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Special Issue: Sustaining small and medium-size towns:  
policies and prospects

Teresa de Noronha and Eric Vaz  
Guest Editors



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## Editorial

To set up a goal such as the sustainability of small and medium-size towns (SMTs), these days, seems unlikely. While trends point to concentration around large and mega towns, much has been studied about their capacity to lower impacts upon the environment, many small and medium-size towns still nourish and foster - in the confinement of a romanticized well-being - a great part of the world population. Before our technocentric decades, the survival of such structures was questionable, assuring the agglomeration economies and correspondent energy savings of industry and services. However, the regional dimensions of spatial and temporal interactions are changing. Dispersion, will likely not have the same costs in future. Smarter cities, and their inclusion of health, education, retail, and transportation, suggest that geographical distances will become irrelevant. This is further enhanced by the human pursue of other values, such as spirituality, nature, and travel. Of course, such determinants of future humans behavior are uncertain, and any assumption about its forthcoming is risky. Nonetheless, there is a trend to look at towns, small or medium-sized, as the only existing instruments to sustainably keep nourishing our whole territories with activities and knowledge while preparing humankind for a post-capitalism future.

The scientific discussion on how to sustain SMTs is tricky, and there is no way to be either definitive or clear about the adequate strategies for regional growth. Or, in other terms, how to be sure that those high-risk investments will not stop their returns sooner than expected, the margins for profitable activities being so narrow. Leveraging the agri-food industry and tourism, in search of more skills related to information and communication technologies (ICTs), there is not much that can be done in such towns for now. But the future could reserve some good surprises if incremental local knowledge would be incorporated in the adequacy of tools for policymakers.

This leads to this Special Issue at hand entitled: Sustaining Small and Medium-size Towns: Policies and Prospects. By enabling this discussion Public Policy Portuguese Journal broadens the context of this paradigm. This issue unveils discussion about the future of small and medium sized towns (SMTs) in times where mainstream debates foster the role of large urban metropolis. It is certain that the theme concerns many decision makers who are struggling for financial support and private investment to upgrade their communities, in the hope of engaging their small towns as sustainable choices within the growing urban futures. We hope to be able to proceed further the way we are starting now and are very thankful to the editors of PPPJ and the authors of this SI for this first step. Hopefully, more will follow to clarify, discuss and build up the necessary policies to open better prospect for the SMTs.

The contemporary theoretical framing suggests the need for a comprehensive and systemic approach to innovation in such cases based on technological development paths and the networking systems for which the strategic choices of companies and the spatial impacts of their network organizations count. Not less important is the regional strategic learning depending so much on the national governance system.

The different papers presented in this special issue are important contributions to tackle the above-mentioned topics directly. The first chapter, entitled "The challenges of smart cities: Social innovation and the role of public authorities in a new conception of the city", by Manuela Mora-Ruiz uses the example of Spain to frame the discussion of how regulation enhances, or not, the smartness of cities.

The next chapter, "Supporting policy development in the Aveiro region by modeling urban sustainability" is a very good example of how smart regions or towns should analyze their restrictions and capacities. In this case, the authors, Tania Esteves, Eric Vaz and Fatima Alves, report on a case study that tackles Ria de Aveiro as a fragile ecosystem surrounded by major metropolitan cores. Key variables influence different reactions to aid decision-making processes, and Geographic Information Systems helps to test different local policy scenarios into the complexity of spatial decision support

systems at the regional level. The third chapter by Teresa de Noronha and Eric Vaz, “Evolution of the Agri-food business landscape of Portugal at a local level shows a descriptive, macro-economic view over the agri-food situation in Portugal. Through regional desegregation suggests those areas across the country that seem to offer more propensity to agri-food production and growth, still accepting the argument that proximity and industrial clustering matter. Local clustering and networking should provide insights into the local capacity to bet on the sector to promote industry and related sectors such as biotechnology or food tourism. Just the same topic, but from a very specific perspective, is developed in the next chapter by André Samora-Arvela, Eric Vaz, Jorge Ferreira and Thomas Panagopoulos, “Turismo e património gastronómico: A valorização turística de um cabaz de doçaria algarvia”. The authors evaluate the degree of preference and willingness to pay of tourists visiting the Algarve region to taste gastronomic identity when their main motivation is beach recreation. The final chapter of this special issue is entitled “Public policies in Europe’s polarised political culture: the radical turn of Portugal’s left-wing bloc party in 2011” by Fatima Lampreia Carvalho. This last article aims to highly whether populist political forces in Europe can assume power or challenge liberal democracy. This may seem a discussion out of context when we intend to better understand the forces pushing SMTs forwards. However, the governance system and all it entails cannot be neglect when we know that the rural world and the small towns are becoming major pieces of the populist movement due to disadvantage, inequality, unemployment, and poverty.

Évora, December, 2017

*Teresa de Noronha*

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# The challenges of smart cities: Social innovation and the role of public authorities in a new conception of the city. The example of Spain

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## ABSTRACT

This paper examines the concept of the Smart City as a new system of territorial organization that aims to build a more cohesive society and a sustainable model of economic growth. Smart Cities play a fundamental role in the organization of physical space and land use, and attempt to balance the needs of economic growth, energy management and transport, at the same time as complying with environmental legislation. To do so, Smart Cities need to develop new administrative competences under a new conception of the relationship between citizens and public authorities, but within the framework of territorial intelligence. This paper explores key aspects of the Smart City, taking into consideration the European framework for Smart Cities, and Spanish legislation governing the competences and functions of the local authorities. It is suggested that Smart Cities can be considered a starting point for designing a new kind of urban living experience which provides different mechanisms for collective interest to be expressed and recognized.

**Keywords:** Cities, territorial intelligence, local government, public-private partnership, sustainable development, self-regulation.

**JEL classification:** K, K3

## 1. INTRODUCTION: THE PHYSICAL AND SOCIAL IMPORTANCE OF THE CITY IN TERMS OF CURRENT MODELS OF ECONOMIC GROWTH

Cities play a fundamental role in modern societies, not only in terms of their physical lay-out, but also in terms of their economic and social organization. It is generally recognized that cities are increasing in importance, as populations increase and as more people seek to live in cities. It is estimated that around 70% of the world's population will live in cities by 2050, entailing a range of problems concerning the organization of cities and territorial management<sup>1</sup>. These problems are exacerbated if we bear in mind that there are many different kinds of urban communities, from the so-called megacities (e.g., Mexico), through large cities (such as Barcelona and Amsterdam), to very little villages (Enerlis, Ernst and Young *et al*, 2012).

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<sup>1</sup> See DIRECTORATE-GENERAL FOR INTERNAL POLICIES, *Mapping Smart Cities in the EU*, 2014, accessible at [http://www.europarl.europa.eu/RegData/etudes/etudes/join/2014/507480/IPOL-ITRE\\_ET\(2014\)507480\\_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/etudes/join/2014/507480/IPOL-ITRE_ET(2014)507480_EN.pdf).

Various authors note the rise of what can be termed the “global city” (Sassen, 2002<sup>2</sup>), and focus in particular on the opportunity to create social networks (Trullén, 2002<sup>3</sup>), and the transformative role of the state, but all agree that there is a need to look at specific solutions for specific territories, taking into consideration their physical and social conditions, their size and their particular management challenges.

In this respect, Sassen (2002) says that “the global experience cannot be applied to everything and is insufficient in the face of challenges requiring a local perspective”. As a consequence, global processes need to take account of local perspectives, and the city could provide a territorial dimension for developing new conditions of living and new rights for citizen. This is the main focus of this paper, whether Smart Cities can be regarded as a holistic solution to the interrelated territorial, economic and social problems of urban living. Further, I evaluate the suitability of the Smart conception of the city to Mediterranean countries, taking into consideration their political and territorial differences, in particular the case of Spain, with its particular territorial organization into autonomous regions and municipalities. One of the key findings from this analysis is the suggestion that the implementation of the Smart City should be required to meet minimum conditions in order to guarantee a standard level of development and so avoid new causes of territorial inequality.

Urban zones are key to implementing the sustainable development objectives of the European Union Treaty as indicated by the Commission Communication of 11 January 2006 on *the thematic strategy on the urban environment* (COM(2005) 718 final) and the most recent Commission Communication of 18 July 2014, to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, on *The urban dimension of EU policies — Key features of an EU urban agenda* (COM(2014) 490 final). Therefore, there is a European legal framework, which needs instruments for its implementation, both from a legal and a social point of view.

As mentioned above, this paper aims to show how the new concept of the Smart City is able to offer a meeting point for legal requirements and social needs in which urban zones can develop (González-Gómez, 2017). It focuses on the European framework for Smart Cities and its engagement with various urban issues, and gives special consideration, in the last part of the paper, to the Spanish context, in particular the competences and functions of local governments in relation to the Spanish legal system. It will also examine local experiences of the Smart City concept, and evaluate the social innovations, which the concept offers urban territories.

## **2. BACKGROUND: THE CONCEPT OF TERRITORIAL INTELLIGENCE AS A FRAMEWORK FOR THE DEVELOPMENT OF SMART CITIES**

The theoretical foundations of the Smart City, on which rests its aspirations as an innovative solution for the development of urban societies, can be traced to the concept of Territorial Intelligence (Girardort, 2010), which emphasizes collective deployment of natural resources to combat poverty and social exclusion at the local level. From this perspective, knowledge is less a global concept than a local instrument enabling territories to develop their own public policies by forming networks with other territories. Smart Cities, with their technological solutions to urban problems, represent a compatible and sustainable development of this concept.

The idea of Territorial Intelligence is, therefore, an alternative to the current model of economic growth, once it is clear that the local territories bear the social and environmental cost of this model (Girardort, 2010; from a different perspective, Amin and Thrift, 2002<sup>4</sup>). Territorial Intelligence places

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<sup>2</sup> This Author defines the “global city” as “a border zone where the old spatialities and temporalities of the national and the new ones of the global digital age get engaged” (p.39).

<sup>3</sup> The author focuses on the importance of connecting the fields of geography and economics with other social disciplines, in order to rethink the territorial organization and new government formulas (pp.29-32).

<sup>4</sup> These Authors focus on the importance of the local economy linked to the local administrative organization.

sustainability as the cornerstone of this alternative model. The approach demands that not only legal requirements be fulfilled, but also that “the ethic of sustainability” (Girardot, 2010), is respected, prompting new relationships between public and private actors in the governance of local territories, whilst recognizing the proximity of local administration to local citizens and hence its greater capacity to meet their needs (Flor Moreno, 2013<sup>5</sup>).

Various authors point out the need for a socio-ecological transition in order to implement the principle of sustainable development (Carragni, 2002) and to rethink the roles of private and public actors to reach common objectives in the framework of the so-called governance model (Girardot, 2010<sup>6</sup>).

In this context, Smart Cities feature in public policies as an alternative solution bridging globalization and local needs, and offering an alternative model of social and ecological growth based on collective societal action. For many commentators, this social perspective is one of the most significant and innovative aspects of Smart City as it requires a multidisciplinary research approach to implement and offers a timely opportunity to rethink the legal mechanisms for achieving this collective action and governance.

On the other hand, citizens may need to play different roles in view of the shared responsibility in solving collective issues such as social exclusion and environmental problems. In this respect, “smart” solutions could offer better education (Enerlis, Ernst and Young *et al*, 2012), enhanced mobility solutions and environmental propositions for local territories, and could represent a chance to change society. The challenge here is identifying the basic features of a Smart City to achieve the socio-ecological transition as required by the Territorial Intelligence approach.

There are various strategic elements that characterize a Smart City (Miedes/Sánchez and Moreno, 2014<sup>7</sup>): a) first, the urban space as the physical base of the Smart City; b) second, a system of infrastructure connecting the territories; c) a complex of networks and intelligent platforms connecting the Smart City directly to the use of the Information and Communication Technologies (ICT) (Trullén, 2002; Noguera Tur, 2013); d) finally, a citizenship willing to participate in the decision making process.

Ideally, all these elements should be developed to the same level. Smart Cities can become a model of social and territorial organization if territories are genuinely valued<sup>8</sup> and there is real citizen participation in public policies. Such collective responsibility can provide alternative governance at local level (VV.AA, 2002<sup>9</sup>) and forge a new relationship between public and private actors. To do so, Smart Cities will require new legal structures in which social innovation can be enacted (Alonso Ibañez, 2012<sup>10</sup>). Without this, the concept of the Smart City will be used by interest groups without solving any of the aforementioned problems.

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<sup>5</sup> The author argues for a need for more flexible and closer public management, depending on the territories in question. The approach is compatible with the concept and method of territorial intelligence (p. 257).

<sup>6</sup> This author proposes a model of collaboration between private and public actors to promote this socio-ecological transition (p. 26).

<sup>7</sup> These authors consider that, whilst Smart Cities might present a ‘smart’ appearance in terms of “smart grids, smart mobility, smart water, smart buildings and smart public services”, if political and business interests are over-represented such cities can only achieve a partial approach to the socio-ecological transition.

<sup>8</sup> The author underlines the importance of reviewing current territorial organization, in order to identify territorial dynamics, the roles of the cities and their organization, taking into account the social, territorial and political aspects.

<sup>9</sup> In this respect, some author argues for “endogenous development strategies that the territory assumes”.

<sup>10</sup> The author emphasises the need to change the prevalent model of urban growth to face the challenges of sustainability and climate change, and notes the importance of regulatory instruments for a cooperative model between administrations.

### 3. SMART CITIES AND EUROPEAN LAW

In the European Union, the concept of Smart Cities is a key strategy. It readily feeds into the Horizon2020 objectives, particularly the environmental goals and the sustainable development principle, and it fits well with principles of cooperation and participation, as there are clear social implications from Smart Cities in the framework of the Territorial Intelligence, as mentioned above.

Collective problems, such as the lack of natural resources, and the issues of renewable energy and energy efficiency, need collective solutions. This is the idea of documents such as *The urban dimension of EU policies — Key features of an EU urban agenda* (COM (2014) 490 final), whose starting point is the large populations living in cities right now and the lack of social cohesion within the urban zones.

In this respect, the point is how to understand a Smart City, and which features characterize this concept. It is impossible to give a very narrow definition of a Smart City, as the concept includes elements that can be applied differently according to the local situation of each city. Indeed, many authors agree that there is not just one Smart City, but as many Smart Cities as the number of “smart conditions” implemented, each offering different possibilities of economic and social growth.

Nevertheless, if sustainable development is the chief framework within which these Cities should be considered, as part of the process of socio-ecological transition, it is clear that some minimum degree of environmental requirements should be taken into consideration in developing a Smart City. For this reason, the chief examples of Smart Cities relate to innovations in transport aimed at improving energy efficiency and/or using renewable energy sources (Irastorza, 2017).

The notion of the Smart City is very wide and includes various, but not necessarily all, of the aspects below, such that there are differing degrees to which a city can engage with the smart concept:

- a) Governance: Smart Cities aim to enhance transparency through the common use of information and communication technologies (ICTs). Key examples include *open data* proceedings, access to public information and the exchange of information between citizens. Such use of ICTs envisages a more dynamic and open government at local level and a shift from traditional hierarchical structures to more horizontal systems of interaction with local authorities.
- b) Population (Smart people and Smart living): This area embraces several ideas, chief amongst which is the expectation of increased citizen participation as a result of the greater availability of information through the use of ICTs. At the same time, it is recognized that meaningful participation requires a higher level of cultural education, which itself is achievable through enhanced access to knowledge, e-skills, education and training. Ultimately, it is hoped that a more connected, smarter population will lead to a more cohesive society<sup>11</sup>. In this respect, as mentioned above, the Smart City concept can offer an innovative solution to social needs.
- c) The economy: The principal goal of this area is to establish a sustainable economy through the incorporation of e-business solutions. In terms of the economy, Smart Cities aim for a balance between economic growth and the needs of society.
- d) Transport: this is one of the signal features of the Smart City (Herrero Pombo, 2016<sup>12</sup>) and concerns improving the efficiency and reducing the costs, both economic and environmental,

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<sup>11</sup> For instance, see *Amsterdam Innovation Motor*, that has been “set up to help preserve and strengthen the Amsterdam Metropolitan area’s authoritative position in the knowledge-based economy”, <http://www.technopolicy.net/index.php/about-us/-3-general-information/41-institutional>, visited 2 May 2, 2017.

<sup>12</sup> The author describes sustainable transport as “set of processes and actions directed at conveying people and goods within a territory for the purpose of accessing activities and services, performed at reasonable economic cost and with minimal negative impact on the environment and quality of life of the people involved.” It is a constant element in social transformation (pp. 96, 106).

of the transport network<sup>13</sup>, by means of integrated transport and logistic systems. From the legal perspective, a smart transport policy implies substantial legislative considerations, from planning to alternative mechanisms and the so-called command and control instruments.

- e) Sustainability: another chief characteristic of the Smart City is the adoption of environmental goals, such as the use of renewable energies, greater energy efficiency and reduction in air pollution. Smart solutions can clearly contribute to protecting the environment, and can be developed at the local level as policies of the municipal authorities.

With these aspects in mind, the European Union takes a holistic approach to the concept of the Smart City, focusing on what it denominates a “three building blocks” approach, as follows: The first block is the generalized use of ICT, which reaches into all the above aspects of the Smart City concept. In this perspective, the city is viewed as one enormous digital platform that can offer numerous services to citizens from the so-called Smart cards to access certain public services to platforms providing information about the environment or traffic updates. Nevertheless, for many commentators, one of the core values of the Smart City concept is that ICT should be used in a fair and limited way. ICT is not neutral and can be dominated by certain groups, social classes or lobbies. Besides that, given that the implantation of ICT is directly connected to investment, it can exacerbate inequalities between rural and urban areas within a given territory, becoming just another neoliberal response to a problem rather than the kind of genuine social innovation which is essential for the development of territorial intelligence (González-Gómez, 2017).

Secondly, one of the conditions of Smart Cities is the involvement of multi-stakeholders and private-public partnerships as innovators of social organization. This includes the creation of spaces or forums in which public and private can meet to debate, from their respective positions and interests, collective solutions to problems. A Smart City can achieve territorial intelligence only if there is a balance between public and private actors, so that both total privatization and exclusively public ownership is impossible<sup>14</sup>. To this end, there needs to be the potential for self-regulation as a legal mechanism to enable direct participation across society.

The chief obstacle to achieving this objective is the identification of the multi-stakeholders, that is, the groups strong enough to take part in the decision-making process. In particular, it is important those involved are representative and minorities are not excluded. In any case, once the stakeholders are identified (both, public and private actors) they should rethink their roles in a City where ICT makes available new public services to solve new social needs. For many, the Smart City offers an opportunity to rethink governance formulas to make them more representative and open.

Finally, the sustainable development framework should be considered not only as the starting point, but also the end point of a Smart City solution. The implementation of appropriate regulations and public policies for sustainable transport vis-a-vis security and efficiency, and the notion of a smart environment through the use of renewable energy sources and energy efficiency are the cornerstones of the Smart City from the perspective of territorial intelligence.

The idea of Smart City can be regarded as a response to the problem of the growing population, as an alternative way to organize urban space (Rivero Ortega and Merino Estrada, 2016), and a means to solving collective problems and to serving collective interests. Nevertheless, it is not a simple solution due to the multiple aspects, which constitute a Smart City, and, hence, the different Smart Cities that are possible<sup>15</sup>. In terms of innovation, the Smart City should remain consistent with socio-ecological transition such that prospective models are constrained by the need for environmental

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<sup>13</sup> There are many examples of smart transport solutions in Europe using ICT, such as “intelligent traffic systems”, car-sharing platforms and so on, c.f. *Mapping Smart Cities in the UE*: pp. 44ff.

<sup>14</sup> See *Mapping Smart Cities in the UE*: p.9.

<sup>15</sup> See *Mapping Smart Cities in the UE*: “the implementation of the Smart City concept, therefore, follows very varied paths, depending on each city’s specific policies objectives, funding and scope...” p. 21 *in fine*.

friendly growth, ensuring the availability of natural resources for future generations and building an inclusive society.

Not to do so is to run the risk of building inequality into the Smart City approach, with only favored territories being provided with the opportunity to achieve a given level of development. This would violate the participation principle and the ethic of sustainable development, and should be rejected as antithetical to the principles of the Smart City approach.

Nevertheless, the European Union has not detailed a blueprint of the Smart City, but instead provides minimum standards for cities to be classified thus. In this regard, the European legal framework is a useful tool for recognizing the importance of the Smart City and its potential for to social innovation and the creation of a more cohesive society, but in itself the framework is insufficiently detailed to use as a roadmap for the development of a Smart City. For this, it is necessary to examine the relevant national regulations. In this respect, it should be borne in mind that the Smart City is a social-legal concept within multi-level governance, and it is thus mandatory to examine national and local initiatives and legal solutions, once the European framework has been considered. This is the aim of the following section, with regard to the Spanish context.

#### **4. THE CURRENT LEGAL FRAMEWORK IN SPAIN AND SOME PARTIAL EXPERIENCES: IS THE SPANISH MODEL FLEXIBLE ENOUGH FOR SMART CITIES?**

##### **4.1. General considerations about the Spanish legal system and Smart Cities**

Having presented the underlying principles of the Smart City, and keeping in mind that, at a European level, rather than narrowly define the concept, it is understood more flexibly in terms of clusters of features, we can now turn our attention to the situation in Spain, as an example of a Mediterranean country, and consider land use and the model of economic growth in this country.

First, it can be noted that the Spanish legal system has strengthened the principle of sustainable development as a cornerstone of various policies concerning the Smart City with regard to the aspects mentioned above, specifically the environment, transport, renewable sources of energy and so on. In this respect, sustainable development is considered a principle underlying all public policies for urban areas, and is recognized as such by the Estate Law: The Law 2/2011 for Economic Sustainability<sup>16</sup> aims to establish the legal framework for the use of renewable sources of energy, energy efficiency and sustainable transport by the use of certain regulatory instruments<sup>17</sup> and by imposing certain obligations on public administration, as the competent body, to adopt and implement public policies regarding these issues under the umbrella of the cooperation principle and the sustainable development principle, according to article 2 of the Law<sup>18</sup>.

In like manner, the Law on land and urban restoration, 30 October 2015<sup>19</sup>, provides a principle of sustainable development from a territorial and urban perspective, which includes some provisions for transport and public participation in urban planning (Herrero Pombo, 2016; Alonso Ibáñez, 2016).

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<sup>16</sup> Law 2/2011, for Economic Sustainability, 4 March, *BOE* number 55, 5 March (accessible at <https://www.boe.es/buscar/act.php?id=BOE-A-2011-4117>)

<sup>17</sup> See articles 99, 100, 101 and 102 of the Law on Economic Sustainability.

<sup>18</sup> Article 2 states: "For the purposes of this Law, a sustainable economy is understood as a pattern of growth that reconciles economic, social and environmental development in a productive and competitive economy that favors quality employment, equal opportunities and social cohesion, And that guarantees environmental respect and rational use of natural resources, so as to meet the needs of present generations without compromising the possibilities of future generations to meet their own needs." Likewise, regarding energy policy, article 77.1 states: "Energy policy will be aimed at ensuring security of supply, economic efficiency and environmental sustainability. In particular, the model of consumption and generation and distribution of energy must be compatible with community regulations and objectives and with international efforts in the battle against climate change."

<sup>19</sup> Real Decreto-Legislativo 7/2015, 30 October, approving the Consolidated Text of the Law for Soil and Urban Rehabilitation (see [https://www.boe.es/diario\\_boe/txt.php?id=BOE-A-2015-11723](https://www.boe.es/diario_boe/txt.php?id=BOE-A-2015-11723)).

Together, these two laws, as indicated above, represent the legal starting point for Smart Cities in Spain. The laws overtly recognize the concept of the Smart City as a model for economic growth, and they specify the legal mechanisms for achieving the ecological-transition required for the implementation of a Smart City. These mechanisms, especially those relating to the decision-making process and urban planning, focus on a more cooperative structure to develop the policies described above through increased citizen participation, different forms of administration and greater transparency in the decision-making process. In addition, the laws make provision for different levels of enforcement with respect to urban planning, depending on the goals of the specific plan, so that it is possible to distinguish between imperative planning and indicative planning with regard to energy efficiency and renewable energy<sup>20</sup>.

However, these laws come into conflict with the existing political structure of towns and the system of competences provided by Law 7/1985, regulating the legal bases of local regimes<sup>21</sup>. From this perspective, although it is clearly established that the local level of public administration has the autonomy to serve its own interests, this autonomy should be exercised within the legal system created by the State and the Regions or Autonomous Communities. This could be disadvantageous for municipalities aiming to implement the holistic and inclusive Smart City of the kind proposed in this paper, as national and European law have yet to offer a finished concept and model of the Smart City, and this represents an opportunity for municipalities to develop their own territorial intelligence. In fact, several researchers focus on the idea of multilevel governance (Arugué/Gomá/Subirats, 2017<sup>22</sup>).

In this respect, it can be noted that there is no reference to any of the features or items related to Smart Cities in Law 7/1985, and we can only find provisions for a few aspects of this concept, such as the competences relating to transport within municipalities (Herrero Pombo, 2016) and those relating to the urban environment: with respect to the former, Article 25.1.d) recognizes “road infrastructure and signage”, as a municipal competence, and Article 25.1.g) likewise recognizes “traffic, car parking and private transport in addition to public urban transport”. In effect, municipalities could design a Smart transport policy by using these competences, and equally they could increase the number of Smart elements and implement a wider concept of the Smart City if they added the competence relating to the urban environment, which is recognized by Article 25.1.b), albeit within a very narrow scope, as the urban environment includes (according to said Article) gardens and parks, urban solid waste and measures to reduce noise pollution, light pollution and air pollution.

These competences were not devised with Smart Cities in mind, as it is a new concept in the social sciences framework, but they are flexible enough to let municipalities develop policies involving smart features that go some way towards a Smart City. Additionally, municipalities have authority over urban planning (Article 25.1.a) Law 7/1985), which is key to being able to “rebuild” the city along the sustainable lines recommended in this paper.

On the other hand, Article 26 of the Law 7/1985 grants municipalities some public services according to the size of the population; those exceeding 50,000 people are responsible for maintaining public transport and protecting the urban environment. These obligations offer an opportunity to implement services in a “smart” sense, making use of the smart elements identified above, that is

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<sup>20</sup> See Article 79 of Law 2/2011. This article states that “planning will take into account various scenarios as indicators of the potential evolution of energy demand, the resources required to satisfy it, the need for new power and, in general terms, useful forecasts for the decisions taken by private investment initiatives and for the decisions affecting energy policy, and will promote an appropriate balance between system efficiency, security of supply and protection of the environment” (2nd paragraph).

<sup>21</sup> Law 7/1985, 2 April, Regulating the legal base of local regimes, *BOE* number 80, 3 April, (accessible at <https://www.boe.es/buscar/doc.php?id=BOE-A-1985-5392> ).

<sup>22</sup> These authors focus on the idea that the European Union is an example of transnational governance, which can be seen as the first step towards developing new strategies of government, including a leading role for the local level (pp. 307, 308).

the use of ICT, smart transport solutions, smart environmental measures and smart population initiatives.

There remains the challenge of identifying appropriate legal instruments to achieve a more cooperative and participative government at local level in order to establish smart governance (Arugué; Gomá; Subirats, 2002), whereby citizens are directly involved in the development of the city. By these means, the Smart City could be an opportunity to renovate public administration (Enerlis, Ernst and Young *et al*, 2002). Various authors have considered this issue and reached the conclusion that the local level of collective interests needs a more flexible system of local governance in conjunction with appropriate legislation to allow the involvement of private actors<sup>23</sup>. The kind of innovative legal mechanisms required for smart governance should include collaborative decision-making processes for urban planning (Enerlis, Ernst and Young *et al*, 2002), formulas for private-public partnerships to manage public services and systems of self-regulation. This might result in a different citizenry whose right to the city is recognized (Sasse, 2002; on the contrary, Alonso Ibañez, 2016<sup>24</sup>).

Although, as suggested above, local administrations would seem to have some authority, from a legal perspective, to implement Smart Cities, there are two main obstacles to be overcome. On the one hand, the current vertical political structure of municipalities in terms of its relationship with citizens is inconsistent with a system of transparent governance and collective action. The mayor and the council are at the head of the local administration and citizens have few possibilities to take part in the decision-making processes. As a consequence, there is a clear need to find legal instruments to bring about a change in the constitution of local authorities, such that they play the role of leader rather than that of hierarchical head of the administration.

On the other hand, municipalities have to develop their competences according to the legal system created by the state and the autonomous regions (Herrero Pombo, 2016, regarding some Laws of Valencia, Cataluña and Madrid), so that they lack the independence to set up a Smart City (Rivero Ortega and Merino Estrada, 2016). Nevertheless, some researchers suggest that the current regulation of municipal responsibilities could be increased as long as the autonomous regions are in agreement (Boix, 2013); this is why it is so important that some public policies relating to the Smart City could be regulated at the regional level.

In summary, it seems that the Spanish legal system at the local level is currently too inflexible to promote a full version of the Smart City featuring the kind of developments mentioned above, and this situation can be considered a limiting factor in the social innovation that we have pointed out as the main advantage of the Smart City approach. For those who believe that cities need to develop new competences under a new conception of the relationship between citizens and public authorities, it is important to find the means of changing the *status quo* of local government or to provide alternative inclusive solutions vis-a-vis the Smart City approach. This paper considers Smart Cities a cornerstone in the future design of urban areas, in which collective interests should find different means of expression and recognition; and public authorities should use other instruments, services or strategies, different from command and control systems, to achieve public goals. Otherwise, the Smart City will become just a technological solution for certain cities or urban zones within a city. In this respect, the main changes could be the following: First of all, ICT solutions should be deployed across all sectors of urban living with the objective of improving the living conditions of all citizens. In the transport sector, for example, there are numerous smart initiatives such as traffic platforms, transport information services, and route planning, all of which rely on ICT to offer the population new services. Nevertheless, there are two problems facing the implementation of ICT. On

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<sup>23</sup> For instance, in the document *Mapping Smart Cities in the EU*, Smart Governance is linked to the transparency principle and the need for open data. For consideration of the Spanish legal framework regarding these topics (Villarejo Galende, 2015).

<sup>24</sup> It is important how the last author asserts that it is impossible to understand the city without the citizen, although there is not yet a clear right to the city from a legal point of view.

the one hand, the financial resources of municipalities in Spain widely differ in their capacity to invest in ICT and hence require the support of higher administration, both at regional and state level. On the other hand, if the Smart concept extends only to ICT, we risk the Smart City becoming exclusive to only certain technological or private interest groups, thus frustrating the wider social goals of the movement.

This paper argues that the use of ICT should be necessarily linked to the development of policies in keeping with the instrumental aspects of the Smart City approach, such as transport, the development of health or other services, and environmental information about the city. All of these are examples of how technology can be used to serve the general interest. Perhaps the main difficulty of this approach is the financial support available to municipalities, as these are numerous in Spain and their size and population vary markedly between one and another.

Secondly, there is a clear need to implement regulatory mechanisms to meet the technical challenges of bringing about change. These should enable public information and public participation across different fields of public action such as the environment (for instance, the use of renewables, energy efficiency and land use). Such participation implies a certain level of governance and the representation of different perspectives from private citizens and organizations alike, working towards a common goal. Commentators underline the necessity for systems, which can facilitate complex decision-making processes, and anticipate new administrative procedures involving forums or “meeting point zones” between public and private actors. Such processes will require innovative legal instruments to make the smart governance described above possible.

Nevertheless, there are as yet no concrete proposals for these changes; many authors focus on the need for innovation and how certain policies such as sustainable transport systems require new legislation to be drawn up, and for many the current situation is insufficient<sup>25</sup>.

#### **4.2. A critical review of smart experiences in Spain**

Having outlined the legislative starting point of the journey towards Smart Cities in Spain, we now examine some initiatives that have already been set in motion in this country. These illustrate how the smart conception of a city is not a closed one, but also show how much ground has yet to be covered before the Smart City is linked to territorial intelligence. The initiatives concern the use of ICT in various sectors, in some cases for certain services and in others for specific public policy, notably transport and environmental protection.

Thus, in Valladolid there are taxis, which are 100% electric; there are green e-motion projects in Malaga and Barcelona, and car-sharing initiatives in Madrid, all of which concern the transport aspect of Smart Cities. In addition, the autonomous regions of Cataluña<sup>26</sup>, Valencia<sup>27</sup> and Madrid<sup>28</sup>

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<sup>25</sup> The drive towards sustainable transport in Spain is guided by the framework of the Spanish strategy of sustainable mobility (2009) aimed at reducing emissions in the transport sector by focusing on five aspects: territory and land planning; transport and infrastructures planning; climate change and reduced economic dependency; air quality and health; management of demand. The document identifies the main areas of transport policy, linking them to the process of ecological transition mentioned above. The key to achieving the goals of this policy is territorial planning, which itself requires very clear specifications. That is, transport policy (including smart transport) needs to develop a new and specific planning process which integrates territorial and land planning to manage its objectives. For some authors the strategy of sustainable mobility is not sufficient, as they would like to see a move towards a systematic approach combining sustainable and smart mobility. In this respect, see Herrero Pombo (2016b) and Alonso Ibañez, 2016, with regard to the relationship between urban planning and sustainable mobility policy.

<sup>26</sup> Law 9/2003, 13 June, on mobility (BOE num. 169, 16 July 2003; accessible at [http://noticias.juridicas.com/base\\_datos/CCAA/ca-l9-2003.html](http://noticias.juridicas.com/base_datos/CCAA/ca-l9-2003.html)).

<sup>27</sup> Law 6/2011, 1<sup>st</sup> of April, on mobility (BOE num. 98, 25 April 2011; accessible at <https://www.boe.es/buscar/doc.php?id=BOE-A-2011-7330>)

<sup>28</sup> Law 5/2009, 20 October, on transport and road mobility (BOE num. 307, 22 December 2009; accessible at <https://www.boe.es/boe/dias/2009/12/22/pdfs/BOE-A-2009-20659.pdf>).

have approved laws dealing with sustainable transport, underlining by doing so that transport is clearly an element of the urban economic development. The laws are consistent with *smart* principles in that they regulate the transparency of the policies and the requirements for social participation; they also make planning the cornerstone of new and innovative legislation and provide new competences for the local administration (Herrero Pombo, 2016).

Elsewhere, there are examples of energy efficient buildings in Vitoria and Malaga. However, these are in conflict with national regulations on auto-consumption of renewable energy. These regulations discourage the auto-consumption model by reducing the financial benefits of these energies and other kinds of financial support<sup>29</sup>. Once again, the legal framework in which the municipalities operate is quite inflexible towards certain smart features (Mora-Ruiz, 2012).

On the other hand, there are several examples of regulations regarding transparency at the local level, which, as stated above, is a requirement of smart governance. An example of this, and an aspect of the Smart City not mentioned before, is the so-called “accountability architecture”, a means of achieving real governance and good administration, both at the local level, and in multilevel governance (European Union, the State and the local government). In this respect, Bilbao, Gijon and El Puerto de Santa Maria (Cadiz) stand out among Spanish municipalities as examples of open government (Enerlis, Ernst and Young *et al*, 2002) and demonstrate the importance of legislating for transparency and the right of access to public information, so that local actors become active agents of the development of cities and participate in local government.

Finally, there are some experiences of new public services using a *private-public partnership solution* with regard to the legal regulation of public contracts, especially in the areas of transport (Herrero Pombo, 2016b) and energy, such as those in Valladolid and Palencia, which have adopted mechanisms for innovative public purchases (Villarejo Galende, 2015<sup>30</sup>).

These initiatives are of limited value in assessing whether Smart Cities are possible in Spain. They are partial realizations of the smart approach and as such represent partial conceptions of what a Smart City might look like. Significantly, they have been achieved without introducing any deep changes to the legal model of the local administration, although they do underline the importance of local territories in the process of society. It is also worth pointing out the lack of key transformations in the Spanish legal system, which, if enacted, would put local authorities in a good position for setting up Smart Cities within the framework of territorial intelligence.

First, with respect to the “new conception of local authorities”, it should be noted that the governance framework of the Smart City approach envisages new roles for local authorities whereby they negotiate, or let citizens participate in, the decision-making process.

From this perspective, Smart Cities offer a space for an informal relationship between public and private actors that needs formal rules. In consequence, public law has to establish the bases of the informal action of local authorities and collaborative solutions, the use of social networks and the new role of local authorities as leaders rather than hierarchical governments. At the moment, the Spanish legal system has yet to respond to these challenges (Rivero Ortega and Merino Estrada, 2016<sup>31</sup>).

A process of modernization of the administration is thus required, basically through the use of ICT (e-administration), and the search for new legal mechanisms for governance. The current legal system governing local administration is too narrow for this purpose, although it can allow certain aspects to

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<sup>29</sup> See Royal Decree 9/2015, 9 October, on the administrative, economic and technical conditions for auto-consumption of energy (BOE num. 243, 10 October; accessible at [https://www.boe.es/diario\\_boe/txt.php?id=BOE-A-2015-10927](https://www.boe.es/diario_boe/txt.php?id=BOE-A-2015-10927) ).

<sup>30</sup> The author points out the Regulation of Valladolid, 17 April 2015, on smart public contract procurement.

<sup>31</sup> In fact, the National Plan on Smart Cities has no specific provisions for the legal mechanisms to implement a Smart City, except for a general definition of such a City with respect to ICT, sustainable development and social goals.

be developed, and public authorities should encourage this. For instance, we can note the importance of planning as a new process of regulation based on territories.

At the same time, formulas for participation in the legal decision-making process and the in force phase of the law (Herrero Pombo, 2016) can be widely broadcast through the use of ICT. For example, in Valencia the Law 6/2011 on transport incorporates technology that allows citizens to participate in the policy, such as Internet information, on-line surveys and the creation of citizen's boards to be consulted by the local administration (Herrero Pombo, 2016). These are examples of smart governance that should be taken into account.

Finally, the Spanish approach to Smart Cities has one very significant disadvantage regarding local competences as discussed above. There is a clear need for a wider legal framework to accommodate new competences for local authorities regarding smart solutions, like those related to ICT, as these competences are essential for taking decisions on the way to implementing smart elements. For instance, in Spanish Law, municipalities can promote the sustainable use of technology by the enforcement of the competence of Article 25. 2.ñ) of Law 7/1985 on the bases of the Local Regime (Villarejo Galende, 2015<sup>32</sup>).

## 5. FINAL REMARKS

To conclude this Paper, I would like to make some final remarks about the Smart City conception and the role of the legal groundwork, which makes it possible.

First, Smart Cities have to be considered as part of the territorial intelligence of society (which means transparency and learning as a method), so that a socio-ecological transition can become a reality. The European Union believes in this idea (Rivero Ortega and Merino Estrada, 2016), and there are some partial examples in Spain. Nevertheless, this goal needs to be more flexible by taking into consideration the size of the city in question, so that small towns can also take on the challenge of developing Smart approaches; if not, we risk Smart Cities becoming an instrument of increasing inequality and the differences between rich and poor cities.

As mentioned above, the Smart City approach can be an innovation for urban areas if it is implemented within the ethics of sustainable development. Mediterranean Countries could adopt this Smart approach by adapting the Smart elements to the size and situation of each urban area, recognizing that there are several smart solutions if they are sufficiently linked to the territorial intelligence of each area.

Second, in this context, the law has a role to ensure a balance between the interests of all sectors of society (Boix, 2013; Gómez Jiménez, 2015). It is necessary to build the city from the citizen up, taking into consideration the new functions that are required of the public authorities, such as those concerning open data and internet information. Thus means that there should be space for alternative instruments such as self-regulation once it is regulated. Therefore, law has an important role in the implementation of the holistic perspective of the Smart City, as there is currently a complete lack of a legal definition (Gómez Jiménez, 2015).

Smart Cities, within the limits of the sustainable development principle and from a holistic point of view, are illustrating that the goals of public action are changing and that there should be a transformation at the local level of government in order to introduce the territorial intelligence approach as a challenge for social innovation and for achieving a new citizenship (Alonso Ibáñez, 2016<sup>33</sup>; González-Gómez, 2017<sup>34</sup>). In this respect, Spain still has a long way to go.

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<sup>32</sup> The author says that the problem is how to apply these established competences to new fields of public action like transport.

<sup>33</sup> Some authors agree that the City cannot be understood without citizenship.

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