



**SBE19**  
**SCILLA**

**Sustainable Built Environment Conference**  
May 16th - 17th 2019, Scilla

# **PROCEEDINGS** **book**



Smart Specialization Strategy Calabria  
Area di innovazione Edilizia sostenibile



SBE19  
SCILLA

Sustainable Built Environment Conference  
May 16th - 17th 2019, Scilla

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## INDEX

<b>Foreword</b>	<b>5</b>
<b>Building design and operation</b>	
<b>A new interpretation of local materials: innovations, technologies, researches</b> Francesca Giglio, Rosamaria Codispoti, Renato S. Olivito	<b>7</b>
<b>Building energy and environmental performance of high-rise residential buildings with a newly developed cladding</b> Goopyo Hong, Suk Won Lee, Ji Yeon Kang, Hyunggeun Kim	<b>14</b>
<b>Design of integrated sustainability “off-shore” and “off-site”. Prototype-mvp “S2_Home” by Demasi mechanical industries</b> Consuelo Nava	<b>19</b>
<b>Use of generalised additive models to assess energy efficiency savings in buildings using smart metering data</b> Benedetto Grillone, Gerard Mor, Stoyan Danov, Jordi Cipriano, Jordi Carbonell, Eloi Gabaldón	<b>27</b>
<b>Energy efficiency measures uncoupled from human perception: the control of solar shading systems in residential buildings</b> Francesco Nicoletti, Davide Condò, Cristina Carpino, Natale Arcuri, Roberto Bruno	<b>35</b>
<b>Architectural quality and typological flexibility: the role of buffer spaces in warm climates buildings. An application in a steel and hemp construction system</b> Roberta Lucente	<b>43</b>
<b>Experimental results on the thermal properties of reflective materials for building insulation applications</b> Roberto Bruno, Vittorio Ferraro, Piero Bevilacqua, Giorgio Cuconati Cristina Carpino, Natale Arcuri	<b>49</b>
<b>The role of thermal inertia in wooden buildings</b> Piero Bevilacqua, Roberto Bruno, Antonietta Pellegrino, Natale Arcuri	<b>57</b>
<b>Decision Making and Evaluation Tools</b>	
<b>Multi-criteria decision support system for urban energy group planning and decision-making activities</b> Sara Torabi Moghadam, Patrizia Lombardi	<b>65</b>
<b>Eco-efficiency Assessment of Administrative Divisions in 42 Countries Based on Environmental Impact and Gross Regional Product</b> Junya Yamasaki, Toshiharu Ikaga, Norihiro Itsubo	<b>71</b>
<b>Comparative analysis for the evaluation of sustainable mobility in urban scale environmental certification</b> Mauro Francini, Giusi Mercurio, Annunziata Palermo, Maria Francesca Viapiana	<b>79</b>
<b>Urban scale ITACA protocol</b> Luca Marzi, Paolo Lucattini	<b>87</b>
<b>Education and Training</b>	
<b>Water World: Architecture Design Proposals Address Climate Change and Rising Sea Levels</b> Theodore Sawruk, Timothy Abblebee	<b>95</b>
<b>Innovative features in training methods for sustainable architecture design</b> Ernesto Antonini, Francesca Giglio, Massimo Rossetti	<b>106</b>
<b>The Rural Making Lab: Tactic of Social, Cultural and Sustainable Innovation for the Inner Areas of Calabria</b> Giuseppe Mangano	<b>113</b>
<b>Living in the Clouds: Sustainable Pencil Towers for Hartford, Connecticut</b> Theodore Sawruk, Seth Holmes	<b>120</b>

## Policies and programs

- Induced impacts from the building and transportation sectors as a means to achieve environmental goals** 132  
John Erik Anderson
- Working on value chains for sustainable buildings in Calabria: the approach of the regional Pole of Innovation Green HoMe** 136  
Mario Maiolo, Giuseppe Rossi, Marida Bevacqua, Gilda Capano
- Sustainable Building Program of the Calabria Region. First results** 142  
Giovanna Petrunaro, Barbara Corasaniti

## Sustainable neighborhoods and cities

- Rebuilding a community for sustainability and resilience** 148  
Ann Edminster
- Effects of urban morphology on outdoor thermal comfort. A microclimate parameterization of housing blocks in the Euro-Mediterranean context** 153  
Carmela Aprea, Alfredo Reder, Paola Mercogliano
- Sustainability and resilience in the southern outskirts of Reggio Calabria. Strategies and projects for soil recycle and management.** 160  
Alessia Leuzzo
- Mapping trees in European cities with Urban Atlas under consideration of natural vegetation formations** 167  
Ulrich Schumacher, Clemens Deilmann
- Cost-effective structural planning of the apartment for flexibility and durability** 173  
Jiyeon Kang, Goopyoh Hong, Hyunggeun Kim

## Assessment methods and tools - Building scale

- BuildDOP: one single tool to evaluate energy, environmental impact and costs** 179  
Carlotta Dolzani, Mariadonata Bancher, Martina Demattio, Ulrich Klammsteiner, Ulrich Santa
- Analysis of the discrepancy between estimated energy demand and real energy consumption of buildings** 186  
Svenja Carrigan, Marco Hartner, Oliver Kornadt
- Remarks on Application of Building Physics for Climate Change Mitigation** 192  
Jan Tywoniak, Pavel Kopecky, Zdenko Malik, Nikolaos Skandalos
- Ontology-based cost estimation for construction projects** 197  
Jaehyun Choi
- Smoothing out the interaction among BIM, sustainability rating systems and minimum environmental criteria** 200  
Floriana Calise, Nunzia Cascone, Erica Proietti
- Itaca-food a model for the sustainability assessment of food process buildings** 205  
Francesco Barreca, Giuseppe D. Cardinali
- Dry construction systems for sustainable design: issues and perspectives for the use of dry construction systems in the Mediterranean context** 209  
Laura Greco
- Maintenance and assessment of environmental sustainability in buildings: a possible synergy between present and future** 217  
Maria Azzalin

## FOREWORD

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Policies play a key role in starting and promoting the movement towards a more sustainable built environment. Public authorities at all government levels are developing and implementing policy instruments to improve the performance of existing and new buildings and urban areas. Sustainability requirements are adopted in green public procurement, building codes, funding programs, subsidies and incentives, urban plans, authorization processes. Public buildings are assuming the role of frontrunner projects to show the feasibility of sustainable building in practice. But policies alone aren't enough. To reach the target, a synergy among all the actors of the building sector is necessary. A public – private partnership is needed. Professionals, workers and construction companies must improve their skills and knowledge. Research organisations must provide new cost-effective materials and solutions. Users must change behaviour in using buildings.

At transnational level, Sustainability Development Goals (SDGs) were set in the United Nations Agenda 2030. The European Union issued common directives, communications and programs concerning SDGs, circular economy, energy efficiency, etc. Following the principle of "Think globally, Act locally", a harmonization among actions implemented at local level is necessary to meet the global common targets. Objectives need to be aligned, common methodologies and indicators must be set up for facilitating the exchange of best practices and to measure the overall progress and results achieved. The outputs of research projects must be effectively exploited and capitalised in practice.

In this context, sustainability assessment and rating systems are recognized to be a useful tool to promote the movement of the building sector towards a better sustainability. Their adoption in policies allows public authorities to fix objective, measurable and reliable performance targets. In the same time, sustainability certifications systems allow to recognize and valorise high performance buildings in the market. Also in this case, a harmonization among the assessment systems is necessary to allow the comparison of assessment results at transnational level.

The SBE19 Scilla conference addressed all the above-mentioned topics, focusing on policies, programs and action plans targeted to improve the sustainability of the built environment. Particular attention was given to the integration of assessment systems in policies and decision-making processes in relation to all spatial levels: buildings, urban areas, cities and territories. Strategies for the harmonization of public assessment systems at building, urban and territorial levels were also discussed. Several thematic sessions were organised with relevant organisations. UN Environment/MAP and MEDCities organised a session concerning planning and management of sustainable cities in the Mediterranean. The Government of Catalonia managed a session on architecture, energy efficiency and housing in the framework of the 2030 agenda. In collaboration with the DG Environment of the European Commission, a session focused on the Level(s) system for the harmonization of assessment systems used by public authorities was organised involving scheme operators from different countries. A session devoted to the European research was organised with the MEDNICE project that manages the Efficient Building Community of the Interreg MED Programme. Always in the field of research, the project CESBA MED: Sustainable Cities showed the first international assessment system for measuring the sustainability of neighbourhoods developed in collaboration with 9 European cities. The Euro-Mediterranean Center on Climate Change (CMCC) organised a session devoted to policies and strategies for Climate Change adaptation in the Mediterranean. The Energy Cities network organised a session to discuss the opportunities for energy efficiency of public buildings in Italy in relation to the new European Directive. Beside the Thematic sessions, 9 paper sessions took place dealing with building design and operation, decision making and assessment tools at building and urban scale, education and training, policies and programs, sustainable neighborhoods and cities. Representatives from 17 countries and 4 continents participated, sharing experiences and creating the conditions for future collaborations and projects.

## Urban scale ITACA protocol

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Keywords: Multicriteria analysis, Evaluating urban scale environmental sustainability, Urban regeneration, Land consumption, Sustainable cities and communities.

### Abstract: The need for an "urban-level" ITACA protocol

The need to upgrade buildings and avoid land consumption, especially in urban peripheries, the importance of verifying environmental impact in relation to the effects of climate change and the awareness that re-designing cities can positively reinforce some of the factors that facilitate integration (community comfort and safety, for example) are among the issues that make it necessary to thoroughly re-examine government policy regarding urban planning and regulation. "Sustainable Construction", an inter-regional working group that is part of ITACA<sup>1</sup>, has responded to these issues by preparing a specific evaluation protocol for use in urban areas. The objective of this protocol, which will act in synergy with other protocols relating to building sustainability<sup>2</sup> and facilitate appropriate responses to urban regeneration, is to provide a cross-scale assessment that will measure the sustainability level of interventions in urban environments ranging in size from the block to the city. This protocol will be useful for public planning bodies and all those stakeholders in developing or transforming urban areas.

### 1. The reference scenario, the evaluation and guidance models developed within the Community.

Ever since the Leipzig Charter on Sustainable European Cities (2007), Europe has considered cities as places where the foundations are laid for generate the economic revitalization of their hinterland. The Declarations of Marseille (2008) and Toledo (2010) defined the contents relating to development in urban contexts, identified urban regeneration as a useful context for integrating the complex goals of environmental sustainability, supported the establishment of settlements with non-homogeneous zoning which would allow degraded or under-used urban areas to be reutilised, and expressed a preference for these strategies rather than isolated expansion processes. In this perspective, the Bristol Accord lists the cornerstones of so-called Sustainable Communities<sup>3</sup> which, despite differences dictated by their specific local context, must be:

- active, inclusive, safe, just, tolerant and cohesive;
- well managed with efficient leadership that stimulates citizen participation;
- sensitive to environmental quality.
- well organized and well built, characterised by quality urban and natural environments;
- well connected by efficient transport and communication services between workplaces, schools, health services and dwellings;
- economically thriving with a diversified local economy;
- well served by public, private and voluntary services that are adequate to people's needs and accessible to all;
- fair and capable of welcoming, now and in the future, people from other communities.

<sup>1</sup> ITACA is the acronym for: l'Innovazione e la Trasparenza degli Appalti e la Compatibilità Ambientale. ( Institute for Innovation, Procurement Transparency and Environmental Sustainability). The inter-regional working group is part of the Federal Association of Italian Regions and Autonomous Provinces

<sup>2</sup> The ITACA Protocol is based on the SBTool, an international instrument developed by iiSBE, and it belongs to a European network of certification systems based on the SBMethod which includes Verde (Spain), SB Tool PT (Portugal) and SB Tool CZ (Czech Republic).

<sup>3</sup> See the communication from the Commission to the Council, the European Parliament, the European Social and Economic Committee and the Regional Committee - Towards a Thematic Strategy for the Urban Environment COM/2004/0060 def. And The Bristol Accord (2005).

AMBITI DI APPLICAZIONE			DESCRIZIONE CRITERIO	SCALA DI APPLICAZIONE			UTILIZZO		INDICATORE	
Esistente	Progetto	Monitoraggio		Isolato	Comparto	Quartiere	piano, (masterplan, (metaprogetto)	progetto (piano attuativo, prog. Preliminare)	Scenario	Quantitativo
			<b>1. GOVERNANCE</b>							
	x		1.01 Partecipazione	x	x	x	x	x	x	x
	x		1.02 Gestione sociale del cantiere		x	x		x		x
			<b>2. ASPETTI URBANISTICI</b>							
x	x	x	2.01 Sviluppo e integrazione delle particelle catastali	x	x	x	x			x
x	x	x	2.02 Adiacenza alla città consolidata	x	x	x	x			x
	x	x	2.03 Conservazione del suolo	x	x	x	x			x
	x	x	2.04 Conservazione dell'ambiente costruito	x	x	x	x	x	x	x
			<b>2 bis. QUALITA' DEL PAESAGGIO URBANO</b>							
	x		2.bis.01 Rapporto con il contesto	x	x	x	x	x	x	x
	x		2.bis.02 Rapporto con le aree agricole periurbane	x	x	x	x	x	x	x
	x		2.bis.03 Rafforzamento del ruolo urbano	x	x	x	x	x	x	x
	x		2.bis.04 Qualificazione del margine urbano	x	x	x	x	x	x	x
	x		2.bis.05 Ruolo dello spazio pubblico	x	x	x	x	x	x	x
			<b>3. ASPETTI ARCHITETTONICI</b>							
	x		3.01 Modalità di elaborazione del progetto	x	x	x		x		x
	x		3.02 Qualificazione del gruppo di progettazione	x	x	x		x		x
	x		3.03 Criteri di gestione	x	x	x		x		x
	x		3.04 Capacità del progetto di interpretare il contesto utilizzando linguaggi contemporanei	x	x	x		x		x
	x		3.05 Flessibilità delle opere architettoniche	x	x	x		x		x
			<b>4. SPAZI PUBBLICI</b>							
x	x	x	4.01 Rilevanza dello spazio pubblico nel progetto	x	x	x	x	x	x	x
x	x	x	4.02 Illuminazione dei percorsi pedonali	x	x	x	x	x	x	x
x	x	x	4.03 Prevenzione dei crimini	x	x	x	x	x	x	x
x	x	x	4.04 Strade e spazi pubblici ombreggiati - comfort termico	x	x	x	x	x	x	x
			<b>5. METABOLISMO URBANO</b>							
			<b>Acqua</b>							
x	x	x	5.01 Permeabilità del suolo	x	x	x	x	x	x	x
x	x	x	5.02 Intensità del trattamento delle acque	x	x	x	x	x	x	x
x	x	x	5.03 Gestione delle acque reflue	x	x	x	x	x	x	x
			<b>Rifiuti</b>							
x	x	x	5.04 Accessibilità alla raccolta differenziata	x	x			x	x	x
			<b>Luce</b>							
x	x	x	5.05 Inquinamento luminoso	x	x	x		x	x	x
			<b>Gas qualità dell'aria</b>							
x	x	x	5.06 Monitoraggio della qualità dell'aria	x	x	x		x		x
x	x	x	5.07 Intensità di emissioni gas serra	x	x			x		x
x	x	x	5.08 Intensità di emissioni acidificanti	x	x			x		x
x	x	x	5.09 Intensità di emissioni fotosossidanti	x	x			x		x
			<b>Energia</b>							
x	x	x	5.10 Energia primaria per la pubblica illuminazione	x	x	x		x	x	x
x	x	x	5.11 Produzione locale di energia rinnovabile	x	x	x	x	x	x	x
			<b>6. BIODIVERSITA'</b>							
x	x	x	6.01 Connettività degli spazi verdi	x	x	x		x		x
x	x	x	6.02 Uso di vegetazione locale	x	x	x		x		x
x	x	x	6.03 Disponibilità di spazi verdi	x	x	x		x		x
			<b>7. ADATTAMENTO</b>							
			<b>Mitigazione degli effetti di siccità e carenza idrica</b>							
	x		7.01.1 Manutenzione straordinaria condotte idriche		x	x		x		x
	x		7.01.2 Riduzione e recupero dell'acqua piovana immessa in fogna	x	x	x		x		x
	x		7.01.3 Utilizzo delle piante xerofite	x	x	x		x		x
			<b>Mitigazione delle ondate di calore in area urbana</b>							
x	x	x	7.02.1 Incremento delle alberature su strade, piazze e parcheggi	x	x	x		x		x
x	x	x	7.02.2 Intensificazione della ventilazione urbana naturale	x	x	x		x		x
x	x	x	7.02.3 Comfort termico delle aree esterne - Albedo	x	x	x		x		x
			<b>Adattamento a eventi estremi di pioggia e rischio idrogeologico</b>							
x	x		7.03.1 Riqualificazione della qualità naturale - regreening	x	x	x		x		x
x			7.03.2 Riduzione della pressione edilizia	x	x	x		x		x
	x		7.03.3 Riduzione della quantità di acqua piovana immessa in fogna	x	x	x		x		x
x	x	x	7.03.4 Rinaturalizzazione dei corsi d'acqua di qualsiasi categoria	x	x	x		x		x
	x		7.03.5 Riduzione tendenziale dell'esposizione della popolazione al rischio					x		x
x	x		7.03.6 Riduzione del danno negli spazi pubblici aperti	x	x					x
			<b>8. MOBILITA'/ACCESSIBILITA'</b>							
x	x	x	8.01 Connettività della rete stradale	x	x	x		x		x
x	x	x	8.02 Complessità ciclomatica della rete stradale	x	x	x		x		x
x	x	x	8.03 Scala della rete stradale	x	x	x		x		x
x	x	x	8.04 Accesso al trasporto pubblico	x	x	x		x		x
x	x	x	8.05 Disponibilità di percorsi ciclabili sicuri (in sede protetta)	x	x	x		x		x
x	x	x	8.06 Contiguità dei percorsi ciclabili e veicolari	x	x	x		x		x
x	x	x	8.07 Accessibilità dei percorsi pedonali	x	x	x		x		x
x	x	x	8.08 Accessibilità alla mobilità condivisa	x	x	x		x		x
x	x	x	8.09 Accessibilità ICT	x	x	x		x		x
			<b>9. SOCIETA' E CULTURA</b>							
x	x	x	9.01 Prossimità ai servizi principali	x	x	x		x		x
x	x	x	9.02 Prossimità a strutture per il tempo libero	x	x	x		x		x
x	x	x	9.03 Flessibilità d'uso (Flessibilità degli usi nell'arco della giornata/settimana)	x	x	x		x		x
x	x	x	9.04 Mixité	x	x	x		x		x
x	x	x	9.05 Incidenza degli orti urbani	x	x	x		x		x
			<b>10. ECONOMIA</b>							
			<b>Accesso alla residenza</b>							
x	x	x	10.01 Accessibilità economica alla proprietà residenziale	x	x	x		x		x
x	x	x	10.02 Accessibilità economica all'affitto residenziale	x	x	x		x		x
x	x	x	10.03 Composizione e varietà dell'offerta abitativa	x	x			x		x
			<b>Accesso all'occupazione</b>							
		x	10.04 Potenziale occupazionale			x		x		x

Figure 1: Framework of the Protocol criteria, with identification of the areas and scale of application.

The objectives outlined in these treaties have been included in national urban development strategies and more importantly, in the revised programming of European Community Structural Funding. Mention should be made of the Urban Agenda<sup>4</sup>, the strategic and operational indications for programming structural funding from 2014 until 2020; this Agenda was implemented in

the provisions for sustainable urban development, contained in the Regulation relating to the European Regional Development Fund (ERDF) and in the partnership agreements associated with it, as well as in the National Operational Plan for Metropolitan Cities 2014-2020.

Within this strategic framework, the role the Regions play in governance in the field of urban innovation emerges; regional policies support a greater use of integrated urban development strategies, to facilitate improved coordination between public and private investments and greater citizen involvement. Consequently, the need to reconsider the aspects related to the growth of cities should be seen as an opportunity to interpret the theme of urban regeneration in the widest and most effective way possible.

Numerous experiments have focused on the topic of urban sustainability and methodologies have been developed for assessing sustainability at both neighborhood and city scales. "Sustainable Seattle" (1993) needs to be mentioned as it has been recognized as the first project to develop large-scale sustainability indicators, based on citizens' shared values and the objectives they set for their community<sup>5</sup>. Some of the more significant experiments in Europe are: the EcoQuartier and EcoCité experience and the research project HQE2R - Sustainable upgrade of buildings for a sustainable urban neighborhood (France), the evaluation tool Sustainable neighborhoods developed by SméO (Switzerland), the CAT-MED project which resulted in the Green Apple (or Manzana Verde) assessment system (Spain) while the Agència d'Ecologia Urbana de Barcelona (BCN) developed El Plan Especial de indicadores de Sevilla.

## 2. The ITACA Protocol

When applied at the urban scale the ITACA Protocol is a multicriteria analysis system for assessing the sustainability of urban regeneration /transformation with a modular structure. Starting from a set of criteria, the Protocol provides a final performance score which indicates the level of sustainability of the urban-scale intervention. The final performance score is calculated using a procedure that is divided into three phases:

- characterisation: appropriate indicators obtained by calculating specific physical quantities (consumption, emissions, distances, etc.) assess how an urban area performs for each criterion;
- normalisation: the value of each indicator is dimensionalised and then re-graded again within a normalisation range-i.e. a score is assigned based on the value of the indicator and in reference to a performance scale (benchmark);
- aggregation: the scores are combined to produce a compressive score. Aggregation is determined using a weighted sum. Each criterion is characterised by a weight that represents its importance.

Although the objective of the Protocol is to assess the sustainability of urban-scale regeneration using criteria based as much as possible on measurable quantitative elements, some aspects of regeneration work, such as its impact on architectural or landscape quality require so-called "scenery-based" evaluation criteria. These criteria allow the overall assessment to consider issues that are not directly measurable on quantitative value scales by introducing flexible assessment methods that can be more easily contextualized to the reference areas<sup>6</sup>.

The constituent elements of the evaluation method can be summarised as follows: A set of evaluation items known as criteria; A set of quantities, known as indicators, which allow the performance of an urban area to be quantified in relation to each criterion; A standardisation method; An aggregation method.

The method adopted allows the Protocol to be contextualised to the specific geographical area where it is to be applied. This is possible because:

- the benchmark value and therefore the performance scale, can be defined for the normalisation phase. This means the score assigned for the various criteria reflects benchmark performance that also takes into consideration local context / best practice;
- the weighted value of the criteria can be adjusted for the aggregation phase so local priorities regarding the issue of sustainability can be taken into consideration.

Given the complexity of urban areas, the Protocol provides for three different application scales which interact with each other; these scales are: the block, the sector, and the neighborhood. In some cases, where appropriate, a reference to the building scale (Building Protocol) or to the entire city is also provided.

In this way, sustainability issues are coherent with the rating scale, and they adopt the appropriate perspective for the area under investigation without neglecting the overall view; this means that not all criteria are significant at all scales of application, nor are they all calculated in the same way.

<sup>4</sup> Methods and Objectives for an efficient use of European Funding 2014/20 - Document which opened the public debate. It was presented by the Minister for Territorial Cohesion in agreement with the Ministers for Labour, Social Policies, and Food, Agriculture and Forestry.

<sup>5</sup> This project was awarded an "Excellence in Best Performance Indicators" by UNHABITAT, the United Nations Centre for Human Settlement.



To summarise: the Urban Scale ITACA Protocol includes all the parameters, material and immaterial, required for characterising and assessing the sustainability of scale-based regeneration of "scale-based" interventions in the city or in significant parts thereof. The protocol applies with is a cross-scale system (from block to neighborhood). This system's holistic approach allows it to promote a plurality of functions (functional mix) and to avoid land consumption, while ensuring, balanced growth of the the area being regenerated and to assess the area's performance level with respect to the main environmental social and economic problems. This instrument can be used to analyse both potential new urbanisation and existing areas in all phases of their life cycle: design, implementation and monitoring. As mentioned, the definition of the proposed criteria / indicators seeks to include issues related to the development of "sustainable cities", giving priority to criteria that can define (target / evaluate) urban quality in its multiple forms.

<b>GOVERNANCE:</b>	i.e. the management and planning process, which starts with an assessment of economic-financial feasibility / sustainability.
<b>URBAN PLANNING ASPECTS:</b>	which take into consideration the complexity of morphology and urban organization.
<b>LANDSCAPE QUALITY:</b>	obtained by identifying the objectives that help protect, preserve and promote the characteristic aspects of the landscape
<b>ARCHITECTURAL ASPECTS:</b>	architectural quality, accessibility and the preservation of historical-cultural heritage and identity.
<b>PUBLIC SPACES:</b>	ensure comfort, safety, usability and accessibility for pedestrians.
<b>URBAN METABOLISM:</b>	control environmental quality by evaluating flows (air, water, energy, waste)
<b>BIODIVERSITY:</b>	a project for green spaces, re-greening the existing city and protecting nature.
<b>ADAPTATION:</b>	adopt strategies to counter the threat posed by climate change.
<b>MOBILITY / ACCESSIBILITY:</b>	public transport and infrastructure.
<b>SOCIETY AND CULTURE:</b>	social cohesion and integration, cultural aspects related to participation/sharing as well as provision of services (educational, cultural, health/assistance, leisure), and commercial equipment (small/medium structures).
<b>ECONOMY:</b>	analyse the benefits to the urban economy and the creation of work opportunities

*Table of criteria*

<sup>6</sup> The choice of criteria was made with a view to building a complete, open, rigorous and well performing system. Document verification safeguards the principles of system openness and accessibility. The urban-scale evaluation system followed a set of principles which formed the basis for identifying the evaluation criteria best suited to fully expressing the sustainability of urban regeneration, so the protocol could represent:

- a complete system: the criteria identified represent the vast panorama of the areas, economic and social sustainability; the aspects appropriate for an urban system are carefully considered;
- an open system: the indicators selected for evaluating the criteria use data obtained from territorial information systems and from public databases;
- an accessible system: the calculation methods adopted are transparent and simple; citizens and public administrations find it easy to interpret and communicate the results;
- a rigorous system: the scientific validity of the system is constantly refined, through continuous experimental work and verification processes conducted in research projects;
- a high-performance system: the evaluation indicators express specific performance aspects, thereby avoiding the definition of a series of rigid design requirements;
- a flexible system: adopt criteria most appropriate to the scale of the area being assessed so as to evaluate its performance as accurately as possible while simultaneously maintaining the connections between the various scales of the urban fabric;
- a contextualised system: once criteria and methodologies appropriate to the specific features of the local and national urban fabric have been selected, the performance ratings are compared with benchmarks relating to the context of the city, so as to capture their specific features and give them a significant characterisation.

For ITACA, therefore, this protocol provides an opportunity for consolidating experience already gained in the context of public building certification protocols, with the aim of providing a tool that can evaluate urban regeneration plans/programmes (ex ante evaluation), verify their effectiveness (ex post monitoring), and significantly assist in orienting the design process towards higher quality (the guidelines and environmental criteria to be used for notices and public announcements). The preparation of a national protocol deeply rooted in the territorial context, linked to a system of local customs and laws and to the specific background of the surrounding area, can also facilitate the drafting of guidelines for settlement quality for use as urban planning tools. The Protocol is an instrument that is intended to meet the needs of both public planning bodies and operators involved in the development or transformation of urban areas. It will be used:

- to define benchmarks during the project phase and as a decision support tool;
- to verify the achievement of sustainability objectives during the construction phase;
- to monitor the overall level of sustainability in the operating phase

ASPETTI URBANISTICI		Thematic area		2,03
2,03 – Conservazione del suolo		criterion		
		Scala di applicazione		Ambito di applicazione
CRITERIO 2,03		Isolato	Comparto	Quartiere
Conservazione del suolo		Progetto Monitoraggio		
AREA DI VALUTAZIONE		UTILIZZO		
2. ASPETTI URBANISTICI		Piano		
ESIGENZA		PESO DEL CRITERIO		
Ridurre il consumo di suolo		nella categoria	nel sistema completo	
INDICATORE DI PRESTAZIONE		UNITA' DI MISURA		
Riuso di suolo precedentemente occupato per la realizzazione di edifici e infrastrutture		%		
SCALA DI PRESTAZIONE		Performance scale		
				PUNTI
NEGATIVO				-1
SUFFICIENTE		benchmark		0
BUONO				3
OTTIMO				5

Figure 2: Criterion Sheet

### 3. Protocol architecture

The protocol is a modular tool designed for homogeneous sections. The 11 thematic areas are divided into 65 criteria (of which 51 are quantitative and 14 qualitative). The Criteria are the evaluation items of the protocol - each criterion is associated with one or more physical quantities that allow the performance of the urban area to be quantified in relation to the criterion being considered by assigning it a numerical value. These quantities are represented by indicators. Each criterion is weighted by its index and identified by its application scale (block, sector or neighborhood) and scope (analysis of existing context, of project context or of monitoring activities).



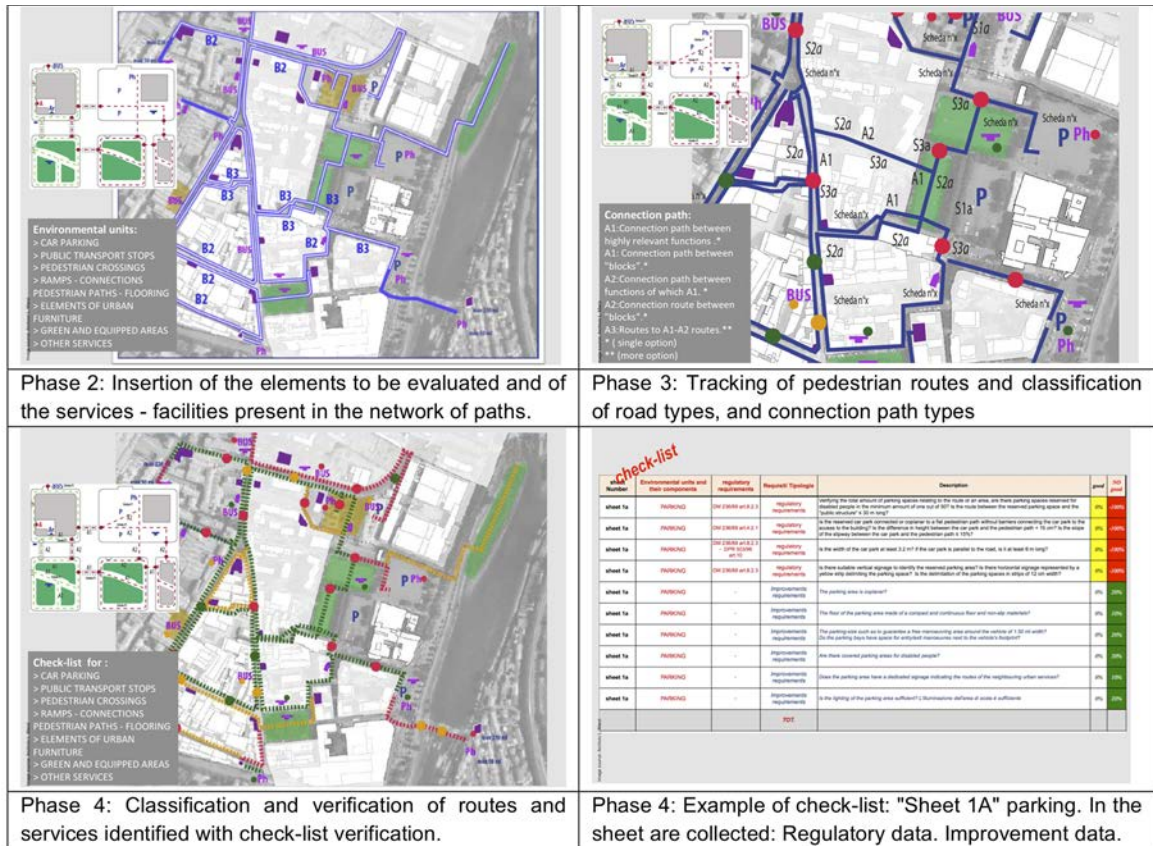


Figure 3: Application example Criteria 8.07: Accessibility of walkways, WalkAbility. The methodology examines the network of pedestrian paths that link access to buildings of particular importance and the services and facilities in the analysis area.

Once the operational framework and the territorial area have been identified, the criterion indicates the application area (thematic area), its use (area of application), the type of requirement and the relative performance indicator as well as the unit of measure and the criterion weight.

The criterion weight ponders (weighs) the score (ranking) obtained on the basis of the performance scale. The score of each criterion is calculated by applying the verification methods and tools.

The techniques used for applying verification methods and tools depend on the characteristics of the indicator. The values obtained, defined at the different urban application scales, are applied to the performance scale in accordance with a comparative framework assessed on 4 reference values (negative - sufficient - good and excellent). The 4 values (performance scale) are common to all 65 criteria. When present, negative values reflect a shortfall in regulatory performance. In this sense the protocol considers that meeting legal requirements is an essential pre-condition for obtaining a positive score. The scores for each criterion are combined to produce the overall score. The aggregation takes place through a weighted sum. Each criterion is characterized by a weight that expresses its relevance.

The objective of the ITACA Protocol is to formulate a concise assessment of the overall performance of an urban settlement, assigning a summary - score relating to the performance of the urban area under analysis. The overall performance score of this urban area is defined by the sum of all the scores obtained by analyzing the evaluated criteria.

#### 4. Future Developments

Unlike the methodology used in ITACA building protocols, protocols for urban areas are mostly concerned with aspects closely related to regional and municipal regulatory and planning systems. This makes it difficult to identify valid benchmarks for every urban area in Italy. The complexity and diversity of the characteristics and problems of Italian urban centres has made

it advisable to postpone the calibration of the indicators to a later stage. This means creating another in-depth phase which will require further study by the working group. The development of this additional phase will require that the calibration of the criteria, and their relative scores be based on the local characteristics of each regional area of reference in order to make the protocol sufficiently flexible to accommodate each specific local reality.

This adaptation phase could be developed using digital territorial data management systems. In this perspective, digital evaluation tools could be designed to interconnect with geo-referenced public databases (GIS tools) that correlate cartographic data with numerical-statistical data. This should enable existing data to be used so as to facilitate the evaluation procedure and to enhance (increase) cities' information assets and update their data. Once these systems are fully operational, the protocol for urban areas can function as a control and monitoring tool.

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To download the protocol from the Internet (last log in on date: 10/09/2019): [http://www.itaca.org/documenti/news/Protocollo%20ITACA%20Scala%20urbana\\_211216.pdf](http://www.itaca.org/documenti/news/Protocollo%20ITACA%20Scala%20urbana_211216.pdf)

