Metropolis was the first city to experiment the Linky with 270,000 devices installed in the household and in the tertiary building categories during the 2008 and 2009. Almost in the same year, European Commission through the "Directorate General of Energy" established "The Task Force for Smart Grid (TFSG)" to push the development of Smart Grid throughout its country members. We analyzed the TFSG as the main indicator of political institutionalization process of Smart Grid within EU policy agenda. The TFSG itself consisted of the representation from national board of energy, environment and renewable energy of EU members and the industrial actors on European market. The experts brought down the conclusion to promote Smart Grid as tools to integrate the renewable resources to the existing grids that still largely depended on fossil fuels. Smart Grid are highly rated as a solution of the current debate that renewable resources could not be integrated to the grid

due to its problem of being "intermittent" (Philibert, 2013). In addition, the experts also stated that Smart Grid could leverage the EU liberalized energy policy[1].

As for the French side, Linky is registered as the symbol of a concrete commitment of EDF Group to be parallel with the EU policy. On the national level, Linky obtained an advantage momentum as the French Ministry of Sustainable Development in accordance of La CRE (Regulation Commission of Electricity) stamped the label of national innovation on Linky as a vector to the renewable resources, and to satisfy the new requirement of European regulation on electricity market.
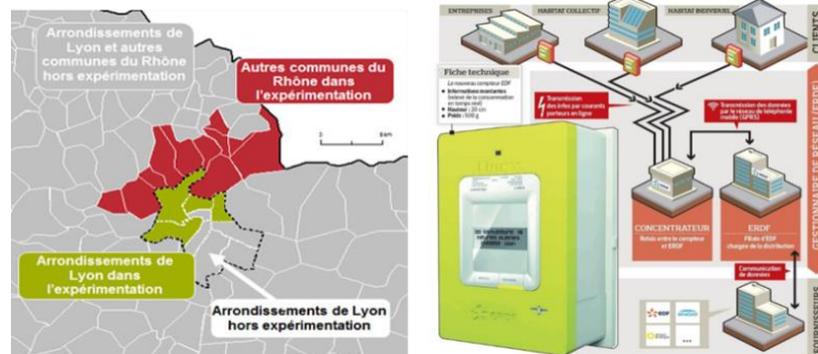

Figure: Lyon as the first metropolis to demonstrate Linky in 2008-2009 (l'Ademe, 2013)

Linky as the brick of Smart City: The role of Lyon Metropolis as proactive actor in climate-energy campaign

Smart Electric Lyon: simulation of new market as well as a « Smart City » project

In the early 2012, EDF launched Smart Electric Lyon (SEL) experiment project as the extension of EDF's efforts to assess the social, economy and political aspects of Linky before its mass installation. The project is focusing on a profound research and development of Linky devices. The SEL is the largest in France in terms of investment. The amount of 69 M€ was granted from EDF and the subvention of l'Ademe through the program of future investment (PIA). The project scopes 270,000 units of Linky installed in the city of Lyon as experiment materials.

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[1] *Interview with the Director of Directorate General of Energy of EU and the initiator of Task Force for Smart Grid.*

Table: Smart Grid projects in France (Think Smart Grid, 2012)

Démonstrateur	Ville	Date du lancement	Durée	Budget	Thématiques principales	Partenaires financières
Nice Grid	Nice	2011	4 ans	30 millions	• Conduite des réseaux • Intégration des EnR • Maitrise de la demande	• Ademe (AMI) et Commission Européenne (FP7)
Solenn	Lorient et Ploemeur	2014	3 ans	13 millions	• Maitrise de la demande • Sécurisation	• Ademe (AMI)
SoGrid	Région Toulousaine	2011	4 ans	27 millions	• Standardisation • Conduite des réseaux • Maitrise de la demande	• Ademe (AMI)
Smart Electric Lyon	**Métropole Lyon**	2012	4 ans	**69 millions**	• **Maitrise de la demande** • **Smart Home** • **Véhicule électrique**	• **Ademe (AMI)**
Poste Intelligent	Département Somme	2012	4 ans	32 millions	• Intégration des EnR • Conduite des réseaux • Cloud et Big data	• Ademe (AMI)
GreenLys	**Lyon et Grenoble**	2012	4 ans	43 millions	• **Conduite des réseaux** • **Intégration des EnR** • **Maitrise de la demande**	• Ademe (AMI)
Smart Grids Vendée	Vendée	2013	5 ans	27 millions	• Intégration des EnR • Conduite des réseaux	• Ademe (AMI)
BienVEnu	Ile de France	2015	3 ans	10 millions	• Véhicule électrique	• Ademe (AMI)
Moyenne		NA	4 ans	35 millions	• Conduite des réseaux • Maitrise de la demande • Intégration des EnR	

The SEL project was formalized by the creation of a consortium named after the project, the 'Consortium of Smart Electric Lyon'. Around twenty members of different actors from energy sector, home appliance producer, and home smart connected devices are invited to perform their programs or to test their latest products to connect to Linky. Our in-depth interview shows most of the consortium members are interested in experimenting how the individual behavior represented by the fine-grained data generated by Linky could produce the new insight into the further development of their products. For example, a smart box company tested to integrate the box with Linky. The product allows one stop interface control of daily energy consumption at home. It proposes to display the detailed data concerning the household appliances energy consumptions[2]. The device features a stimulating-awareness program for the family member in order to govern their habits by looking at maximizing the use of each appliance according to the needs and avoiding the peak hours.

This form of activities has been part of a vocal critic from many associations and scientific. Linky as Smart Grid does not necessarily bring a direct significant contribution except more on empowering people (Lepretre, 2015). Number of researchers also criticized the kind of Smart meter as a sort of TIC as the intermediary to governing at a distance—the new model of the citizen's empowerment that corresponds to what Foucault defined as "the conduct of conduct" (Attour, 2014; Klauser et al., 2014). At the same time the smart meter can become an agent of neoliberalism that mirrors the individual activities (Levenda et al., 2015).

The choice of Lyon is our main problematic issue in this part. In many occasions such as seminars and public dialogs, the instigators of SEL claimed Lyon Metropolis as the favorable ecosystems for SEL[3]. To contextualize the so-called "favorable ecosystem", our findings show the choice of Lyon was fundamentally relying on two aspects: technical infrastructure due to the presence of Linky and the political choice within the internal

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[2] *Interview with member of consortium SEL*

[3] *Interview with Director of SEL*

structure of EDF at the national level[4]. For the first aspect, Lyon was the first to experience the democratization and the territorialization of Smart Grid project in France. According to the concept of "niches" coined by Bulkley et al. (2016), the Linky devices could be constituted as the element of technical infrastructure niche that paves the way for such innovation and experiment to be conducted.

For the second aspect, we investigated the role of the "efficient agent" (Bourdieu, 1997) within the high-level hierarchy of EDF that strongly pointed out Lyon. The actor himself was an "Executive Director in charge of the Innovation, Strategy and Programming Department", and member of the "Executive Committee" of the EDF Group that indisputably represents the symbolic capitals of "*prise de position*" as a determinant factor of negotiation on the exercise of power relation. As Bourdieu (1983) explained, "*Prises de position" arise from the encounter between particular agents' dispositions (their habitus, shaped by their social trajectory) and their position in a field of positions which is defined by the distribution of a specific form of capital*'. We later deeply examined that the actor has a privilege relation with Lyon both with EDF Regional and Lyon Metropolis where he started his career. On the occasion of Smart Grid projects and eventually through SEL, he intended to prompt a Smart City project in Lyon on the energy sector[5]. He was convinced to promote SEL on a form of "Smart City" in order to make echo with the political orientation of Lyon Metropolis that envisioned the international attractiveness policy by positioning the city among the pioneers of Smart City network[6]. Therefore, presenting SEL as a Smart City would be considered a proxy line for both parties to collaborate and to govern the project within Lyon's territory[7]. As revealed by the director of SEL, his first mandate as director was to negotiate with the president of Lyon by proposing SEL and its Showroom as an attractive hi-tech site in Lyon.

At this stage, EDF seems to play an aggressive role not only as a pressing side (Cadiou, 2016) to render Lyon metropolis as an ideal ecosystem for their experimentation, but also to favor Lyon's international vision. From this point of view, we argue the label of "a favorable ecosystem" embedded to Lyon does not necessarily reflect the spatial context of Lyon as the most technically suitable for such Smart Grid project, especially SEL, but carrying the political discourses coming from the top level of EDF. The use of Smart City notion was solely a means as a leveraging element to align with the local politics, but it does not necessarily changed the content of the project by nature.

From Smart City project to Energetic transition tools

From the point of view of urban marxism, the cities are envisaged as reticular capitalism thanks to its role as a market pool and as an ecosystem that directly or indirectly contributed to create the supply and demand and the flow of production (Vanier, 2015). In the era of Smart City, numbers of critics have singled out the city as the victim of the new technology and information market in which the overflow of industrial interests are occurring (Deltour et al., 2016). The ideas of Smart City are then noted as an avatar of

[4] *Interview with the Top Management of EDF Regional Auvergen-Rhone Alpes and the Director of Smart Electric Lyon*

[5] *Interview with Top Management of EDF Regional – Lyon Metropolis*

[6] *Interview with the expert staff of Lyon Metropolis president*

[7] *Interview with the Director of Smart Electric Lyon.*

neoliberalism (Townsend, 2013; Söderström, 2014). In the extension of the hypothesis on the *new urban governance*, there is a confidence that the cities should play a vital role to orchestrate a new form of governance, to negotiate and to collaborate with any level of actors (Le Gales, 1995; Kooiman, 1998; Le gales and Lorrain, 2003; Gaudin, 2002; Le Galez and Borraz, 2010). All of the authors have provided an insightful reading in which the cities, especially the metropolis that are the emerging actors, have even surpassed the central power of the state (Chevallier, 2003). Specifically, through the debates on urban sustainable development issue, numbers of scholars have proposed a paradigm concerning the term of sustainable cities or cities that contribute to 'sustainable cities' (Satterthwaite, 1997). The discussion arose following the hypothesis of certain authors such as Craig Johnson, Noah Toly, and Heike Schroeder (2015) that the cities are not the object of the "sustainable cities" campaign but more likely the pivotal actors of such campaign through its political bargaining powers. Hence, in a more specific topic, the authors outline a stimulating question to rethink the role of cities as lobbying parties in global climate-energy governance.

Regarding the problematic issue above, we underlined the awareness of many scholars, in which they question whether the arrival of smart city would become a big challenge for the cities notably in climate-energy governance. Herewith, some simple questions are worth to be preserved, to what extent the climate-energy are going to propel on Smart Cities? Additionally, to echo Robert Dahl (2005) eventually 'who governs?'.

Through the case of SEL, we figured out a phenomenon of overlapping subjects in which SEL that was initially presented as a Smart City was forced to associate with the climate-energy theme[8]. It is not by chance at all that it is turned towards climate-energy since the governance of Lyon Metropolis Smart City program are attached to the division of expert staff of Lyon metropolis President: "Smart innovation and Urban Sustainable Development". We identified the form of contemporary agency in which Smart City agenda are entrusted to the sustainable issues. It gives certain political weight of the governance of Lyon's Smart City ecosystems, especially when it comes to the configuration of multi-level stakeholders that defend their own interests and values (see. Bevir 2010; Faure 2005, 2017 on urban governance).

Lyon is among the first cities in France to launch a smart city program on its agenda setting and become the national reference[9]. Thus, the political agenda of Lyon on the governance model of Smart City was also revealed. Even though SEL has generated a large portion of support from all level of actors, European, national government, as well as infra-national actor such as la CRE, we argue that the metropolitan level clutches its proper political standards. Lyon situated itself with strong commitment to environmental concerns. In Lyon, the elaboration of climate and energy has been formed in several public action such as *Plan Climat Energie territorial* (PCET) (Rocher, 2016).

Within two years of the appearance of SEL, its instigator needed to change certain aspects on the activities of the project in order to aspire the climate-energy plan of Lyon. During 2013-2014 the SEL was then declared as Smart City as well as a part of an energetic transition instrument development. Bearing with this transformation, the instigator of SEL

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[8] *Interview with the expert staff of Lyon Metropolis president*

[9] *See the rapport Luc Belot for the Prime Ministry «De la smart city au territoire d'intelligence(s) - l'avenir de la smart city » (2017) and three consecutives « Prix Le monde de Smart City » since 2015 to 2018.*

propose a fundamental discourse by affirming Smart Meter Linky as the basic ingredient to for climate-energy plan. Thus, the company insisted the interplay of so-called big data generated by Linky which could largely contributes to the energetic transition by providing the control of energy demand.

Figure: The benefits of Data-Linky as energetic transition tools for local government (l'Ademe, 2013)

In some discourses delivered by the SEL instigators, big data from Linky could perform as the new model of climate-energy quantification by replacing the old model. We confess under the radar of such self-declaration, most of the stakeholders and eventually the scholars are on a big debate. As explained by Garnier and Lecler (2015), the tools (Linky) are the *designed by product* that could only induce certain changes of consumerism performances without sharing other variety of significance on energy sobriety. After all, Linky were originally meant to be the supporting tools to consumers awareness. Hence, how Linky could quantitatively contributed to reduce energy consumption or to be a sustainable one needed to be assessed carefully in the future research. It seems too premature to cage the power of big data since very few scientific discussions have approved on how it comes to play.

The construction of climate-energy quantification scenario is always the fruit of negotiation between multi-dimensional stakeholders: Scientifics, politics, international organizations, economics actors, etc. (Dalmedico, 2007). From Rio convention to Kyoto Protocol, the investment on mathematics models is the most common tools across the globe in which the tools are expected to represent the hybridization between politics and Scientific's dynamics. It is important to note the fact that the case of SEL led us acknowledge the introduction of big data by EDF as tools to climate energy quantification. How it came to join the dynamics on the 'negotiation table' as Dalmedico explained, the big data could have triggered a new debate.

In order to frame big data as a new form of climate-energy quantification instrument, we propose to overlay the approach of "commensuration" analysis (Espeland and Stevens, 1998). Commensuration was introduced as a cultural technic that anticipates the transformation of different qualities into a common metric. In one part, commensuration identifies the ensemble of elements associated to the dynamism of power, value and interest, sometimes cognitive, or even political symbols that prefigure the tools of quantifying processes toward the objects. In other parts, it reveals a critic of the possible divergence

perspectives between the parties. For this reason, how EDF came to promote and establish big data as common tools to energy-climate Lyon Metropolis level does not appear yet as an object in the scientific discussion roadmap. We argue that, it is part of a new belief in big data programs, as if big data has achieved great economic success for GAFAM actors (Google, Amazon, Facebook, Apple, and Microsoft) (Faghmous & Kumar, 2014). But, will the same tools be able to give the same success with regard to the subject of energy and climate? Thus we see the multifaceted approach of big data that being mobilized by different actors to address the different topics (Horban, 2016).

The transformation of the form of SEL to embed energetic transition has once again displayed the political weight of a city as the local actor among the multilevel governance of climate-energy. We also figured out that EDF was forced to approach the local political supports and change some content of the project in order to apply the financial grant of PIA from l'Ademe. We assessed through our interview, the support of the local authorities of Lyon metropolis president was essential for l'Ademe's to validate the feasibility of the project as well as to formalize the grant[10]. Thus, an addition element that confirms the proliferation influences of city's environmental politics has an extensive impact to encourage economic actors to grasp the environmental issues on their activities.

In terms of Lyon as experiment site, for now the city still played an important role as an enabler of industrial innovation, hence to contribute to a new market development under the banner of the Smart City (Vilajosana et,al. 2013) that represents a measure for the market potential available to and from the city itself (Caragliu, 2008). The SEL invites us to observe the typology of Smart City model constructed by the historical actor, EDF. We need to underline, however, that EDF is initially a non-Smart City player that became a Smart City promotor. The notion of Smart City has produced the unprecedented effects on new economic transformation of various actors (Boulenguer and Yannick, 2017). This event principally opposes the early model of Smart City in which the primary advocates such as IBM, Microsoft, and Cisco teamed up directly with the municipality to create the Smart City (Townsend, 2013). At this stage, despite the consideration of climate-energy on Smart City, we still encounter the fact that Smart City gave a new dialect to the city-metropolitan that proactively contribute to the needs of industrial development.

Conclusion

As the result of our investigation through the Smart City program promoted by EDF, we would like to invite the readers to reposition the city at the center of the stage in promoting climate-energy policy. The example of SEL finally illuminates a determinant role of cities in the governance of climate-energy eventually under the penetration of Smart City.

Our analysis also demonstrates that climate-energy politics that are being embedded on Smart Grid are not merely a matter of international negotiation such as European Commission through TFSG, national climate-energy strategy, or even the negotiation of the industrial actors, but cities are also taking an important place to mobilize global issue. However, we noted that the governance on the local level was not conducted on a direct and clear structure of governance, but the fruit of power relations instead. The hybridization of

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[10] *Interview with l'Ademe, person in charge of Smart Grid developmment.*

Smart City and the sustainable development in Lyon allow for the creation of new domains of authority that are important as the instruments for Lyon to govern both Smart City and their Climate-energy policies.

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