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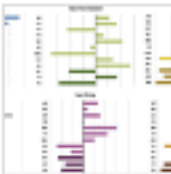
Planning in the era of Information and Communication Technologies. Discussing the "label: Smart" in South-European cities with environmental and socio-economic challenges

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Highlights

- Empirical research work developed in three metropolitan cities in South Italy, questioning the framework "Smart" in cities with lacks in planning processes.

- Methodology is based on case-study method. Sources of evidence: quantitative indicators, archival documents, and excerpts of key interviews.

- Findings show the two-fold use of technologies for cities: on one side, technocracy; on another side, technologies as supports for urban revitalization.

- Authors argue that the second role of technology may improve urban planning in challenging South-European contexts.

- Authors also argue that organized networks of citizens are needed in order to improve the smartness (intended as human and social capital) of a city.

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ARTICLE INFO

ABSTRACT

This paper presents lessons learnt through empirical research work developed in three metropolitan cities in South Italy aimed at exploring if and how the "Smart" framework might improve urban planning in cities with lacks in planning processes. Authors argue that organized networks of citizens (such as non-profit organizations or private associations) together with networks of institutions (such as partnerships amongst municipalities or universities) are needed in order to improve the smartness of a city; technologies are framed as opportunities and supports for more inclusive and informed decision-making processes, i.e. as a tool, rather than as a goal, for effective smartness. The paper discusses the primary findings of a Research Project conducted at the Department of Civil, Architectural and Environmental Engineering (DICEA), University of Naples, titled "Smart Energy Master for the Energy Management of Territory" funded by EU.
The methodology is based on the case-study method, whose sources of evidence are: quantitative indicators, archival documents, and excerpts from interviews with key stakeholders. In detail, the paper focuses on three Southern Italian cities (Reggio Calabria, Catania and Palermo), which have been clustered for similar challenges they have to face, in relation to their geographical proximity and cultural features. Findings show the twofold use of technologies for cities: on the one hand, technology may be perceived as a panacea and Smart initiatives may be isolated and episodic experiments; on the other, technologies may be critically incorporated in complex policies and initiatives aimed at regenerating urban areas holistically, and Smart initiatives may be coordinated and well-connected experiences. Authors argue that the second cases are feasible approaches for improving urban planning in challenging South-European contexts.

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1. Introduction

In the last decades, planners have explored various approaches to sustainable urban planning and development. Scholars have widely argued the limits to uncontrolled physical growth, to the exploitation of resources, and the need to find alternatives. Within the general framework of sustainability, urban planners are searching for approaches aimed at coping with the current uncertainties that cities have to face based on the deterioration of natural-socio-cultural environments and uncontrollable economic and financial flows (Salvati et al., 2013). Nevertheless, the rise of post-industrial urban economies has introduced Information and Communication Technologies (ICTs) as successful devices that are proposed for the fulfillment of sustainability and for the interpretation of uncertainties. The "Smart" label has emerged as a

specific approach to sustainability based on ICTs as opportunities to create networks, and to collect a wide amount of data that are constantly updated (the so-called "big-data") aimed at improving urban planning (Mosannenzadeh & Vettorato, 2014; Papa, 2013).

The rising debate about Smart Cities and Communities is widely supported by the EU (Gargiulo, Pinto, & Zucaro, 2013) through the homonymous programs, partnerships, and so forth. Meanwhile, various corporations are investing in order to spread the message that ICTs are powerful devices for the pursuit of better life. Scholars such as Townsend (2001); Allwinkle and Cruickshank (2011); Anthopoulos and Vakali (2013); Batty (2013a,b); Bettencourt (2013); Las Casas, Lombardo, Murgante, Pontrandolfi, and Scorza (2014) have focused on the potentials generated by the relationship between big data, networks, and urban planning. On the other hand, some critical reflections about the rhetorical use of the term "Smart" have been proposed, such as in Hollands (2008). At the local scale, through initiatives supported by administrators and non-governmental organizations, a growing

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number of cities are adopting what is defined as the Smart "label" in this paper, being skeptically conscious that the "label" may be just a trend. Within this variegated cultural framework, experts agree on one point: ICTs are not a panacea; ICTs alone cannot solve any problem. The central question is: does the "label" apply anywhere in the same way? Is this label based only on ICTs, or is anything more needed in order to define a city as *Smart*? What role do networks play in generating effective smartness? After a brief literature review, this paper discusses the results of a research project based on the case-study method as described in paragraphs 3 and 4. The main goal is to focus on Smart Governance and Smart People as crucial characteristics for Smart Cities. In conclusion, an operative framework for urban planners is provided; it regards the role of civic networks that may effectively improve enduring environmental and socio-economic sustainability and quality of life with a holistic approach to smartness, apart from the use of ICTs.

2. Literature review

2.1. Is smartness more than ICTs?

Various scholars have highlighted the potentials generated by linking cities and ICTs, big data, physical and virtual networks, within the framework of the so-called "Smart Cities". Focusing on telecommunications networks provided by technologies, more than a decade ago Townsend (2001) already spoke about an international interurban connectivity, considering both the physical and the virtual city (of the Internet) as having the same level of importance. In urban planning and design, as Townsend argues, there has to be a growth of awareness of global connections mediated by ICTs, in order to encourage, through policies and plans, "smart dependency" between different urban areas, a "better and more equitable accessibility to a telecommunication infrastructure", underlining the role of knowledge and efficiency in the use of IT to foster long-term economic growth.

Allwinkle and Cruickshank (2011), observing how ICT infrastructures hold a central position in many Smart City programs, discuss their role as tools that can "allow cities to empower and educate their citizens so that they can become members of society capable of engaging in a debate about their own environment". As Ratti and Townsend (2011) state, people in cities act both as sensors and agents of change thanks to the use of ICTs and smart personal devices, a distributed intelligence able to shape a new kind of citizen activism and new community activities that city governments, technology companies and their urban-planning advisors should consider in order to create smarter cities. Innovation in the public sector and enhancement in coping with the uncertainties of a complex environment for governments can be fostered by ICT supported knowledge flows (Occelli & Sciullo, 2013). Technologies can also be used for conducting qualitative analysis that may support ontologies for describing and explaining social phenomena (Rabino, 2014).

People-generated data are growing, as, for example, the number of smart phones is growing at around 30% annually (Batty, 2013a). Batty observes a kind of coincidence between "smart cities" and "big data". Considering the fact that "cities only become smart when people are smart", he, however, highlights the opportunities carried by big data in terms of possibilities of social interactions and support for more informed decision-making. Allowing the generation of new models and visualizations of urban networks, flows and phenomena, big data are intended to be useful tools for planning (Pulselli & Ratti, 2005), but data per se do not generate answers or solutions (Batty, 2013b). As a matter of fact, Batty (2014) warns how "most of this big data is not very useful, for it is non-representative, unstructured, and difficult to adapt to both traditional and new forms of planning and intervention" (p. 390); real-time flow of information, models, and their use as planning support systems are complex research topics that need to be explored carefully.

Tracing the evolution of the theoretical framework which has led to the concept of Smart Cities, Murgante and Borruso (2013), recalling Roche, Nabian, Kloeckl, and Ratti (2012), highlight the peculiarity of the "techy level": it is the specific dimension that allows the creation of specific cognitive frameworks combining geographic Information and Communication Technologies in order to improve the quality of knowledge, communication and social infrastructure for city planning and management. The authors warn that three pillars are necessary in order to fulfill the goal: open data, sensors (considering citizens as voluntary/active sensors in terms of crowdsourcing, crowd-funding, and policy making), and connections; these three pillars need to be linked through a proper system of *governance*, otherwise they prove to be episodic and unable to catalyze real urban changes. But Murgante and Borruso (2015) also highlight one crucial point regarding technology: in a globalized world with a fast-growing population, the validity of technology has to be tested on its real impact in reducing the consumption of resources and improving the overall quality of life for citizens all over the planet. Recalling Nijkamp, Rietveld, Spronk, van Veenendaal, and Voogd (1979), still Murgante and Borruso discuss the key-concept of human networks: in contemporary cities, the rising use of technology generate flows of transportation and information, allowing connections that could not be feasible in the past and catalyzing material and immaterial links; the role of human networks is crucial for Smart Cities that strive for meaningful social impact, beyond the "techy level" itself. Stressing the centrality of human networks is not a recent trend in planning literature but it has been a pivotal idea since Castells (1996). The centrality of human networks is a key-concept also for Lombardi et al. (2011): exploring the role of institutions in building capacity for information society and civic engagement, the authors revise the concept of the triple helix (Etzkowitz & Leydesdorff, 2000), a crucial one in the debate about Smart Cities; Lombardi at al. move from the interconnections of University-Industry-Government to the ones of Learning-Market-Knowledge, with a broader focus on intellectual capital, social learning, market-based entrepreneurial capacities and knowledge-transfer abilities. Moreover, looking at Smart City and urban planning interrelations and reciprocities, Anthopoulos and Vakali (2013) argue that urban and regional planning has to take the Smart City into account in its frameworks, capitalizing the ICT resources "for information retrieval and policy making". Papa, Gargiulo, and Galderisi (2013) focus on the crucial role played by urban and regional planning in building up Smart Cities beyond ICTs, with a holistic approach. Carta (2012) highlights the key-concept of Creative Cities: the point is not to attract the creative class, but to establish the conditions for generating creativity, in the sense of producing innovative morphologies and activities. This goal may be reached through strategic planning aimed at valorizing the potentialities of cities, with a trans-scale approach and a territorial switch, i.e. "[…] intercepting the energies of flows, people, and know-how and of more selective financial capitals that cross the planet and transform[ing] them into local resources […]" (p. 4). Multi-level and multi-player, cooperative, decision-making processes are necessary in order to facilitate the integration of the city with its metropolitan/global dimension, as well as to distribute the good effects and to reduce the negative effects (such as gentrification, real-estate market speculation, and so forth), feeding urban, cultural, social, ethnic, functional diversity. This approach is related to the framework of Smart Cities but confirms the centrality of the human/immaterial dimensions beyond ICTs. Innovation in a smart city starts with the re-thinking of urban metabolism, generating a smart citizenship based on a more effective dialogue with the population, and strengthening the human capital (Carta, 2013). Through cloud computing, Smart Cities have to develop the collective smartness of communities, facilitating bottom-up processes and highlighting both individual and collective advantages deriving also from the availability of new technologies (Carta, 2014). Still Carta (2014) defines a Smart Planning Protocol that acknowledges the potentialities related to ICTs, highlighting their usefulness for improving the chances of constructive interaction amongst citizens, experts, policy

makers and entrepreneurs; the centrality, again, is on the social dimension of a Smart City, where ICTs *serve* as powerful devices. The spread and permeation of ICTs in the "sensitive" Smart City support the enhancement of human capital (Fistola, 2013).

Bettencourt (2013) identifies the rise of ICTs and the spread of urbanization as the two most important trends going on in the world today at a global level. Considering the role of big data in cities as a tool to facilitate information flows enhancing mechanism of learning and coordination amongst people, Bettencourt (2013) argues that "the primary uses of big data in cities must then be to continue to enable the creation of new knowledge by more people, not replace it".

What all these authors have in common is the focus on ICTs as tools, devices, and opportunities in order to boost human capital (Halpern, 2005); education, awareness, and proficiency of citizens in the use of ICTs become then primary goals of cities and communities that claim to be defined as Smart. Someone can argue that ICTs may end up becoming goals themselves, rather than remain just tools; these observations may be rooted in streams of thoughts that strongly criticize and oppose technocracy such as in Gorz (1980), and in the Italian epistemology discussed by Severino (1988) and Galimberti (2002). These philosophical frameworks have widely explored a switch: tools that become goals without a clear and deliberate choice of goals; in other words, the supremacy of technologies (the *how to do something*) over ethics (the *why do we do* something). Furthermore, in an extremely apocalyptic scenario such as in the Orwellian novel *1984* (1948), technologies may be seen as overpowering means designed to control and violate citizens' privacy. On the other hand, if one assumes the principle of responsibility (Jonas, 1985) as a guiding value when discussing the role of technologies, it can be argued that ICTs may be a complement for facing complex challenges, such as what Bettencourt (2013) calls "wicked problems". Climate change, hydrogeological risk, industrial hazards, waste management systems, mobility flows in metropolitan areas, etc. are all unsolved problems that can be better tackled with the support of ICTs (Fistola & La Rocca, 2014; Papa, Galderisi, Majello, Cristina, & Saretta, 2015). Smartness can thus be understood as a sort of "service technology" (Bencardino & Greco, 2014; Morandi, Rolando, & Di Vita, 2013) aimed at improving the overall quality of life, when responsibility lies under political and ethical choices. At the same time, another alert is necessary; as Hollands (2008) recalls, the Smart "label" may be used with superficiality and may be abused; there can be a tendency toward self-promotion and rhetoric, as well as a deviation toward corporation-driven interests rather than equity and citizens' improvement. The following cases are reported as examples of how the Smart "label" can be differently understood in challenging contexts, highlighting virtuous scenarios where ICTs assume a "service role" for human networks.

3. Materials and methods

This paper presents results arising from the *Governance Analysis Project for Smart Energy Cities* (GAP), which is part of a broader research project aimed at exploring energy efficiency (SEM – Smart Energy Master).[1] The main goal of SEM is defining strategies of governance in urban areas and high-density complexes, in order to carry out operative tools for creating synergies amongst inhabitants, experts, administrators and so forth. The final purpose is to define how to virtuously manage the amount of energy that is necessary in order to develop anthropic activities in contemporary cities. Within this framework, GAP is aimed at verifying how the framework "Smart" is inspiring policies and actions in Italian Metropolitan Cities. Metropolitan Cities have been recently instituted in accordance with the Italian Administrative Law that has been recently reformed, establishing an optimization of services and an

enforcement of institutional and non-institutional networks (L. 56/2014; L.R. 8/2014; L.R. 15/15).[2] Due to the contact points between the discourses about Smartness and the contents of the legislative reform, GAP is asking if and how the so-called Smart Cities are able to fulfill the requirements of Metropolitan Cities defined through the aforementioned laws. GAP has measured the "Smart attitude" by dividing it into six characteristics as proposed by Giffinger et al. (2007): smart environment, smart mobility, smart economy, smart governance, smart people, and smart living. First, a set of indicators has been chosen according to the following criteria: high relevance in describing the nexus "Smartness-Metropolitan Cities", frequency in EU studies and rankings, accessibility to validated sources of data, and availability on different scales (national, regional, metropolitan, urban) and temporal phases. Indicators have been calculated and discussed in order to understand the "quantitative forms" of Smartness. Outcomes of this first phase are reorganized sets of data (according to the six aforementioned Giffinger's characteristics) that allow a quantitative comparison between the status of cities and the regional/national average, in relation to the most relevant challenges a Smart City has to face (Table 1). Then, a screening of potential best practices has been carried out through internet-based research and archival documentation; the main criteria of selection has been looking for high-innovative contents in terms of Smartness as emerged from the literature review (i.e. Smartness as virtuous scenarios where ICTs assume a "service role" for human networks, as in Papa et al., 2013); this phase has provided "qualitative forms" of Smartness. Outcomes of this phase are sets of initiatives, still organized according to Giffinger et al. (2007), that have been described through official sources of evidence, such as institutional websites and reports. In other words, the first phase (quantitative) has provided numbers to be compared; the second phase (qualitative) has provided practical experiences to be explored. Finally, researchers have chosen a restricted set of best practices to be investigated in-depth, interviewing key-stakeholders in order to test in the field the previous quantitative-qualitative research, based on databases and archives. The outcome of this phase has been organized in synthetic sheets whose contents are reported in paragraphs 4.3 and 4.4 as exemplification. This methodology has been applied to all the Metropolitan Cities established in Italy by law.

This paper focuses on three Southern Cities: Reggio Calabria, Catania, Palermo, the last two of them being within Sicilian Region. These cities have been clustered according to similarities connected with specific challenges they have to face, referring to geographical proximity and administrative challenges. The following paragraphs describe in detail the context-based characteristics and the results of the analysis in these three Southern Metropolitan Cities that claim to be Smart.

4. Results and discussion

4.1. Characteristics of three challenging Southern Cities

Reggio Calabria, in the Calabria Region, Catania and Palermo, in the Sicilian Region, can be defined challenging contexts, based on several criteria. These regions belong to the group of "Convergence Regions" as defined by the EU (i.e. having a GDP lower than 75% of the average GDP of the EU-25, in accordance with Commission Decision C 2007 1238). This is related to underdevelopment conditions that are rooted in historical and cultural features grounded over centuries (Daniele & Marani, 2011). The poor state of basic infrastructures such as highways, railways, and so forth is a tangible example of the level of

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[2] LEGGE 7 aprile 2014, n. 56 - *Disposizioni sulle città metropolitane, sulle province, sulle unioni e fusioni di comuni*. (GU n. 81, 07/04/2014); Regione Siciliana: LEGGE REGIONALE 11 Marzo 2014 n. 8 *Istituzione dei Liberi Consorzi Comunali e delle Città Metropolitane* (GURS n.13, 28/03/2014).; Regione Siciliana: LEGGE REGIONALE 04 Agosto 2015 n. 15 *Disposizioni in materia di liberi Consorzi comunali e Città metropolitane* (GURS n. 32, 07/08/2015). The Sicilian Region has the authority of legislating, being a "Special-Statute" region of Italy.

Table 1
Example of indicators per each characteristic.

Characteristic & data	Description of data	Year	National average	Sources
Economy [e.g. per capita income]	Total resources/total population	2012	19.299	- Italian Ministry of Economy and Finance - URBES (dossier: *Equitable and sustainable wellbeing in cities*) - Il Sole 24 Ore (dossier: *Quality of Life*)
Environment [e.g. waste sorting]	Percentage of separated garbage/total garbage	2010	35.30	- ISTAT (Italian National Institute of Statistics) - I City Rate - URBES (dossier: *Equitable and sustainable wellbeing in cities*) - CERTeT (dossier issued by Bocconi Univ., with ABB, Ambrosetti) - Urban Ecosystem Dossier - EfficienCities - Siemens Cittalia
Governance [e.g. voter turnout]	Percentage of eligible voters who cast a ballot in an election	2013	75.20	- Italian Interior Ministry - I City Rate - URBES (dossier: *Equitable and sustainable wellbeing in cities*) - Smart Cities Ranking of European Medium-Sized Cities (Giffinger)
Mobility [e.g. public transport]	Passenger on Public Transport/Inhabitants per year	2011	225.65	- ISTAT (Italian Institute of Statistical Sciences) - Sustainable Mobility in Italy - Euromobility - Urban Ecosystem - Smart Cities Ranking of European Medium-Sized Cities (Giffinger) - EfficienCities - Siemens Cittalia - Elaboration on environmental data issued by Municipalities
Living [e.g. ealthcare]	(Availability of hospital bed/inhabitants) × 10.000	2011	40.34	- Elaboration on data issued by the Italian Ministry of Health - Smart Cities Ranking of European Medium-Sized Cities (Giffinger) - Il Sole 24 Ore (dossier: *Quality of Life*)
People [e.g. Associations]	(Number of volunteers in Non-profit/inhabitants) × 100	2011	225.65	- ISTAT (Italian National Institute of Statistics) - Smart Cities Ranking of European Medium-Sized Cities (Giffinger) - Il Sole 24 Ore (dossier: *Quality of Life*)

underdevelopment. In addition, data confirm the main critical challenges to be faced, such as: unemployment rate (19.2% for Reggio Calabria and Catania, 23.2% for Palermo; data source: Italian Institute of Statistical Sciences, ISTAT, last update 2014); youth unemployment rate (60.1% for Reggio Calabria; 56.7% for Catania; 59.2% for Palermo; data source: Italian Institute of Statistical Sciences, ISTAT, last update 2014); low levels of education (illiterate population is 14,970 in Reggio Calabria; 19,784 in Catania; 22,450 in Palermo; data source: Italian Institute of Statistical Sciences, ISTAT, last update 2011).

Unlike the rest of Italy, the Metropolitan Cities of Reggio Calabria, Catania and Palermo underwent several obstacles to be formed. Although Reggio Calabria is under law L. 56/14, which has required the institution of the Metropolitan Cities by January 2015, the City has obtained a postponement to 2017 for instituting the Metropolitan City, due to the compulsory administration of 2012. In Sicily, that is a Special Statute Region with the authority of legislating, L.R. 08/14 has established different boundaries for Metropolitan Cities, altering the previous administrative organization (this fact did not happen in the rest of Italy); then a series of delays happened, as municipalities have started arguing whether (or not) to be included within the new defined boundaries. Moreover, urban planning suffers delays as well, for example in Catania where the last comprehensive plan was approved in 1969. In these challenging scenarios, the quantitative analysis has shown other *gaps* between these southern cities and the rest of Italy. The next paragraph presents some significant data in relation to Giffinger's characteristics of Smart City.

4.2. Specific challenges under the "Smart" framework

The aforementioned conditions describe some challenging characteristics of Reggio Calabria, Catania and Palermo. Notwithstanding their critical conditions, these cities take part in the race for Smartness and Innovation, as most of the cities under globalized economies do. As a matter of fact, the debate about Smart Cities has permeated a large amount of European Cities, probably catalyzed by funding programs such as the homonymous "Smart Cities and Communities" that, for instance, have captured about 200 million euro for Convergent Regions in 2014.

GAP has investigated the "starting point" of Cities in terms of specific data that have been selected according to literature related to the Smart City framework. Although about 40 indicators have been studied, the paper reports the first 6 of them, amongst the most critical for each characteristic, comparing the three cities with the National average, and then the standardized synthetic one. Sources of data have been selected amongst the most reliable Italian Statistical Institutes, such as ISTAT, InfoCamere, CNEL, and so forth. The following data show the comparison. The *Gap* is calculated by comparing the National Average with the Cities' values.

Through the selected data, Table 2 shows how each Southern challenging City performs negatively compared to the national average. The only exception is *Living* for Catania, where the healthcare system presents several complex challenges, which require a specific detailed study that is not the objective of this paper.

In general, the Cities studied present significant gaps, compared to the Italian average, in each characteristic of a Smart City, as it is confirmed in Image 1.

The next paragraph shows some windows of opportunity in order to generate better conditions for fixing the *Gap*.

4.3. Is it possible to fix the gap?

ReACTION City is an exemplificative name for projects aimed at opposing the negative trends, in order to revitalize challenging contexts. *ReACTION City* is also the name of a project for social innovation that was proposed in Reggio Calabria in 2014, led by Professor Consuelo Nava and the association *Pensando Meridiano*. In this case, a Smart City is envisioned as a sustainable, equitable, and livable city for citizens that have to be involved as main actors of changes. ReACTION City's main goal is to generate actions that can be implemented in the short run, in order to impact in the long run through urban regenerative practices, based on re-appropriation of collective spaces. Various makers have been involved in creative and informal initiatives aimed at building up a collective identity and a common vision for Smart Reggio Calabria, beyond its current challenges. In this case, human networks, in the form of citizens' networks, have been created and supported in order to

Table 2
Gaps between the National average and the Cities studied, using only one indicator for each Smart characteristic.

Characteristic & data	Description	National average	Reggio Calabria	Catania	Palermo
Economy [e.g. per capita income]	Total resources/total population Year: 2012 Main source: Italian Ministry of Economy and Finance	19.299	12,344 Neg Gap: 1.6 — 36.0%	14,685 Neg Gap: 1.3 — 23.9%	13,427 Neg Gap: 1.4 — 30.4%
Environment [e.g. waste sorting]	Percentage of separated garbage/total garbage. Year: 2010 Main source: ISTAT (Italian National Institute of Statistics)	35.30	10.90 Neg Gap: 3.2 — 69.1%	9.25 Neg Gap: 3.8 — 73.8%	6.80 Neg Gap: 5.2 — 80.7%
Governance [e.g. voter turnout]	Percentage of eligible voters who cast a ballot in an election. Year: 2013 Main source: Italian Interior Ministry	75.20	59.70 Neg Gap: 1.3 — 20.6%	66.11 Neg Gap: 1.1 — 12.1%	62.60 Neg Gap: 1.2 — 16.8%
Mobility (*) [e.g. public transport]	Passenger on public transport/inhabitants per year. Year: 2011 Main source: ISTAT (Italian National Institute of Statistics)	225.65	40.01 Neg Gap: 5.6 — 82.3%	66.40 Neg Gap: 3.4 — 70.6%	46.00 Neg Gap: 4.9 — 79.6%
Living [e.g. healthcare]	(Availability of hospital bed/inhabitants) × 10.000 Year:2011 Main source: elaboration on data issued by the Italian Ministry of Health	40.34	33.50 Neg Gap: 1.2 — 17.0%	41.18 Pos Gap: 1.1 + 2.1%	36.27 Neg Gap: 1.1 — 10.1%
People [e.g. associations]	(Number of volunteers in Non- profit/inhabitants) × 100 Year: 2011 Main source: ISTAT (Italian National Institute of Statistics)	225.65	4.69 Neg Gap: 1.7 — 41.2%	4.09 Neg Gap: 2.0 — 48.7%	3.72 Neg Gap: 2.1 — 53.4%

Mobility (*) has been calculated only at the County Seat scale, others within the County's boundaries.

generate durable connections that may effectively improve the overall quality of life in Reggio Calabria.

Catania is well known for the World Heritage Sites that characterize its landscape (the Baroque Architecture and Mount Etna, the tallest active volcano in Europe). *SEOSTM* (*Search Engine Optimization for Sicilian Tourism Marketing*) is the first project classified in the standing of the Notice D.D.84/Ric. of March 2, 2012, Smart cities & Communities and Social innovation approved by MIUR, with a loan term of 80% of 1,480,000.00 (PonRec Standing). *SEOSTM* is a no profit organization which, selected by MIUR amongst the projects for national technological evolution, was created to achieve the goal of improving and making distribution of tourist services efficient thanks to the creation of a tourism efficiency's measurement software. *SEOSTM* is both a non-profit project and a project aimed at optimizing the tourism market, making the system work more efficiently. It is based on ICTs that collect, analyze, and elaborate information through data mining. The final goal is to identify and improve networks of stakeholders, both private and public, in order to empower the local economy. As a matter of fact, tourism is based on connections and relationships between different actors, both private and public. In this case, human networks, in the form of stakeholders of a specific sector, are analyzed and improved in order to create opportunities for socio-economic regeneration based on the environmental peculiarities of Smart Catania.
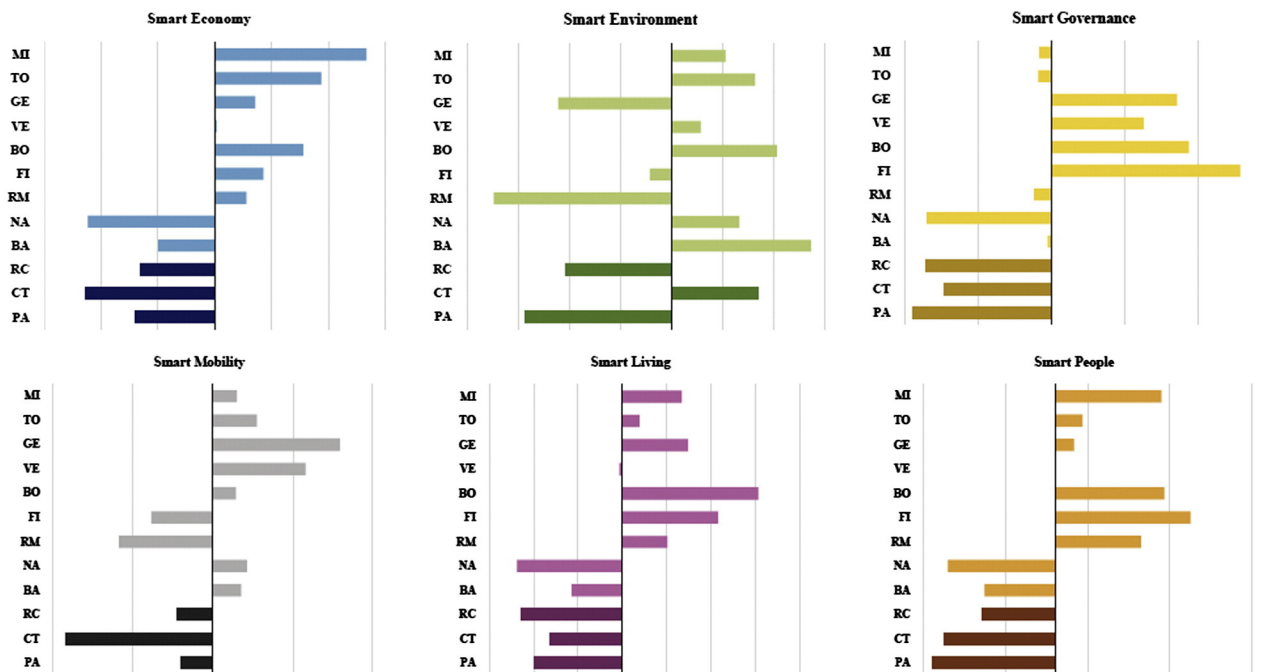
Image 1. The Y axis reports abbreviations for the 12 Italian Metropolitan Cities. (RC: Reggio Calabria; CT: Catania; PA: Palermo). The graphic shows the *Gaps* between the National average and the studied Cities, using standardized indicators for each Smart characteristic, based on Giffinger et al. (2007) methodology: a synthetic value is compared with the average (the vertical line). The studied Cities present negative gaps for each characteristic, except *Environment* for Catania. The difference with Table 1 is due to the indicators used, this second result being more comprehensive than the first one.

The *i-NEXT project* (*Innovation for greeN Energy and eXchange in Transportation*) is an applied research project about energy efficiency of buildings and sustainable mobility and logistics, powered by renewable energy sources. It is a European "Smart Cities and Communities and Social Innovation" project, financed by PON R&C 2007–2013 funds, promoted and led mainly by the CNR ITAE of Messina, Italtel Spa and the University of Palermo, with the Department of Energy, Information Engineering and Mathematical Models (DEIM) and the Department of Architecture (DARCH). The general goals of the project are: in the field of mobility, to realize an ICT platform that would concern both urban and touristic mobility; in the field of energy, to integrate the different technological components of buildings, electric grids and plants into one system in order to monitor and actuate some parameters for the improvement of energy efficiency, through the use of ICTs and simulation models. Within the i-NEXT project, the *Smart Planning Lab* is an operative tool led by the Department of Architecture with the scientific direction of Professor Maurizio Carta, integrating applied research, communication and education. It is a laboratory of applied research in advanced planning for smart city and social innovation. In the field of urban planning, the Smart Planning Lab uses and combines algorithms and spatial information related to mobility, energy and the localization of urban functions, in order to produce spatial analyses that are the result of the integration between traditional information sources and tools with data (open data, big data…). Through this method, representations of urban phenomena are produced, i.e. defining the city by the energy consumption levels. Another experiment carried out by the Smart Planning Lab has led to the elaboration of a "Map of Talents, Creativity and Innovation". The map shows the places that are dedicated to creativity and innovation within the city of Palermo, the urban makers' places that today are spontaneously settling, with the aim of orienting the future planning decisions and facilitating the development of innovative production. The map is constantly updated through a database that is constructed with a participatory process: makers and citizens, through their suggestions, contribute to implement the map.

4.4. ICTs alone do not work. Smart People asking for Smart Governance

The coordinator of *ReACTION City* has been interviewed. The interviewee highlighted the necessity of catalyzing forms of *sharing economy*, i.e. giving priorities to values based on the sense of belonging to a community that has to be rebuilt and improved. The interviewee confirms how preconditions for a Smart City are necessarily connected to fixing the structural gap that exists in the Southern context. In order to center the goal, actions for community building are needed; at the same time, an organizational structure is crucial. In the interviewee's frame of reflection, a Smart Governance aimed at empowering Smart People is thus the very first step in order to build a Smart City in challenging contexts such as Reggio Calabria. ICTs come later. This belief is strongly highlighted by the interviewee. As a matter of fact, she says:

"[…] If asked to prioritize the 6 characteristics of smartness, I would consider Smart Governance as the first and most important one, then Smart People and Smart Living. A smart city has necessarily to reconnect citizens with the city itself, in a direct way. In other words, in the public domain, active citizenship is strongly related with *Participatory Governance*, therefore Smart (Participatory) Governance is the main feature that links Smart People with a Smart City. This is the first step. Without this step, you do not go anywhere. […]"
(Excerpt from the interview conducted with the coordinator of *ReACTION City*, October 22, 2014)

The president of *SEOSTM* has been interviewed. The interviewee highlighted the abuse of the Smart "label" that is often connected with the mere use of technologies. Smartness means, in the interviewee's view, having citizens at the core of the discussion. Smart Cities need to develop services aimed at facilitating connections that may improve the overall condition for the quality of life. Conversely, the risk is to invert the roles, in the sense that technologies become the ultimate goal rather than a service tool. In these cases, technologies make citizens' lives more difficult, rather than saying that they deteriorate them. A more critical approach is needed: technologies can be intended as devices aimed at speeding up services for citizens. At the same time, coordination of initiatives is needed, in order to organize and to create synergies between ideas that otherwise could remain isolated and lost. A direct quote of his better summarizes the concept:

"[…] Recently, the word *Smart*, as a label, has been someway overused. The idea I want to spread is that a Smart City, created starting from citizens' needs, and around them, is characterized by services that may facilitate their life and may improve quality of life. Definitely, a Smart City has not to complicate life, on the contrary, because of the most sophisticated technologies. Sometimes technologies do not help, at the end of the day. We have instead to promote technologies that may fasten and ameliorate services, so that citizens are really involved in a process of change, which has to be boosted by networks, and coordinated by governance structures […]"
(Excerpt from the interview conducted with the president of SEOSTM, December 11, 2014)

Even if the *i-NEXT* project focused on energy and mobility, and ICTs are intended to have an important role, when considering the meaning for a city to be smart, Professor Maurizio Carta stated how:

"[…] a technology insertion is fundamental, but it has to be done coupling the technological component with social innovation, regaining the community dimension that has always been essential within the city, and an integrated project of the city. The Smart City is a commitment to go back to a holistic and metabolic vision of the city. The intelligent city is, above all, a Human Smart City. […]"
(Excerpt from the interview conducted with the director of the Smart Planning Lab, October 13, 2014)

In order to make a city "Smart", ICTs are important as they can provide new tools, but their effectiveness could be weakened by a lack or absence of a holistic vision of the city and a "smart consciousness" within different "smart community" levels: institutions, public subjects, citizens, private stakeholders, and all those actors that animate cities. That is to say, Smart Governance is needed for supporting Smart People.

5. Conclusions

Although the cities studied have to face relevant environmental and socio-economic challenges, as described in paragraphs 4.1 and 4.2,[3] opportunities for change exist related to the framework of Smart City. The aforementioned initiatives have been described as examples of these types of opportunity for Southern contexts. What these initiatives have in common is the operative approach toward the so-called "Smart" framework, beyond the label. As a matter of fact, interviewees expressed the firm belief in integrated and innovative policies and actions, including those that are based on ICTs, aimed at improving the overall conditions of citizens' lives. Interviewees also expressed critical positions regarding ICTs, being conscious that they are not panaceas but only operative tools to be used when needed. As interviewees state, the most common highlighted characteristic has been *Smart People*, in the sense that citizens have to be put at the center of Smart Cities, as the initiators as well as the beneficiaries of initiatives. Contemporarily, the most needed

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[3] The gaps of Reggio Calabria, Catania and Palermo, in comparison with other Italian Metropolitan Cities, have been confirmed by the final ranking elaborated for the overall *Governance Analysis Project* (forthcoming), where the three southern cities are located in the last positions.

characteristic is *Smart Governance*, in the sense that coordination structures are needed in order to create synergies. All the initiatives are based on human networks amongst different stakeholders. In other words, a Smart City cannot exist if groups of various *actors*, including the citizenry, are not connected with each other with the common goal of ameliorating the environmental and socio-economic conditions of the context where they operate.

The recent institutional change, i.e. the establishment of Metropolitan Cities (L. 56/2014; L.R. 8/2014; L.R. 15/2015), is a turning point in order to verify whether synergies and human networks can be actually translated into policies aimed at *fixing the Gap* factually within the framework of Smart Cities. As described in par. 4.1, Reggio Calabria is still in the process of instituting the Metropolitan City due to the destitution of the previous administration for criminal infiltration; at the same time, the whole Sicilian Region (under Special-Statute) has gone through a paralysis while redefining boundaries of its Metropolitan Cities. Further research can explore how Metropolitan Cities will tackle the challenge of creating material and immaterial infrastructures aimed at connecting the "democratic driving forces" of societies. In this perspective, it is possible to trace operative guidelines for planners who aim at implementing a *Smart approach* toward this direction. Although these guidelines may be better discussed in further research, they are enunciated as an outcome of this paper in the following synthetic steps:

A) The need to evaluate context-based challenges, before applying the Smart "label";
B) The need to identify structures and key-elements for generating and improving "Smart Governance", as the first strategic action to be carried out in a City that claims to be Smart;
C) The need to sustain human networks as the real crucial point of Smart Cities. ICTs certainly help. But they come later.

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