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EUROPEAN PATHWAYS FOR THE

SMART CITIES

TO COME

on behalf of EERA Joint Programme on Smart Cities

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INTRODUCTION: WHY A VIRTUAL ROUND TABLE ON SMART CITIES?

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Regardless the source, energy is a major factor for development. It is needed for transport, industrial and commercial activities, buildings and infrastructures, water distribution and food production - to quote a few. As a matter of fact,most of these activities take place in or around cities, which are responsible - on average - for more than 75% of a country's Gross Domestic Product (GDP) and can therefore be considered as the main engines of global economic growth. To run their activities, cities require an uninterrupted supply of energy. A sustainable urban energy system needs low carbon technologies on the supply side and an efficient distribution infrastructure as well as lower consumption on the end-user side.

The aim of this Virtual Round Table[1] is to present the perspectives of representatives of selected stakeholder groups we consider as key actors for urban development.

According to the above scheme, the Virtual Round Table Editorial Board[2] have identified four main stakeholder groups: Governmental Stakeholders; Research Stakeholder; Design/Construction and Real Estate Stakeholders; Social/Civil Society Stakeholders. For each group the Editorial Board elaborated a set of questions; each stakeholder group is introduced by a member of the Editorial Board, who - at the end of the contribution - identify the main findings.

Highlights on the topic are provided in the Foreword by Magdalena Andreea Strachinescu Olteanu - Head of Unit, New Energy Technologies, Innovation and Clean Coal, Directorate General for Energy, European Commission - and by Eddy Hartog - Head of Unit Smart Mobility and Living, Directorate General Communications Networks, Content and Technology, European Commission.

I would like to thank them and express my sincere appreciation for their contribution.

01 |

Government Stakeholders
Research and Innovation Stakeholders
Design/Construction Stakeholders
Real Estate Stakeholders
Urban Services Stakeholder
eCommerce Stakeholders
Analyst, IT project and Big Data Stakeholders
BPM Stakeholders
Financial/funding Stakeholders
Social/Civil Society Stakeholders

07 | Urban Stakeholder, from RdS, SCC solutions for Smart Urban District, PAR2016/033

NOTES

[1] The Virtual Round Table on Smart Cities is more than a collection of points of view. A Round Table asks for selected speakers to present in depth - and discuss - at their best, a set of given questions.
Our Virtual Round Table is a Round Table in the sense that a set of questions have been given, then the answer - among the same Stakeholder Group - have been circulated for fine tuning. Then it is Virtual as the most of our key note speakers didn't have the opportunity to meet.

[2] Paola Clerici Maestosi, Paolo Civiero, Elena Guarneri.

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A dialogue between **Paolo Civiero** and **Eugen Pănescu, Daniele Russolillo, Graziella Roccella, Luca Talluri**

In the last ten years of economic disease, architects, engineers and construction companies had been facing many and more revolutions to sustain growth and lead innovation in urban areas. Most of this innovations concern design, planning and P&CM as well as tools, regulations upgrade and protocols. All these innovations promote sustainability, efficiency and security, technological advances in materials and products, according with a 4.0 industrial revolution towards industrialized building systems. The Smart Cities lighthouse projects already demonstrate that solutions to integrate smart homes and buildings, smart grids (electricity, district heating, telecom, water, etc.), energy storage, electric vehicles, smart charging infrastructures and ICT platforms based on open specification, are feasible though expensive.
On the other side different approaches are possible in built environment: urban regeneration and/or urban regeneration through cultural creativity and social inclusion, transition to ZEED, rehabilitation, reconstruction, recovering.
The participants in the VRT are key note representatives of three European Design, Construction and Real Estate promoters of cities of tomorrow (Architects Council of Europe[1], Federcasa[2], and Planet Idea[3]).

Paolo Civiero *Housing is probably the main construction sector able to face human healthy living conditions and - due to its impact on cities - it represents the way to limit the drastic increase in urban energy consumption associated with CO_2 emissions. Which strategies and solutions for cities of tomorrow?*

Eugen Pănescu European housing stock faces a dual situation. The clear majority of existing residential units is not fit to provide a healthy comfort without using too much energy. New units are already better equipped, but insufficient in numbers. Main future efforts are regarding the huge demand to upgrade old stocks, in relation to the social context, not only technological. All efforts must start with the integrated design of contemporary solutions, balanced in investment vs. effect. As for the existing cities, a step-by-step approach is very much sustained by developing efficient tech solutions, funded in broad research programs (Horizon2020 for example). Affordability of all solutions is key for a massive impact in the future years, sustained by European and national policies.
At urban level, the European compact city is a model for short distances, mixed areas, social balance and public transit. Ecological approach comes in place at every level of the design, building and use of cities. All these aspects provide best conditions to further improve the circular economy, lower emissions and public support, to tackle climate change causes and effects.
ACE promotes quality based approaches in acquiring professional services of architects, which bring considerably advantages for the entire life cycle of buildings, from economic, social, environmental and cultural points of view. Value of design is paying back every time.

Daniele Russolillo, Graziella Roccella Energy, together with air, soil, water and natural ecosystem, is one of the target areas in which cities of tomorrow can have a positive impact in terms of different approaches to consumption, being one of the crucial areas of urban life, in the broad framework of ecosystem resources.
When it comes to define strategies for reducing emissions, it is necessary to make a first distinction between greenfield and brownfield projects. In the first case it is somehow easier - even if not always economically feasible - to adopt the most effective methods starting from the right choices in urban planning (such as density, localization of the houses near the production plants, choice of renewable sources for energy production, correct orientation of the buildings, closure of productive cycles in a systemic vision), in Brownfield projects it is harder to define an efficient and effective roadmap that can gradually lead to a more sustainable energy management.

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Planet Idea Smart Engineering

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Chief Operating Officer
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Multicriteria analysis tools together with CIM (City Information Modeling) and DIM (District Information Modeling) can help supporting decision makers to determine short and medium term strategies.
Designing smart grids, starting from *smart metering* and even experimenting demand-response based processes, can help energy providers to manage peaks in energy consumption promoting peak-shifting and/or peak-shaving.
When it comes to list vertical solutions for the neighborhood of tomorrow, if decision-makers want to understand and manage the wide offer in terms of products, they must operate with an integrated and systemic approach. For instance, regarding the issue of public lighting, starting by substituting traditional lamps with LED ones is surely not enough. New generations of smart lighting systems can integrate a number of diverse sensors and devices such as wi-fi connection, cameras and audio systems that can significantly improve performances in the quality of urban life in public spaces, that's why it is vital to keep an integrated approach that also helps to avoid the technology lock-in.
Besides those solutions, that can instantly and rapidly reduce consumptions, there is also a need for spreading best practices to activate virtuous behavioral changes. In this perspective, cities could encourage the implementation of intelligent equipment in their public spaces, creating "Living Labs" with e.g. gym equipments that produce energy through physical exercise, active playgrounds where children can touch, hear or see the energy they produce are just two examples of what the cities of tomorrow can put in place to promote a so called "smart citizenship".
Luca Talluri The challenge is to regenerate what already exist, to work on what was built. A project of the building is necessary in order to have high performances in energy efficiency and high living comfort but it is also essential a urban planning that takes into account social needs as use of commons, social cohesion, possibility of self-realisation and emancipation of the individual. Families who live in public social housing have an average rent of about 110 €/month and spend more than 10% of their income on energy consumption. Reducing energy costs would help the fight against "energy poverty", therefore it is necessary to intervene right where the need is greatest.
Considering that the dwellings built before 1981 are certainly lacking of adequate insulation, there are about 400 thousand apartments with consumption over 150 kWh/sqm/year which need urgent intervention. The serious maintenance deficit in which a portion of the managed assets is experiencing absorbs a large part of the total amount of the resources allocated: these resources activate extraordinary maintenance interventions on about 7 thousand dwellings each year, less than 1% of the assets. Currently public social housing benefits from Italian financial incentive (Conto Termico, D.M. 16/02/2016) and tax deduction (DL 63/2013, art. 14) but they cover only part of the cost of an energy efficiency intervention (from 30% to 75% of the total). Therefore it is possible to activate energy efficiency interventions only by an integration with regional funding and own funds of the public housing company.
The public housing sector is particularly suited to meet the challenge that Europe has launched on energy efficiency, because its features facilitate intervention more than in private assets: there are many apartment building with centralized systems which allow greater economies of scale. Larger scale interventions, small district heating networks or building complex ones, combinations of interventions to improve the thermal behaviour of the building envelope associated with systems optimization and use of renewable energy are possible.
For these reasons, the public social housing sector has a role of experimentation of innovative methods and technologies also thanks to the possibility of monitoring the results and of intervention on the behaviour of both the operator and the users, by:
- the development and implementation of low-consumption urban, building and construction models;
- the development and innovation in the sector of systems engineering in order to reduce energy consumption, as research of materials to increase their durability and consequently to reduce management costs;
- the implementation of almost Zero Energy pilot projects for public social housing, to be constantly monitored: results can be used as good practices;
- the transfer of process and procedural models to the private rented sector.

Despite the current constraints, energy requalification activity demonstrates that public social housing companies have technical and planning skills able to implement and manage interventions in a perspective of deep redevelopment of entire buildings, up to demolition and reconstruction of almost zero energy buildings. The public social housing sector is therefore ready to launch an energy redevelopment plan based on funding targeted to the specificity of the subject and that can be combined with incentives and tax deductions, with the aim of combine upgrading and recovery interventions of the assets with energy efficiency measures and improvement of seismic safety of buildings and entire neighbourhoods.
In particular, the role of public housing operators can be qualifying in energy efficiency improvement programs. Through the redevelopment of public housing assets, it is indeed possible to achieve both the reduction of the emissions and help the fight against "energy poverty", considering that a high percentage of families that live in there are in disadvantaged economic conditions and currently spend on the bill energy equivalent to twice the rent. Last

but not least: in some national contexts energy efficiency must be linked to the improvement of the seismic performance.

Paolo Civiero *How social inclusion, social participation and demographic change will be faced by buildings and built environment in the next future?*

E.P. The relation between urban context, buildings and their occupants is a continuous preoccupation in the European cities. Still enjoying the advantages of social mixed environments, either in historical centres or in peripheral mass living neighbourhoods, we must defend increasing effects segregation and urban poverty. Well planned cities and buildings bring people together, not keep them apart. Short distances and efficient public transports make people meet and spend more time together instead of commuting in private cars.

Social policies are key in balancing an ageing population. Generations are communicating easier, integrating their needs and using the built environment in a flexible way.

D.R., G.R. By 2025, 440 million affordable households will be needed around the world (62 million in China, 28 million in India, 11 million in Brazil, 11 million in Nigeria and 7 in Indonesia, only to quote the first 5 countries in the ranking)[4]. New population will settle in urban context and will need to dwell in affordable houses. To face this growth, trying to reduce inequalities and offer the same opportunities to everybody, it is important to define internationally valid guidelines and set up minimum requirement standards for smart infrastructures and services. A global action carried out by governmental bodies and in general by the public sector is strongly needed and welcome.

Being directly involved in the planning and construction of *Smart City Laguna*, a newly built settlement in São Gonçalo do Amarante, near Fortaleza in Brazil, Planet Idea has defined the Social Smart City Matrix, a new evaluation tool for measuring how much "smart and social" a project is. The matrix, elaborated with Arup and RECS Architects, works both on the urban and on the architectural scale and is based upon a framework operating with two components: people and technology. These dimensions are expressed through qualities: from the "social" point of view, a project must be attractive, healthy and inclusive; to be technologically smart, a project should be informative, efficient and digital. *Smart City Laguna* will feature various sharable spaces such as a social kitchen, a Library of Things, shared gardens where people shall grow their vegetables, spaces for book crossing, to help the spontaneous creation of *Smart Communities*. The Planet App, a digital tool, where data are made available to citizens, is encouraging the birth of the community of inhabitants who will live in the city that will be ready by 2020. There would be no Smart City without active citizens therefore it becomes more and more clear that social participation is one of the drivers of change.

L.T. Federcasa is the association which provide over 850,000 social dwellings to low and middle income households. They are specialized in the construction and management of housing assets, implement interventions of recovery, restructuring and maintenance and promote and implement urban regeneration programs, providing also the services necessary to improve social cohesion and inclusion.

The efficient management of public social housing is affected by the general context of reference but also by the socio-economic conditions of the families that live there. According to the Bank of Italy survey on household budgets, the profile of the typical family living in public housing is characterized by a significant presence of retirees (43.9%) over 65 years (38.3%). It is a population with a deep economic vulnerability: more than half of the families pays a monthly rent of less than 100 euros (51.1%), as its income is below 10 thousand euros per year (37.8% of households). They are unable to save money, 83.3% of households claims to spend all their income. Households are mostly Italian citizens, and the percentage of foreigners represents 5.8%. More often they are single-family or two-component families, while the largest families (with more than 3 members) represent a residual percentage. Young families (up to 34 years) reach only 12.5% of the total.

Considering the picture above, the public social housing companies needs new tools and skills to foster integration and social cohesion, to manage neighborhood conflicts, to ensure compliance with the rules of cohabitation and coexistence with the goal of integrating the skills of housing policies with those of social mediation in order to prevent illegality and to overcome the degradation of neighborhoods and suburbs, including through partnerships with institutions, social and health services, voluntary work.

Public social housing companies now come to awareness that it is the time of complex programs and integrated approaches between construction activities and social interventions in order to be effective and efficient toward households. The ongoing challenge on which we are working is managerial and organizational: it is crucial to introduce offices and services that recognize tenants as persons, understand their fragility and carry them in the search for answers to their problems, to be received from the territorial socio-health institutional network. This creates social cohesion.

Interventions of reallocation and fractionation of dwellings increase available units and allow a wider response to the current size of families. At the same time, it is very important to sustain and strengthen all the initiatives of co-housing, for disabled and vulnerable people, students and families, and the development of a network of care services and local protection of the elderly, through monitoring and prevention services.

Paolo Civiero *New technologies and materials will facilitate renovation and reconstruction in urban areas: citizen's participation in the planning and design phases could be an added value for urban regeneration?*

E.P. Smart City can help boost residents interest in their close living environment and participation in the decisions affecting their living standard. Already such framework is present and design has become inclusive and democratic.

Open Data and effect based decisions in design are supported by new technologies, ready-to-use by citizens.

Urban regeneration has become a general topic throughout Europe, but is still an unclear approach unless the issues to tackle are not clearly defined. Focus on an integrated intervention will prevent limitations in solving single issues.

D.R., G.R. The most critical issue that the concept of "smart" city generally raises is that it is mainly based on the technocratic paradigm and it is probably leading to social exclusion of people who are not able to use or who can not afford digital technology. For this reason, a new concept of "human Smart City" is gaining attention on the international scene.

From this perspective, every process which encourages active citizenship's engagement is the perfect counterpart to the innovation carried out in the technological field. Truly smart and social neighborhoods should include public spaces to be interpreted like pluralistic arenas where active citizens can meet, organize and realize public events and activities.

Co-design processes for the urban regeneration, especially of existing suburban areas, are effective strategies to build a new identity for those places, certainly different from the "mousetrap identity" criticized by architects, that imprisons places and resists to renewal[5] but rather a new bottom-up participatory process of identity building. Many cities have already started this kind of approach by adopting innovative and light forms of participated administration such as the Regulation of the Common Goods and the possibility for the citizens to take care of public spaces through Collaboration Agreements. Besides, since 2001 participation could also be adopted starting from local funding operations such as Participatory Budgeting.

In short, the main objectives that a truly participatory budget pursues are:

- facilitating the confrontation with the citizens and promote shared choices and decisions, also reducing conflicts;
- responding more effectively to the needs of citizens, and ensure greater correspondence between needs to be met and available resources;
- involving citizens in the process of public management through forms of direct democracy;
- rebuilding a relationship of trust between institutions and citizens.

L.T. Citizens participation is an inherent need of urban regeneration and is fully part of the smart governance tools. Talking about urban regeneration means tackling the problem of social exclusion, which is always associated with physical and functional marginalization of the district, widespread poverty, lack of services and unemployment.

Since the nineties, many legislative measures (integrated programs, urban recovery and urban redevelopment programs, neighborhood contracts, programs of sustainable development of the territory) allowed the integration of real estate valorisation processes with improvement of urban conditions, employment development and improvement of quality of residential building. Companies of public social housing have been able to join national, regional and European calls by participating in local partnerships on cross-sector projects, supported by participatory planning processes, which allowed to renew and increase managed assets and to improve the quality of life of the inhabitants.

Two factors emerge as essential in order to reverse the escalation triggered in the degraded neighborhoods: the resumption of a relationship of trust between the local administration and the inhabitants (who felt excluded from the process of growth of the city for too long) and the launch of a process of taking-in-charge by the inhabitants of the maintenance of the results of the regeneration process.

This practice can lead to a change of culture: in those neighborhoods where any form of active democracy has not been promoted and the same democracy has been questioned, a bottom-up participation in land transformation processes can be the premise for restoration of legality and social cohesion.

Paolo Civiero *Rules and burocratic obligations, lack/difficult access of funding financing (private and public) are some of the main aspects to be overcome in everyday activities. Which governance model would better support urban regeneration?*

E.P. Best cases of Urban Regeneration schemes are including a balanced mix in providing arguments, data, participation and decisions: citizens, independent specialists, city administrators and local politicians.

Urban Quarter/Districts management frameworks offered optimal results when they included continuous professional support as part of the scheme - facilitators, architects, sociologists, landscapers and urban planners.

Participatory budgeting schemes are proven to increase the trust and participation of citizens, thus bringing closer decision makers with the populations and providing transparency in managing public funding. Often smart open digital platforms are key in social progress, increasing common understanding brings empathy and supports interest in raising the overall standards. Smart Cities rely on connected infrastructure, but the real in-

novation is being driven by citizens, in the most democratically manner available.

D.R., G.R. The most successful development models for Smart Cities seem to be characterized by the wide participatory approach of a strong and formally established governance structure. Such a governing body can really get into the details of the executive decisions related to projects timeline and of the procurement and investment decisions often realized in the context of public-private-partnerships[6].

The constitution of such a strong governance requires a comprehensive alignment of incentives among the actors with regards to the Smart City programme. This requirement is surely not sufficient to ensure a successful implementation of smart city processes, but it is necessary[7]. The alignment of incentives in turn requires a comprehensive knowledge of the system of actors, as well as a deep understanding of each actor's incentives before the start of any Smart City programme.

Thus the first step is certainly the identification of salient stakeholders for which a three-layered scheme made of infrastructure, digitalization layer and services is surely helpful. Indeed such layers should be carefully looked into, to mitigate the risk of leaving some actors out of the game. For instance, the service layer in a Smart City can be exploded in sub-layers such as legacy services and innovation services and the latter can be even further explored analyzing on-demand/sharing economy services and specific social innovation services aimed at social inclusion or at updating the welfare system in place.

Then, in order to start building an effective and efficient governance structure of the Smart City, it is relevant to:

- analyze the set of relationships among all the local and sometimes national (it depends on the regulatory framework in place) stakeholders, and
- analyze in detail the information flow in place amongst the actors.

L.T. As the "Parliamentary Commission of Inquiry on Suburbs" recently highlighted, first of all there is the need to define a strategic plan for cities and then it is necessary to start a structural policy on the regeneration of suburban areas. So far the call for inner peripheries collected a widespread planning not able to realize a mass critical enough to reverse regressive tendencies.

In particular, in order to have more effective housing policies in urban regeneration processes we consider necessary:

- to define a national strategy for housing and urban regeneration and to decide a national department or agency as reference point on the matter for public bodies and operators;
- within urban regeneration programs, to have subsidies specific in favor of public social housing;
- to provide permanent funding for public social housing in order to ensure an adequate maintenance of the assets and to have the possibility to increase the assets itself in cities and municipalities where the housing deprivation is more severe;
- to redefine responsibilities and duties of State, Regions and municipalities and prepare a framework legislation on tasks and functions of Public Social Housing Companies in order to establish uniform criteria for the entire national territory concerning the treatment of households;
- to redefine the above-mentioned Companies and their role in order to recover administrative and financial efficiency and to ensure them to be the leading actor in the social housing sector;
- to oppose the squatting through new procedures that involve local authorities, court and law enforcement;
- to launch a program that support the development of social infrastructure in the suburbs, a program that put first the creation of services, trials of immaterial actions, the diffusion of sustainable management models, the support for projects of social inclusion, cultural production, new welfare and innovative living services.

Paolo Civiero *How the Smart City paradigm plays a key role in promoting innovative and sustainable economies?*

E.P. Smart Cities are better working with urban open data, with broad population inclusion and transparent decision making. In this regard, urban and architectural design is benefitting from an integrated growing framework of awareness. Diversity of the European context is asking for diverse solutions, so less big scale approach as opposed with matching answers, provided by small scale dynamic economies.

The digital transition affects most aspects of daily life and will have significant impact on all levels, making most of us adapt and benefit from it. Smart City toolkit should increase cooperation of the public and private sectors. City and community management are depending but also generating better economical instruments, based on cross financing and incentives. Sustainability can be achieved by opening access to technological solutions and sustaining SMEs.

D.R., G.R. The most relevant factors of the Smart City paradigm to promote innovation and sustainability for the local economy are indeed the connectivity and the local social innovation.

The first element, i.e. the availability of a widespread and reliable broadband connectivity, both available in private and public premises in open spaces, is key for instance to enable the set of new enterprises that can be developed onto such technology layer: the most known example are surely the sharing economy services (also called on-demand services) blossoming everywhere. In fact they are substantially match-making platforms that require an always-online state and geolocation services in order to provide the expected results. Such a requirement might sound outdated, but reliable broadband connectivity is still a challenge in most minor urban centers and is widely known that the digital divide can halt

any smart city programme. Moreover is still the first challenge to meet in emerging and developing countries worldwide.
The second key element is the social innovation process. The Smart City paradigm shift is at risk of being non-inclusive by design when excessively techno-centric, whereas user-centricity insures that the real needs of all citizens are met in the urban innovation process. It is very relevant at the urban level that competent stakeholders trigger social innovation first of all analyzing the main collective interests of the urban society with a bottom-up approach. The risk in fact, especially when social innovation is bound to impact finance, is to foster the interest of social entrepreneurs only to the low-hanging fruits.
The social innovators in a Smart City or Smart District must aim at promoting new models of civic participation, with a constant eye to inclusion and social protection, that are able to meet effectively the social needs with an updated capacity[8].
L.T. Increase in the world population, a gradual decline in energy resources and the consequent increase in their cost, climate changes and air pollution are the main problems cities will have to face to survive, transforming themselves into smart cities and focusing on green building and smart mobility.
Cities must necessarily be ready and able to sustain enormous social and environmental changes, becoming the focus of the fight against global warming and catalyzing investments and policies oriented towards sustainability and efficiency in a smart perspective.
A Smart City is a city able to improve the quality of life of its citizens by offering a lasting opportunity for cultural, economic and social growth in a healthy, safe, stimulating and dynamic environment, focusing essentially on digital technology, environmental sustainability, civic initiatives, mobility and businesses.
Concerning the housing sector, a Smart City is therefore a city able to guarantee a smart living: quality of life, health and safety, culture, social structures, quality of dwellings, educational facilities, social cohesion, tourist attraction.

Paolo Civiero *Which key stakeholders and key actions better deploy transition to Smart Cities?*
E.P. Smart City is an unavoidable trend, but also a flexible approach, which should be tailored-to-fit for any community. Key actions are first hand expected from the public sector managing cities and regions. Responsibility will be met more efficient using new tools. Nevertheless, obtaining real time data, using it in an open transparent and accessible way is possible with private sector support and citizen's access and involvement. In a diverse social and economic mix, Universities can play a decisive role, providing not only specific research and solutions, but also urban vitality, without which Smart City has only a softer grip.
Architects Council of Europe is promoting several topics that will need a smart approach in their implementation throughout Europe: European Urban Agenda is integrating all key topics for the common future and Smart City can provide help for every aspect. As architects can play a role in fighting Climate change, the complex relation between context, materials, form and cultural approach gives better results as only concentrating on technological solutions. Quality driven output is achieved if "Value" of design is recognised in its complete benefit. Fair architectural competitions are one of the main tools in providing quality.

D.R., G.R. Sound examples such as Copenhagen or Amsterdam have succeeded in developing strong management stakeholder platforms that succeeded to deploy effective transition to Smart Cities.
Such stakeholder cooperation models are characterized by really broad participation, executive powers over investment decisions, high reputation and of course the ability to influence the political and policy making arena. Furthermore they speed up the project execution[9].
The inner core of effective stakeholder platforms should surely include the municipality, the public companies participated by the municipality, the local private or public incumbents with regards to the local public services (such as waste, energy and transport utilities). The public or private nature of the incumbents depends on the regulatory framework in force and on the maturity of the privatization and unbundling process achieved on the territory. The outer circle of stakeholders should indeed include the private operators directly involved in realizing infrastructures and implementing smart solutions, such as real estate developers, system integrators, competence centers and technology providers.
Another set should include the academic institutions and the start-up community and last but not least the organizations involved in social innovation and the associations of active citizens.
The best initial actions to trigger the required paradigm shift are related to a structured dialogue aimed at discovering the real needs of the citizens, in order to avoid to develop an excessively techno-centric approach to the Smart City. The level of the district (starting from 600-800 households) is indeed the most suitable for experimentation and realizing pilot projects whose hopefully positive results can spread to the rest of the urban territory.
L.T. Public social housing assets represents an important opportunity to create increasingly inclusive, sustainable and Smart Cities, more commonly called Smart Cities.
When we talk about Smart City we are not referring just to hyper-technological or hyper-connected urban centers but to cities that pursue an idea of sustainable development based on the conciliation between environmental, social and economic sphere, where the citizen's well-being is central.

With this logic, housing is the fundamental issue: the house is the minimum space unit in the city where social relationships develop and where habitual behaviors are formed but it is also a physical space, that has to be salubrious, functional and energetically efficient.

Managing public social housing assets means to have the possibility of identifying guidelines and developing projects on a consistent and extended system of residences, both on the "software" level (relationships, behaviors, inclusiveness, services, etc.) and the "hardware" level (building, applied technology, energy efficiency, plant engineering, etc.). And it means to be able to influence the future of our cities and their inhabitants.

Therefore public social housing companies can be considered among the main stakeholders to build the future policies of the Smart Cities, together of course with the Public Administrations and the other companies that deal with public services (from water management to waste management, from public transport management, to parking, to pharmacies, etc.).

There are therefore many actions to be developed on public social housing that can lead to the transition to Smart Cities: actions on the building with an immediate impact on environmental sustainability (construction of new Near Zero Energy Buildings, energy redevelopment of existing real estate, system integration for energy efficiency and use of renewable energy sources, bio-architectural solutions, etc.); action for householders (preventive matching of families in order to foster relationships and minimize conflict, services for inclusion and interculture, spaces for integration and recreation, co-housing experiments, etc.); action for the neighborhood (development of services and activities shared with the surrounding urban and social fabric as for example sharing mobility services, neighborhood carers, etc.). It is necessary to deploy all this to create more and more cohesive communities and to design the cities of the future.

NOTES

[1] The Architects' Council of Europe (ACE) is the representative organisation for the architectural profession at European level. Its membership consists of regulatory and professional representative bodies throughout Europe. Through them, the ACE represents the interests of over 560,000 architects from 31 countries in Europe, with the aim of fostering Cross-Border Cooperation, facilitating European Practice and supporting Sustainable Development of the Built Environment.

[2] FEDERCASA is the main Italian Association representative of national public social housing companies and housing bodies, involved in different activities (e.g. construction, management, training, design competition) and in broad scientific research programmes at European level.

[3] PLANET IDEA is a multidisciplinary competence and service center that designs and integrates innovative smart solutions into the urban context at various scales. Planet Idea operates based on four macro-areas: built environment, technological systems, ecosystem resources, and society. It international clients are presented with a list of smart solutions that are sub-categorized within each area.

[4] McKinsey Global Institute, A blueprint for addressing the Global Affordable Housing Challenge, October 2014, pages 27.

[5] Koolhaas, R., Generic City, 1995, Sikkens Foundation, ISBN 9789074957038.

[6] E&SG (Energy&Strategy Group of the Polytechnic of Milan, Italy), Smart city report, 2015. Available online at http://www.energystrategy.it/assets/files/SCR_15.pdf

[7] D. Russolillo, *Knowing the Field for Infrastructure and Service Regulation at the Local Level: Players, Information, Incentives*, featured in the volume *The Political Economy of Local Regulation. Theoretical Frameworks and International Case Studies*, Palgrave Macmillan 2017, pages 77-94, ISBN 978-1-137-58827-2.

[8] Such a definition and framework related to collective actions has been presented by Planet Idea Srl to the working groups of the initiative of the City of Turin named Torino Social Impact, soon online.

[9] Mosannenzadeh Farnaz, Maria Rosaria Di Nucci, Daniele Vettorato, Identifying and prioritizing barriers to implementation of smart energy city projects in Europe: An empirical approach, Energy Policy, volume 105, June 2017, pages 191-201, ISSN 0301-4215.

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