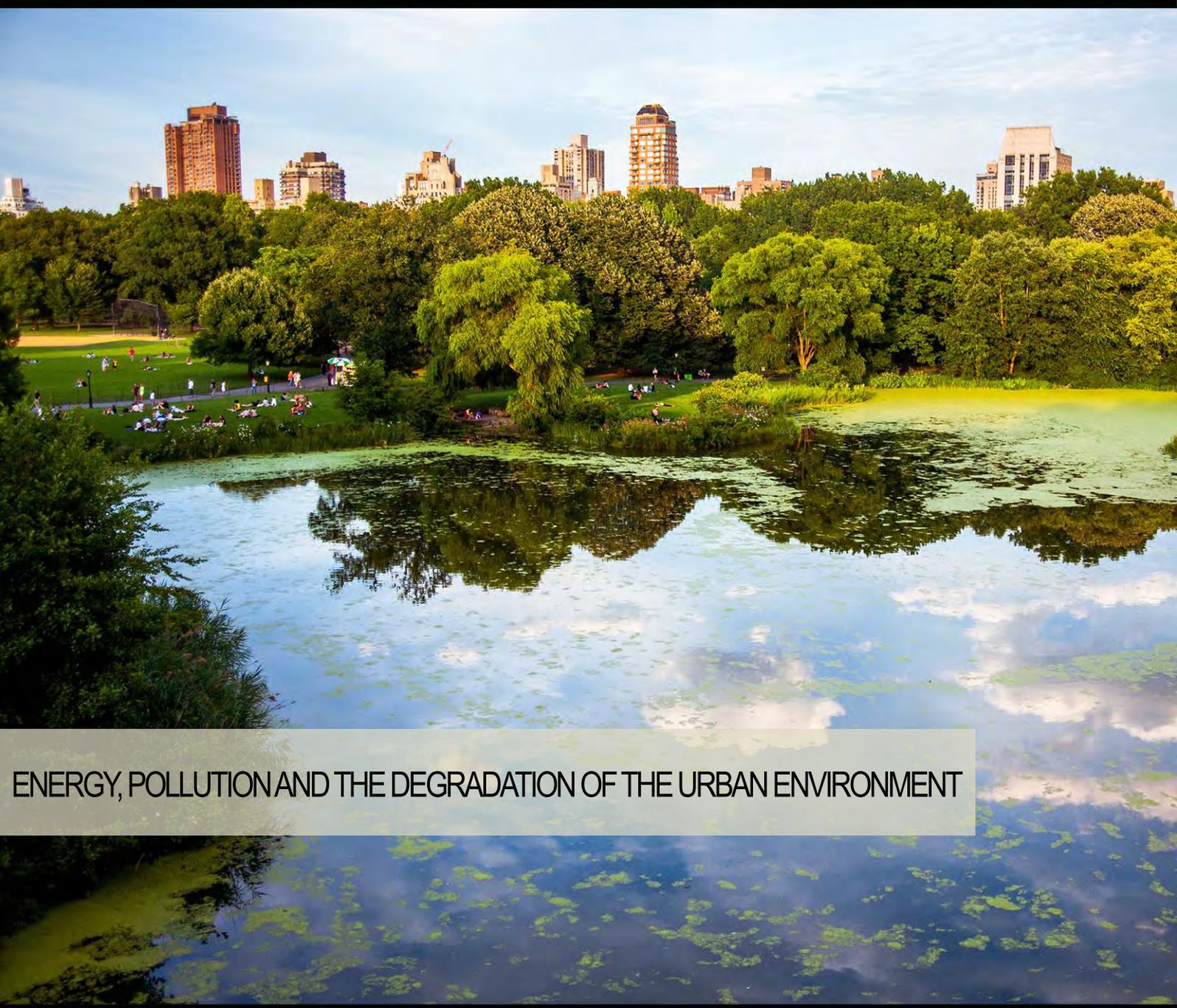


TeMA

Journal of
Land Use, Mobility and Environment

There are a number of different future-city visions being developed around the world at the moment: one of them is Smart Cities: ICT and big data availability may contribute to better understand and plan the city, improving efficiency, equity and quality of life. But these visions of utopia need an urgent reality check: this is one of the future challenges that Smart Cities have to face.

Tema is the Journal of Land use, Mobility and Environment and offers papers with a unified approach to planning and mobility. TeMA Journal has also received the Sparc Europe Seal of Open Access Journals released by Scholarly Publishing and Academic Resources Coalition (SPARC Europe) and the Directory of Open Access Journals (DOAJ).



ENERGY, POLLUTION AND THE DEGRADATION OF THE URBAN ENVIRONMENT

ENERGY, POLLUTION AND THE DEGRADATION OF THE URBAN ENVIRONMENT

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The Italian *National Agency for the Evaluation of Universities and Research Institutes* (ANVUR) classified TeMA as scientific journal in the Area 08. TeMA has also received the *Sparc Europe Seal for Open Access Journals* released by *Scholarly Publishing and Academic Resources Coalition* (SPARC Europe) and the *Directory of Open Access Journals* (DOAJ). TeMA is published under a Creative Commons Attribution 3.0 License and is blind peer reviewed at least by two referees selected among high-profile scientists. TeMA has been published since 2007 and is indexed in the main bibliographical databases and it is present in the catalogues of hundreds of academic and research libraries worldwide.

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ENERGY, POLLUTION AND THE DEGRADATION OF THE URBAN ENVIRONMENT 2 (2016)

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REVIEW PAGES

ENERGY, POLLUTION AND THE DEGRADATION OF THE URBAN ENVIRONMENT

Starting from the relationship between urban planning and mobility management, TeMA has gradually expanded the view of the covered topics, always remaining in the groove of rigorous scientific in-depth analysis. During the last two years a particular attention has been paid on the Smart Cities theme and on the different meanings that come with it. The last section of the journal is formed by the Review Pages. They have different aims: to inform on the problems, trends and evolutionary processes; to investigate on the paths by highlighting the advanced relationships among apparently distant disciplinary fields; to explore the interaction's areas, experiences and potential applications; to underline interactions, disciplinary developments but also, if present, defeats and setbacks.

Inside the journal the Review Pages have the task of stimulating as much as possible the circulation of ideas and the discovery of new points of view. For this reason the section is founded on a series of basic's references, required for the identification of new and more advanced interactions. These references are the research, the planning acts, the actions and the applications, analysed and investigated both for their ability to give a systematic response to questions concerning the urban and territorial planning, and for their attention to aspects such as the environmental sustainability and the innovation in the practices. For this purpose the Review Pages are formed by five sections (Web Resources; Books; Laws; Urban Practices; News and Events), each of which examines a specific aspect of the broader information storage of interest for TeMA.

01_WEB RESOURCES

The web report offers the readers web pages which are directly connected with the issue theme.

author: Chiara Lombardi

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02_BOOKS

The books review suggests brand new publications related with the theme of the journal number.

author: Gerardo Carpentieri

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03_LAWS

The law section proposes a critical synthesis of the normative aspect of the issue theme.

author: Laura Russo

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04_URBAN PRACTICES

Urban practices describes the most innovative application in practice of the journal theme.

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05_NEWS AND EVENTS

News and events section keeps the readers up-to-date on congresses, events and exhibition related to the journal theme.

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REVIEW PAGES

能源、污染和城市环境的退化

TeMA从城市规划和流动性管理之间的关系入手，将涉及的论题逐步展开，并始终保持科学严谨的态度进行深入分析。在过去两年中，智能城市（Smart Cities）课题和随之而来的不同含义一直受到特别关注。

学报的最后部分是评述页（Review

Pages）。这些评述页具有不同的目的：表明问题、趋势和演进过程；通过突出貌似不相关的学科领域之间的深度关系对途径进行调查；探索交互作用的领域、经验和潜在应用；强调交互作用、学科发展、同时还包括失败和挫折（如果存在的话）。评述页在学报中的任务是，尽可能地促进观点的不断传播并激发新视角。因此，该部分主要是一些基本参考文献，这些是鉴别新的和更加深入的交互作用所必需的。这些参考文献包括研究、规划法规、行动和应用，它们均已经过分析和探讨，能够对与城市和国土规划有关的问题作出有系统的响应，同时还对诸如环境可持续性和在实践中创新等方面有所注重。因此，评述页由五个部分组成（网络资源、书籍、法律、城市实务、新闻和事件），每个部分负责核查TeMA所关心的海量信息存储的一个具体方面。

01_WEB RESOURCES

网站报告为读者提供与主题直接相关的网页。

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02_BOOKS

书评推荐与期刊该期主题相关的最新出版著。

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03_LAWS

法律部分提供主题相关标准方面的大量综述。

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04_URBAN PRACTICES

城市的实践描述了期刊主题在实践中最具创新性的应用。

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05_NEWS AND EVENTS

新闻与活动部分让读者了解与期刊主题相关的会议、活动及展览。

author: Andrea Tulisi

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ENERGY, POLLUTION AND THE
DEGRADATION OF THE URBAN ENVIRONMENT

REVIEW PAGES: WEB RESOURCES

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In this number
**URBAN FOOTPRINT, RESOURCES
SCARCITY AND POLLUTION**

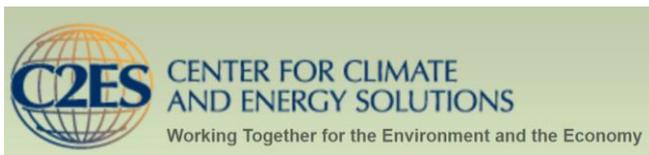
Though cities represent only the 2% of world's surface, more than a half of the total world's population lives in cities, wasting 75% of global resources: that is to say that cities' footprint is much higher than the surface they cover (Hui et al., 2001). At the same time, cities are not only the main cause of resources wasting and pollution, they are also the places where reside the greater opportunities to give a large-scale technological answer to this problem (Hodson, Marvin, 2010; Dixon, Eames, 2013, Papa et al., 2014)

In this context, the building sector in the world represents on average more than a third of the final energy consumption, exceeding transportation and industrial sectors.

In the last decade, in the most advanced European countries with marked programmatic, planning and technical capacities, the "energy question" has already entered in the governments' agendas from years, and policies and large-scale interventions aiming at reducing cities' energy consumption have been issued yet (Leone, 2011). Also in Italy, there has been an increased attention towards the reduction of energy consumption in the latest years. Unfortunately, major efforts have been only dedicated to the building scale, neglecting the size where the results could be more effective: the urban scale. In fact, only few cities have drafted a Municipal Energy Plan (PEC), introduced by Law 10/91; and the copious SEAP issued (Sustainable Energy Action Plan) have produced no significant effects until now.

With the aim of giving insights on the matter, in this volume three websites are presented: C2ES, World Green Building Council, Gov.UK – Innovate UK. The first is the website of the Center for Climate and Energy Solutions, an American independent, nonpartisan, non-profit organization working to advance strong policy and action to address climate and energy challenges. It was launched in 2011 as the successor to the Pew Center on Global Climate Change, long recognized in the United States and abroad as an influential and pragmatic voice on climate issues.

The second is the official website of the Green Building Council, a network of national green building councils in more than one hundred countries. It is the world's largest international organization, which also strongly influences the green building marketplace. The third is the web portal of the UK's innovation agency, an executive non-departmental public body, sponsored by the Department for Business, Innovation & Skills of the UK. It works with people, companies and partner organisations to find and drive the science and technology innovations that will support the grow of British economy.



C 2 ES

<http://www.c2es.org>

The Center for Climate and Energy Solutions is a non-profit organization working to enhance policies and actions to address climate change and energy challenges.

Founded in 1998 with the support of The Pew Charitable Trusts, a non-governmental body widely recognized in the United States and abroad as a credible, independent force for pragmatic climate action. The nonpartisan Center for Climate and Energy Solutions was a valued source of information and analysis, an effective bridge between diverse interests, and an established leader in catalyzing constructive business engagement.

The Center's activities are mainly focused on providing with:

- A Reliable Source – providing timely, impartial information and analysis on the scientific, economic, technological and policy dimensions of climate and energy challenges;
- Working Together – working side by side with business, the environmental community, other stakeholders, and policymakers to achieve common understandings and consensus solutions;
- Concrete Action – Working with members of Business Environmental Leadership Council of the United States and others to take action on the ground;
- Innovative Policy – Working closely with policymakers and stakeholders to promote pragmatic, effective policies at the state, national and international levels. Thanks to a rich web resources help both experts and citizens understand the issues, track government efforts, and contribute to the policy process.

The webpages are divided into seven sections, besides the homepage where there is an overview on the blog, the latest news and analysis and the publications library.

The first section is dedicated to policies, organized in International, Federal, U.S. State and Region and Economics.

The second section is about Energy and Technology, where it is possible to access other sections: energy and technology in general, Climate Techbook, Energy Efficiency Web Portal, Energy Sources, Energy Uses, ICT, Facts and Figures, Events, This Week in Energy News.

The third section is about Science and Impacts. Here you can find information on: Adaptation, Climate Resilience, The Basic, Events, Extreme Weather, Facts and Figures, National Security, National Climate Assessment.

The fourth section is dedicated to Business and its implications on climate change. This section is structured into 8 sub-sections: About Business, Business Environmental Leadership Council, Climate Resilience, Climate Leadership Award, Events, Low Carbon Business Innovation, What Companies say about Climate and Energy, Business Support for the Paris Agreement.

The fifth is about Initiatives: it includes past and present initiatives led by the Center. Here there are 4 sub-sections: Make an Impact, Climate Resilience, National Enhance Oil Recovery Initiative, Towards 2015: An International Climate Dialogue.

The sixth section is the Solution Forum, where there are discussions on the main themes of interests.

The last section is for donations in order to support the Center.



WORLD GREEN BUILDING COUNCIL

<http://www.worldgbc.org>

The World Green Building Council is the network of the Building Councils operating in each country in the World. Its aim is to strengthen green building councils in member countries by championing their leadership and connecting them to a network of knowledge, inspiration and practical support.

All its efforts are directed to the dissemination of sustainability and energy saving, at first only at the building scale and, in the last decade, also at the neighbourhood scale. The first World GBC meeting took place in November 1999 in California, and the countries represented were Australia, Canada, Japan, Spain, Russia, United Arab Emirates, United Kingdom and the United States. This led to the creation of Green Buildings Councils in most of the countries in attendance. The World GBC was formally funded in 2002 with the primary role to formalize international communications, help industry leaders access emerging markets and provide an international voice for green building initiatives. Since its foundation, the Green Building Council model has widespread in the five continents and counts now more than 100 Green Building Councils in the world at various stages of their development. This global network has an extraordinary influence since it has more than one hundred thousand buildings and one billion square metres of green building space registered, operating in all aspects of building sector: both residential and industry, leading towards a sustainable growth. Its main mission is to support GBC in the world from the very first steps, strengthen new and emerging Councils by providing them with tools and strategies to foster their leadership positions in their countries. Born in 2002, the GBC has been working with local councils to promote green building actions and address global challenges such as climate change. It works to guarantee that the green building market be part of a comprehensive strategy to reduce GHG emissions and pollution. One of the most important outcomes of the GBC's work in the world is the development of sustainable assessment tools. The first product was the Leadership in Energy and Environmental Design (LEED) certification, born in the Nineties and now become the most widely used third-party verification for green buildings. From the late 2000's the GBC have started pilot projects to develop a LEED certification for the urban scale, which have then originated LEED for Neighbourhood Development, released in 2009.

This webpage is connected with all the portals of each GBC in the world, so it is possible to have a quick overview of what the Councils are doing in the world. Indeed, the website is structured in four sections:

World GBC refers to the international organization in general. Here you can find information on WGBC, its members, its Board, how to make a career at WGBC, its history, people profile etc;

Regions provides link to African, American, European Asian and Pacific, Middle East and North Africa Councils, giving a overview of their work and key people;

Activities gives insights on news, events, blog, congress, case studies and activities in general lead on by the Councils;

Resources provides links to download documents, videos, newsletter, pictures and all the informative stuff regarding green buildings.

In addition, the web portal provides with a form to contact the staff and, also, an address and mobile phone number to contact directly their marketing and communications manager. Another section is dedicated to members login of each different region.

To conclude, the World Green Building Council webpage is the main portal to know more about GBC activities in the world and to build networks with agencies, companies and people involved in the green building sector in the world.



GOV.UK – INNOVATE UK

<http://www.gov.uk/government/organisations/innovate-uk>

Innovate UK is a non-governmental body powered by the UK's Department for Business, Innovation & Skills. Its main aim is to support companies, associations and people to drive technology in the UK, with a specific focus on business. Indeed, Innovate UK intends to de-risk innovation and provide support, through 5 cardinal actions:

- determine which science and technology developments will drive future economic growth;
- meet UK innovators with great ideas in the fields we're focused on;
- fund the strongest opportunities;
- connect innovators with the right partners they need to succeed.

The body has worked successful so far, committing £1.8 billion to innovation delivered to more than 7,600 organisations, which are expected to return to the UK economy more than £11.5 billion and create 55,000 extra new jobs, through innovative projects. Recently, the UK Government has confirmed the crucial role of innovation in the growing strategy of the country. Actually, in the forthcoming National Innovation Plan 2016-2020, the UK's Innovation agency is going to perform a key role in the development of actions. One of the initiative carried out by Innovate UK is dedicated to energy saving, especially focusing on 3 major challenges: low carbon, security of supply and affordability. This initiative "Energy Catalyst Competition" aims at supporting projects proposed by businesses and research organisations collaborating with a business, thanks to a special fund of £10 million afforded by the UK Department for International Development (DFID) and the UK Engineering and Physical Sciences Research Council (EPSRC). This competition is expected to speed up commercialisation of UK energy innovation that will deliver clean, affordable and resilient energy. Last but not least, the website provide a section through which access latest funding opportunities for innovative projects from the Government but also from the European Union. There are several funding competitions covering different industry sectors:

- emerging and enabling technologies;
- infrastructure systems;
- health and life sciences;
- manufacturing and materials.

To sum up, Innovative UK is a smart, user-friendly and comprehensive web portal for people, companies and researchers to access the main funding opportunities for projects in the field of energy saving and innovation in general.

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ENERGY, POLLUTION AND THE
DEGRADATION OF THE URBAN ENVIRONMENT

REVIEW PAGES: BOOKS

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In this number
**REGENERATION OF THE URBAN
AREAS**

The urbanisation is the consequence of the growth in world population and rural-urban migration in the search for improved socio-economic opportunities in urban areas. In the first decade of the 21st century the urban population reached parity with the rural for the first time in the history. In the 2050, the population will increase to 9.5 billion and its urban fraction to three quarters. In the urban areas are located the great part of global economic activity, it follows that urbanisation will impose greater stress on the natural environment and this at a time for which the international organizations on climate change suggest the reduction of greenhouse gas emissions. In the last years, the 75% of Europe's population living in cities and urban areas. In particular, the Europe continent is the world's most urbanised. Urban living has many benefits, including more and better job perspectives, the variety and liveliness of urban life, and other social and economic opportunities. Towns and cities support the regional and national growth. However, the very characteristics that make them desirable places to live and invest cause a great number of challenges to their sustainability. Cities are wonderfully liveliness places for the education, employment and commerce, social encounter and recreation. They are the most important centres of the modern global economy and as such they continue to attract migrants in search of a better quality of life for themselves and their families. This high density of economic and social activity is connected by a similar concentration in the use of energy and resources as well as of technology and infrastructure, with significant consequences for raw materials depletion, greenhouse gas emissions and climate change. Also, the urban areas present a great concentration in societal challenges, as disparity in income and social inequality that can adversely affect social capital and cohesion and in the worst of cases lead to exclusion of access to home ownership, education, welfare and healthcare. The urban and territorial planning can contribute to sustainable development in various ways (Salvati et al., 2013). It should be directly related with the three complementary dimensions of sustainable development: social development and inclusion, sustained economic growth and environmental protection and management. Integration of those three dimensions in a synergetic way requires political commitment and the involvement of all stakeholders, who should participate in urban and territorial planning processes. According to these considerations, this section suggests three books that help to better understand the issue of this number: International Guidelines on Urban and Territorial Planning; Sustainable regeneration in urban areas; Transition towards and the strategic research sustainable and innovation agenda liveable of Joint Programming Initiative urban Europe urban future.



Title: **International Guidelines on Urban and Territorial Planning**

Author/editor: United Nations Human Settlements Programme

Publisher: UN-Habitat

Download: https://www.uclg.org/sites/default/files/international_guidelines_on_urban_and_territorial_planning_un_habitat.pdf.

Publication year: 2015

ISBN code: n.d.

As a follow-up to resolution 24/3, UN-Habitat established a group of experts to advise the secretariat on the structure, content and wording of the Guidelines. The group was geographically balanced to respect experience and practice in every region of the world.

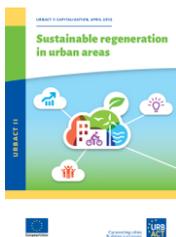
The Guidelines will support the operationalization of two sets of guidelines previously adopted by the Governing Council of UN-Habitat: The international guidelines on decentralization and the strengthening of local authorities (2007) are a catalyst for policy and institutional development and reforms at national level to empower local authorities and improve urban governance. They are policy-oriented and have been used as a reference in a number of countries. The international guidelines on access to basic services for all (2009) provide an enabling framework for improved partnerships in the delivery of basic services at city level. They are process oriented and have been adapted to the national conditions of various countries.

In response to that transformation, the International Guidelines on Urban and Territorial Planning (the Guidelines) are intended to be a framework for improving global policies, plans, designs and implementation processes, which will lead to more compact, socially inclusive, better integrated and connected cities and territories that foster sustainable urban development and are resilient to climate change.

The Guidelines are an instrument to promote sound urban and territorial planning around the world, based on universally agreed principles and national, regional and local experience, as well as a broad framework to guide urban policy reforms, taking into account the specific approaches, visions, models and tools existing in each country.

The goals of the Guidelines are captured hereunder: To develop a universally applicable reference framework to guide urban policy reforms; To capture universal principles from national and local experience that could support the development of diverse planning approaches adapted to different contexts and scales; To complement and link to other international guidelines aimed at fostering sustainable urban development; To raise the urban and territorial dimensions of the development agendas of national, regional and local governments.

The following section contains the Guidelines on urban and territorial planning. The structure is derived from the accepted way of unpacking the sustainable development agenda by United Nations bodies. It is organized into two sections reflecting the interrelated dimensions of that agenda, namely, the governance, social, economic and environmental aspects of urban and territorial planning, followed by two sections on urban and territorial planning components and their monitoring and implementation. Each section starts with key underlying principles, followed by a series of action-oriented recommendations. It should be emphasized that the recommendations are of a general nature and intended to be a source of inspiration when reviewing, developing and implementing urban and territorial planning frameworks. National Governments, local authorities, civil society organizations and their associations, planning professionals and their associations could consider adapting the Guidelines to national and local contexts.



Title: **Sustainable regeneration in urban areas**

Author/editor: Joint Programming Initiative Urban Europe

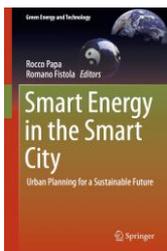
Publisher: n.d.

Download: n.d.

Publication year: 2015

ISBN code: n.d.

This publication is part of a bigger initiative set by the URBACT programme and presents a collection of the evidence, analysis and concrete solutions. In first part, provides an overview of the main challenges and types of approaches applied in Europe. In following part, "Why 'Think Global, Act Local' is no longer enough", the authors discuss about local solutions in the wider context of pressing global challenges by introducing the notion and evidence on environmental limits, calling for a move beyond the well-known "Think Globally, Act Locally" motto of sustainable urban development. Following conceptual framing, the study moves to discussing on to innovative approaches and concrete solutions. It begins by looking at the physical environmental dimension: the first in-depth case study, on the IBA Hamburg (International Building Exhibition), discusses in detail the implementation of the innovative "Cities and Climate Change" strategy and actions towards a climate neutral urban district. Furthermore, the report proposed interview with the co-ordinator of the Power House Europe project tells about the challenges and solutions that housing providers are facing in their quest to retrofit Europe's housing stock, as well as on the importance of linking energy-efficient housing renovation to sustainable urban regeneration. Finally, it proposed an interview with Luís Carvalho from the URBACT workstream "New urban economies", to reflect on connections of the latter with sustainable urban regeneration and the possibilities and limits of current policy trends such as the "smart city" or the "green economy". A second part of publication, the authors investigate on the importance of institutional and social aspects in achieving sustainable urban regeneration. In "Governing the sustainable city", it's offer a reflection on the importance of cross-sector integration in sustainable regeneration projects and propose a set of recommendations for cities to become better at that. The publication proposes residents' perspective on these processes, particularly at what happens next following completion of a given sustainable regeneration project, through an interview with one of the leaders of the residents' movement that gave rise to the IBA Hamburg in Wilhelmsburg. After this, Francois Jégou, co-ordinator of the URBACT workstream "Social innovation in cities", defines his views on the importance of social innovation not only from the grassroots when it comes to sustainable urban regeneration initiatives, but also from local authorities leading these projects. The second case study, the city of Vilnius, looks at the specific problems that post-communist cities face in this field and adopt a process-perspective to understand the root causes of problems and the way forward. In addition, we asked the Head of the Urban Planning Department of Vilnius to give us her view on how to best work with the private sector to achieve win-win solutions in sustainable urban regeneration projects. But none of the above can be achieved and sustained over time without the adoption of new, pro-environmental behaviours by individuals and institutions. The last article explores this issue and sheds light on concrete actions that cities can take to encourage their citizens to change their behaviour in that direction. The publication is concluding with a set of policy recommendations, followed by a word on our working methods to carry out this work and by a list of useful literature and online resources for the curious reader.



Title: **Smart Energy in the Smart City. Urban Planning for a Sustainable Future**
Author/editor: Rocco Papa, Romano Fistola
Publisher: Springer
Download: n.d.
Publication year: 2016
ISBN code: 1865-3537

This book examines the energy dimension of the smart city from the urban planning point of view, through a collection of papers about the energy dimension of a smart city. The papers are written by the main Italian research groups in the field of urban sciences. The aim of the publication is to define a new concept of a smart city that can successfully open a new understanding of urban systems and progress towards a new type of administration of the urban areas. From this debate on the smart city, it is possible to say that the central issues of this new concept regarding the urban areas are energy and technology. The technological aspect of the smart city is inherent to the city itself and represents the engine that moves the urban systems. But the principal issue for the future development of a city is energy. Cities are the places where this challenge must be played out first, because cities are the main consumers of energy on the earth. The planning of a smart city will be greatly different from the canonical urban planning of our current cities. In particular, many studies have highlighted the relations between activities, urban structure and energy consumption (Papa et al., 2016).

The Italian case study is particularly exposed to energetic problems for three principal causes: The geographic location determines a particular vulnerability to climate change and consequently the need for large amounts of energy; The country has no primary energy resources available; Due to a public referendum, no nuclear plant is available on national territory. This study has an explicit concern about a city's energy. Again, energy has to be considered inside the urban planning process as well as incorporated within the new idea of a future city. From this concept is developed this book, which is structured along three principal issues: the relationship between energy and city (in its different dimensions), a methodological aspect of energy's contribution to the urban system management, with a special focus about ontological issues, a review of case studies which describes some practices, procedures, and tools of urban planning. At the end this essay could be useful to students of urban planning, town planners, and researchers interested in understanding where the city of the future will go and what the energy contribution to this evolution will be.

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AIR POLLUTION: THE INVISIBLE KILLER

With the rapid growth of cities urban air pollution levels are dramatically rising, putting in danger human health. The OECD (Marchal, 2012), indeed, estimates that the number of premature deaths from exposure to particular air pollutants leading to respiratory failure could double from current levels to 3.6 million every year globally, with most occurring in China and India. In Europe one hundred millions workdays are lost because of air pollution with a direct cost of about fifteen billion euros in productivity, four billion euros are lost in direct health costs and farmers lose three billion euros a year in crop damage due to the Ozone smoke. Air pollution is, therefore, not only unhealthy but also expensive. In addition, air pollution has also environmental impacts affecting the quality of freshwater, soil, and the ecosystem, and some air pollutant also behave as greenhouse gases that cause climate change. For all these reasons not to act is simply not an option.

The focus of this issue of TeMA is therefore air pollution, and three environmental laws on air quality will be described: the U.S. Clean Air Act, the European Air Quality Package, and the China New Air Law. The three regulations are reviewed in chronological order, starting with the oldest – e.g. the American Clean Air Act – concluding with the most recent, e.g. the Chinese Air Law. The goal is to highlight the main regulations they require, the accomplishments achieved under them, and the criticisms they have attracted.

The U.S. law was first adopted in 1970 and more recently revised in 1990. Since then, a great number of air quality improvements have been obtained in the U.S., but despite these positive achievements a lot more has to be done, especially for limiting climate change. On the other hand, much more recent is the European Air Quality Package, approved in 2013. It includes a revised National Emission Ceilings Directive with severer national ceilings for six main pollutants, aiming at bringing EU on the right pathway towards achieving better air quality. Lastly, the Chinese New Air Law adopted less than a year ago – in summer 2015 – and that became effective at the beginning of this year. This law can be considered a first attempt by the Chinese government to reduce air pollution, which represents one of the main challenges of China's growing cities, but there have been also some critics because probably something more concrete could have been done.

Despite all the critics, the three environmental laws represent a necessary tool to make sure that all citizens around the world can access better air quality and, thus, better health, cleaner environment and a more productive economy. They confirm the commitment of policy makers to put in place strategies and actions to protect human health and ecosystems from pollution.



THE U.S. CLEAN AIR ACT (1970-1977-1990)

Considered one of the most comprehensive air quality regulation worldwide, the Clean Air Act was first introduced in the United States in 1970 to control air pollution at national level and to protect public health and welfare. Then, in 1977 and 1990, two major revisions were established in order to improve the original structure and to address newly recognized air pollution issues such as acid rain, urban air pollution, and toxic air emissions. The Act requires States to adopt plans to meet the National Ambient Air Quality Standards (NAAQS) set by the Environmental Protection Agency (EPA) for six common air pollutants, which are scientifically recognized to be dangerous for health and the environment. Other key provisions are introduced to avoid pollution increases from greater motor vehicle fleet, and from new industrial installations. Furthermore, “the law calls for new stationary sources (e.g., power plants and factories) to use the best available technology, and allows less stringent standards for existing sources” (EPA, 2016).

Since its adoption, the U.S. has achieved a great number of dramatic air quality improvements under the Clean Air Act. First of all, aggregate emissions of six common pollutants dropped an average of 69% between 1970 and 2014 while GDP grew by 238% (EPA, 2016); a main reason is that vehicles are much cleaner thanks to the emission standards for new motor vehicles set by the Clean Air Act, and as consequence all the zones that registered high levels of carbon monoxide in 1991 now meet the national air quality standards required by the law.

A peer-reviewed EPA study issued originally in 2003 (DeMockerc, 2003) and updated in 2011 analyzed the benefits and costs of the Clean Air Act between 1990 and 2020 finding that the benefits estimate exceeds costs by a factor of more than 30 to one. In particular, according to this study, in 2020 the Clean Air Act amendments will prevent over 230 thousand early deaths, 17 million work days and 120 thousand emergency room visits, as well as 200 thousand heart diseases and 75 thousand chronic bronchitis. At the same, these health benefits will be also responsible of an economic improvement that will occur because better air leads to better health and productivity for workers as well as savings on medical expenses for air pollution related health issues. In the end, the costs for pollution control will be largely offset by economic, health, and environmental benefits.

Although the expected positive consequences of this regulation should satisfy all parties, a great debate about EPA and the Clean Air Act is ongoing in the US at the moment. As reported by The New York Times (Davenport, 2016), the Act’s “rules impose restrictions on business, industry and agriculture, limiting the amount and types of pollutants that can be emitted into the air and water, as well as where and how landowners can use their property. The regulations can sometimes impose billions of dollars of costs on industry, requiring companies to install expensive pollution control technology and in some cases to shut down polluting facilities”. For all these reasons the Republican Party has the specific intention of changing the size, scope and structure of the EPA, limiting its power to set pollution standards, and even some Democrats are questioning the Agency authority. These critics that the EPA has lately been called to face are not the only ones. Indeed, an increasing number of Americans demand for a new updated environmental law, because they consider the Clean Air Act out of date. For example, the lack of any regulation in terms of greenhouse gases – probably not considered a problem in 1990 when the law was amended for the last time – whose accumulation is increasing triggering climate change, is considered unacceptable.

In conclusion, the Clean Air Act continues to represent a milestone for environmental protection but, at the same time, the need for an advanced approach to climate change and air pollution is urgent.



THE EUROPEAN CLEAN AIR POLICY PACKAGE (2013)

The Clean Air Policy Package adopted by the European Commission in 2013 includes a set of cost-effective measures that aim to provide a strong direction to healthier society and environment, save significant direct and indirect costs, improve productivity across the economy, promote innovation and create growth and jobs. Polluted air, indeed, is an invisible killer with enormous economic costs – estimated at 3 to 9 % of EU GDP, as declared by Janez Potocnik during the press conference opening – because poor air quality has health impacts, as well as increases medical costs, reduces economic productivity and damages crops and buildings.

The Clean Air Policy Package is based on the full review of both the latest scientific evidence on air pollution and existing EU air policy and it is the results of almost three years of intensive consultations with stakeholders. The main conclusion drawn in the review is that despite the progress the EU made in the last decades, we are far from achieving the air pollution levels recommended by the World Health Organization (WHO), and there is lot more that can be done also because better air offers interesting economic opportunities for the EU, especially for clean technology sectors.

The Package includes four main instruments, which are briefly described below.

- A new Clean Air Programme for Europe, which sets the overall policy framework up to 2030. It includes measures to make sure that the all citizens will enjoy the same level of air quality protection and that the existing EU air quality standard are respected everywhere.
- A proposal for a revised NEC Directive for the EU's new commitments under the amended Gothenburg Protocol, which is necessary to honour EU's international obligations with regard to new national emission ceilings for 2020.
- A revised National Emission Ceilings Directive with stricter national ceilings called "emission reduction commitments" for the six main pollutants for 2020 and 2030, that aim to bring down overall pollution emissions significantly in the most cost-effective way. These revised national emission ceilings represent the principal instrument to bring EU on the right pathway towards achieving WHO air quality guidelines, and they will partly be delivered by national legislation, giving some freedom to Member States to take action on air pollution based on their own particular circumstances.
- A proposal for a new Directive to cut emissions from medium-sized combustion installations, such as energy plants for street blocks or large buildings, and small industry installations.

These four components together aim at bringing major health and environmental benefits, in particular by 2030, and compared to business as usual scenario, the Clean Air Package is estimated to:

- avoid 58.000 premature deaths;
- save 123.000 km² of ecosystems from nitrogen pollution;
- save 56.000 km² of protected Natura 2000 areas from nitrogen pollution;
- save 19 000 km² of forest ecosystems from acidification (EU, 2013).

Health benefits alone will save society €40-140 billion in external costs and provide about €3 billion in direct benefits due to higher productivity of the workforce, lower healthcare costs, higher crop yields and less damage to buildings. The proposal will also add the equivalent of around 100 000 additional jobs due to increased productivity and competitiveness because of fewer workdays lost. In the end, the Clean Air Package is estimated to have a positive net impact on economic growth (EU, 2013).



THE CHINA NEW AIR LAW (2015)

In summer 2015, the National People's Congress of China adopted the Air Pollution and Control Law, also called the New Air Law, which has come into full effect starting January 1st. The New Air Law revised a 15-year old air pollution law doubling in length the original document, and restricting different sources of smog as well as making information about air pollution and the environment easily to read to the public.

Cities play a central role, unsurprisingly since they are booming and the levels of air pollution within their boundaries are more than alarming. The New Air Law, indeed, obliges cities to adopt and implement plans to ensure they are on track to meet national air quality targets and, if they are not, they are required to submit correction plans to achieve these targets in the short term. In addition, cities have to keep their plans updated and share with their supervising government agencies and the public every implementation update, so to provide great transparency. Furthermore, specifically for coastal areas where air quality suffers because of ships fueled by sulphur-intensive heavy oil, the Law requires the establishment of a control area for pollutant discharge of ships and ships entering that area must conform to specific emission requirements. One of the main changes introduced by the New Air Law is related to monitoring greenhouse gas emissions that, for the first time in China's history, is now finally considered a priority. The New Air Law cuts GHGs by introducing several measures to control coal use and transportation emissions. In addition to it, the Law allows regional governments to establish zones where burning fuels that emit a large amount of pollutants are prohibited. Inevitably there are also some critics to the New Air Law, arguing that "the legislation should be enforced through government powers, rather than just expressions of intent" (Quin, 2015), however the new regulation on air pollution undoubtedly represents a first commitment towards a cleaner China.

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Fig. 1 https://en.wikipedia.org/wiki/Air_pollution; Fig. 2 <http://www.forbes.com/sites/larrybell/2014/01/14/clean-air-act-epas-charade-to-justify-war-on-coal-plants/#294dba1b1351>; Fig. 3 www.southeast-europe.net; Fig. 4 https://en.wikipedia.org/wiki/Flag_of_China

ENERGY, POLLUTION AND THE
DEGRADATION OF THE URBAN ENVIRONMENT

REVIEW PAGES: URBAN PRACTICES

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In this number

PLANNING FOR E-MOBILITY:
TWO CASE STUDIES

Transport is responsible for around a quarter of EU greenhouse gas emissions, making it the second biggest greenhouse gas emitting sector after energy. Road transport alone contributes about one-fifth of the EU's total emissions of carbon dioxide (CO₂), the main greenhouse gas (EEA, 2014). As part of the European strategies until 2030 and 2050, the European Commission points out the need to reduce GHG emissions from transport by at least 60 % until middle of the century (2050) with respect to 1990 levels (Papa et al., 2016). These decarbonisation targets required significant economical, social and technological changes (Coppola and Arsenio, 2015). In this contest, the concept of electromobility (e-Mobility) presents a significant contribution toward traffic decarbonisation and address a variety of mobility issues concerning the environmental and societal effects of transportation. Electromobility can be defined as the use of electric powertrain technologies, in-vehicle information, communication technologies and connected infrastructures to enable the electric propulsion of vehicles and fleets (Naranjo et al., 2014). It has been recognized as a major field of innovation throughout the coming decades and the dominant technology for future urban mobility (Geels et al., 2012). E-Mobility solutions provide a new opportunity for a sustainable transportation environment. Efforts made to reach the goal by many aspects like intelligent vehicle, smart road, V-2-X communications, are proved to have considerable effectiveness. It is believed that the green, sustainable, safe, intelligent transportation systems will be benefit to reduce air pollution and obtain eco-friendly transportation systems (Geels et al., 2012). Motivated by the need to address fuel efficiency and emission requirements, as well as market demands for lower operational costs, a large number of plans for e-Mobility have been conducted and great efforts have been made by many cities. The success of e-mobility initiatives requires a strong collaboration between private and public actors. The municipality's role is to set regulations and standards, encourage interoperability and to provide incentives. The private sector's role is to bring the new technology to the market and enforce mass production and thereby reduce costs. This contribution focuses on the role of public actors and presents two international case studies of cities that have developed plans, initiatives and regulation to support e-mobility:

- London (United Kingdom)
- Amsterdam (the Netherlands)



LONDON

With over 7.3 million inhabitants, London is the capital and most populous city of England and the United Kingdom. The city has one of the largest urban transport networks in the world, serving over three million passenger every day (TfL, 2014). However, the city suffers traffic congestion and pollution, since about one third of all trips are made by car. Road transport produces about 16 per cent of London's CO₂ emission and roughly 50 per cent of the nitrogen dioxide (NO₂) emissions in the city are caused by traffic (TfL, 2014). Air pollution in London is a matter of life and death, causing approximately 9,500 early deaths every year (Walton et al., 2015).

The drive to decarbonize road transport and improve air quality in London is enshrined in several London's public policy such as the *Mayor's Transport Strategy* (2010), the *Air Quality Strategy* (2010), and the *Climate Change Mitigation and Energy Strategy* (2010). The first attempt to introduce e-mobility solutions in the British capital can be traced back to 2009 when the city published *An Electric Vehicle Delivery Plan for London*, an ambitious strategy for electric mobility aimed to reduce CO₂ emissions and improve air quality.

The strategy is based on three pillars:

- *Infrastructures*. Electric Vehicles (EVs) have a shorter range than comparable petrol/diesel vehicles. The lack of charging infrastructure is a major barrier to the greater use of EVs. In this regard, the plan proposes three different charging networks serving different types of users and equipped with different technologies, distributed on-street, in off-street public car parks and station car parks. The *slow* charging network (up to 3kW) is for customers who travel and then park for a considerable time at one location. On the contrary, the *fast* charging points (7-22kW) assist those that only wish to stop for a short period of time (e.g. 30 minutes) and need to quickly charge their vehicle. Finally, the *rapid* charging points (43-50kW) serve drivers embarking on longer trip or for specific market segments, such as taxis and commercial vehicles, where they may not wish to be delayed for an extended period.
- *Public sector vehicle fleets*. The plan aims to achieve economies of scale in procurement of EVs by combining the vehicle requirements across different public sector fleets. In the public transport sector, for instance, Transport for London (TfL), following a high profile design competition, introduced 600 new diesel-electric hybrid vehicles. The *New Bus for London*, designed as a 21st century version of the historic *Routemaster* are driven by an electric motor and powered by batteries that are recharged by a diesel generator (that only runs when the batteries need recharging). EVs have been introduced also in other public sector vehicle fleets such as that of local and central Government departments, police and firefighter departments. These fleets will act as a further stimulus to the market and will demonstrate that the public sector at all levels is committed to shift to electric vehicles. Furthermore, TfL is currently conducting a Low Carbon Taxi trial, to establish the capability of technologies to reduce carbon emissions from London's black cabs.
- *Incentives, Marketing and Communication*. In order to increase the uptake of electric vehicles, a number of incentives have been established. These includes economic incentives for consumers to purchase a plug-in electric vehicle, a 100% discount from the London congestion charge, parking for free in some municipal park areas as well, drive in bus lanes. The plan also establishes marketing and communication strategies to make EVs an attractive alternative to petrol and diesel vehicles.



AMSTERDAM

With over 820,000 inhabitants, Amsterdam is the largest city in the Netherlands and the cultural and financial center of the country. The city is served by an extended public transport network made of metro lines, tram and bus as well as inland waterways making. Furthermore, Amsterdam is a bicycle-friendly city and is home of one of the most developed bike lane network in the world. However the city has an air pollution problem, especially with regards to the emissions of nitrogen dioxide that exceed limit values at many locations in the city, exposing the population to dangerous levels of pollution (Milieudefensie, 2013).

Problems in terms of air quality conditions and noise pollution together with the objective of promoting a sustainable and greener development of the city, has stimulated local authorities to undertake an aggressive action plans to transform Amsterdam into a clean, smart and sustainable city. The municipality committed to reduce by 40% its CO₂ emissions compared with 1990 levels by 2025 (while targeting a reduction of 70-80% by 2040) and to locally produce one third of its energy needs through renewable sources by the same time. The city electro-mobility initiative, called *Amsterdam Electric*, is a very aggressive action plan aiming to decarbonize the entire transport system of the city by 2040, targeting 200,000 electric vehicles in the urban area. The plan comprises various initiatives with very high demanding targets in terms of citywide infrastructures and user adoption of EVs. Since 2009, the city has been promoting the adoption of another form of sustainable transport: electric vehicles. The initiative has seen a raft of measures introduced in the city to encourage uptake of clean, electric transport. The city of Amsterdam launched its e-mobility programme at the event "Amsterdam Electric" in March 2009. E-car drivers from all over Europe attended with their e-cars: a surprise because at that time there were hardly any e-cars available in the market. The strategy is based on three pillars:

- *Subsidize Electric Vehicles.* One of the main pillars of the current policy is to subsidize EVs for frequent road users, such as taxis, vans, and lorries. As a rule, the subsidy that an applicant receives is dependent on the type of vehicle and the emissions of that vehicle. Only applicants whose business is located in Amsterdam or one of the surrounding municipalities and who drive in the Environmental Zone at least five times per week are eligible for a subsidy.
- *Infrastructures.* Many EVs users do not have direct access to the necessary facilities. This issue was addressed by rolling out a charging infrastructure on both public and private land. In Amsterdam public land receives more attention because of the lack of space in this densely populated city. Amsterdam was the first city in Europe to organise a call for tenders for charging poles in public space (in the spring of 2009). Electricity supplier NUON was awarded the contract and, together with network provider Alliander, installed 100 charging poles, each containing two charging points, in Amsterdam that supplied renewable energy. Following the successful implementation of the charging network, in 2010, a second tender, for another 1000 charging points, was awarded to two energy companies. An interesting aspect of the charging network development was that the Local councils do not anticipate the market by placing charging poles in arbitrary locations but instead react to a request from a resident who has purchased an EV and needs a charging pole close to home. A charging station should preferably be no further than 200 m from the applicant's house, in a place that does not hinder other residents.
- *Communication.* In order to increase the uptake of electric vehicles, the plan establishes marketing and communication strategies to make EVs an attractive alternative to petrol and diesel vehicles.

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ENERGY, POLLUTION AND THE
DEGRADATION OF THE URBAN ENVIRONMENT

REVIEW PAGES: NEWS AND EVENTS

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In this number
URBAN ENVIRONMENTAL PROBLEMS AFFECTING
QUALITY OF LIFE

The year 2007 marks an important turning point in the human history, when for the first time, people living in the cities have overtaken the 50% of the whole world population. Are the cities able to manage this ongoing phenomenon, guaranteeing high level of quality of life for all their citizens?

It is undeniable that the growth of cities is driven by hopes and dreams for a better life, in so far as they can offer investors security, infrastructure and efficiency, thus providing more educational and career opportunities, better access to high quality health and emergency services, and as well as a number of other positives. On the other hand, in many cases, cities have been castigated as centers of disease, social unrest and insecurity, and they have been often blamed for causing environmental catastrophes, for marginalizing communities, for diminishing the quality of life especially of the least-favored social classes.

In this context, the concern over the quality of modern life is one of the main topic of the debate on the urban development of contemporary society and is not a case that quality of life is one of the most recurring phrase in the smart city definitions, as one of the main objective for the future cities (Papa et al., 2015).. "A major reason for this growing interest in issues relating to life quality is the paradox of affluence in modern societies in which concern over the quality of life has increased proportionately with technological progress and increases in income" (Pacione, 2003). The main assumption of this theory is that quality of life is not necessarily a simple function of material wealth. It led different studies to the search for new indicators, other than those based on GNP, that will reflect more adequately the overall health of citizens based on the awareness of the importance of other factors, including the social, political and environmental health. Central to this developing interest in quality of life is, therefore, the research on the relationship between people and their everyday urban environments. On this ground, the arguments of the actual debate among urban planners is basically referred to causes and consequences of the main urban environmental problems intended as threats to present and future human well-being in urban areas. The selected conferences represent an opportunity for an in-depth to share the most recent studies and experiences on this topic, with special regard to the following issues:

- Urban drainage;
- Land-use planning, and social housing and public buildings construction policies;
- Links between social and environmental determinants of health in urban settings;
- Smart Environment & Urban Networking;
- The environmental impact of the construction industry.



ICUD 2017 : 19TH INTERNATIONAL CONFERENCE ON URBAN DRAINAGE

Where: Paris – France

When: 18 - 19 April 2017

www.waset.org/conference/2017/04/paris/ICUD

Among the environmental problems, water system management have become increasingly important. Urban drainage systems are in general failing in their functions mainly due to non-stationary climate and rapid urbanization. As these systems are becoming less efficient, issues such as sewer overflows and increase in urban flooding leading to surge in pollutant loads to receiving water bodies are becoming pervasive rapidly. Therefore, carefully selected adaptive measures are required for the provision of sustainable drainage systems, by using a more holistic approach in order to integrate water network in the wider urban system.

ICUD 2017: 19th International Conference on Urban Drainage represent an opportunity to bring together scientists, researchers and research scholars to exchange their experiences and research results on all aspects of Urban Drainage, providing an interdisciplinary platform to present and discuss the most recent innovations, trends, and concerns as well as practical challenges encountered and solutions adopted.



CONFERENCE - LIVING AND SUSTAINABILITY

Where: London – United Kingdom

When: 9 - 10 February 2017

<http://www.lsbu.ac.uk/conferences/living-sustainability-built-environment>

Another important issue affecting the urban environment is connected with the building sector that contributes up to 30% of global annual green house gas emissions and consumes up to 40% of all energy. Given the massive growth in new construction in economies in transition, it cannot be ignored. However, integral to environmental effects are the social implications of unsustainable practices: Land-use planning, as well as housing and public buildings construction policies, often influences community attributes such as soil contamination, traffic density, unaffordable housing, excessive running costs and divided communities to name but a few. Premised on this dual understanding of sustainability the conference is focused on three specific areas:

- Housing
- Commercial buildings
- Urban design.

Within these themes the conference aims to focus the debate on the following issues:

Sustainable construction; eco-retrofitting; resilience; adapting to climate change; building sustainability assessment tools; construction engineering; eco-materials and technologies; and life cycle analysis.

Affordable housing; design for life; sustainable communities; effective public transit; low-tech, low-cost self-build, participatory planning; and social inclusion.

The conference welcomes international contributions from across sectors, such as environmental engineers, sustainable architects, urban planners, infrastructure designers, building technologists, policy makers and others.



ICUEEH 2017 : 19TH INTERNATIONAL CONFERENCE ON URBAN ENVIRONMENT AND ENVIRONMENTAL HEALTH

Where: Venice - Italy

When: 13-14 April, 2017

www.waset.org/conference/2017/04/venice/ICUEEH

Cities around the world face with many environmental health challenges including contamination of air, water and soil, traffic congestion, noise, "urban heat island" amplification of heat waves, and poor housing conditions exacerbated by unsustainable urban development and climate change. The urban environment involves health hazards with an inequitable distribution of exposures and vulnerabilities, but it also involves opportunities for implementing interventions for health equity. On this topic, many researches focused on the links between social and environmental determinants of health in urban settings. Interventions to improve health equity through the environment include actions and policies that deal with proximal risk factors in deprived urban areas, such as safe drinking water supply, reduced air pollution from household cooking and heating as well as from vehicles and industry, reduced traffic injury hazards and noise, improved working environment, and reduced heat stress because of global climate change.

The ICUEEH 2017: 19th International Conference on Urban Environment and Environmental Health represent a good occasion to fix some important points about this issue; it aims to bring together leading academic scientists, researchers and research scholars to exchange and share their experiences and research results and to present and discuss the most recent innovations, trends, and concerns as well as practical challenges encountered and solutions adopted in the fields of Urban Environment and Environmental Health.



SEUNET 2016 : IEEE WIMOB 2016 WORKSHOP ON SMART ENVIRONMENTS & URBAN NETWORKING

Where: New York – United States

When: 17 - 19 October 2016

<http://www.polymtl.ca/seunet2016/index.html>

As cities experience events which are no longer manageable through the traditional tools available to local administrations, identification of state-of-the-art methods to organize and manage the urban system has become essential. For this reason a lot of studies of cities relies more and more on advanced mathematical models especially networks and new "science of cities" emerges. Such models can be used from describing the fundamental concepts of urban development up to the description and optimization of physical networks, such as power, water or telecommunications. Networks can help us also understand city economics and various aspects of human interactions within cities with particular application in health and the flow of people and goods. Finally, the natural environment and even the climate of cities can be modeled and managed as networks. Although Information and Communication Technologies (ICTs) play a critical and potential role in empowering next-generation smart-environments and more specifically smart cities applications, they bring up a number of technical and environmental challenges that need to be tackled.

The objective of this workshop is to bring together under one roof together leading academic scientists and researchers, in order to provide a platform for discussion on basic and potential challenges of ICTs technologies in dynamic urban environments.



EBUILT-2016. TOWARDS A SUSTAINABLE URBAN ENVIRONMENT

Where: Iasi – Romania

When: 16 - 19 November 2016

<http://ebuiltiasi.com/>

In the mentioned context also Civil engineering, traditionally focused on construction, is opening the fields of investigation to different aspects of the built environment like ageing infrastructure and buildings coupled with a strong demand to reduce the environmental impact of the construction industry as a whole.

In this perspective, the objective of the EBUILT-2016 Conference is to strengthen the cooperation between the major players in the field of Civil Engineering: Academia, through fundamental or applied research, Industrial Partners, who are facing ever stricter regulations in terms of environmental protection and Decision Makers, who should enhance the welfare of society. The main topics of this conference are the followings:

- Safety, Reliability and Integrated Risk Management;
- Maintenance and Rehabilitation of Buildings;
- Sustainability, Innovative Materials and Design;
- Performant Lifelines;
- Indoor Environment and Energy Efficiency;
- Applied Mathematics and Physics;
- GIS, Remote Sensing and Urban Planning;
- Transportation Infrastructure Engineering.

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IMAGE SOURCES

The image shown in the first page is taken from: <http://news.colgate.edu/scene/2014/11/urban-legends.html>

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Engineer, graduated in Environmental and Territorial Engineering at the University of Naples Federico II with a specialization in governance of urban and territorial transformations. Since 2014 he has been a PhD student in Civil Systems Engineering at the Department of Civil, Building and Environmental Engineering – University of Naples Federico II. In July 2013 he won a scholarship within the PRIN project on the "Impacts of mobility policies on urban transformability, environment and property market". Since 2011 he represents the UISP (Italian Union Sport for all) in the Forum Civinet Italy. In December 2012 he started collaborating with TeMA Lab.

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