

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).



SMART CITIES CHALLENGES

SMART ENVIRONMENT FOR SUSTAINABLE RESOURCE MANAGEMENT

SMART CITIES CHALLENGES: SMART ENVIRONMENT FOR SUSTAINABLE RESOURCE MANAGEMENT 1 (2014)

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TeMA

Journal of
Land Use, Mobility and Environment

TeMA - Journal of Land Use, Mobility and Environment offers researches, applications and contributions with a unified approach to planning and mobility and publishes original inter-disciplinary papers on the interaction of transport, land use and Environment. Domains include: engineering, planning, modeling, behavior, economics, geography, regional science, sociology, architecture and design, network science, and complex systems.

The Italian *National Agency for the Evaluation of Universities and Research Institutes* (ANVUR) classified TeMA as one of the most highly regarded scholarly journals (Category A) in the Areas ICAR 05, ICAR 20 and ICAR21. TeMA Journal 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 publishes online under a Creative Commons Attribution 3.0 License and is blind peer reviewed at least by two referees selected among high-profile scientists. TeMA is a four-monthly journal. 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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REVIEWS PAGES

SMART CITIES CHALLENGES: SMART ENVIRONMENT FOR SUSTAINABLE RESOURCE MANAGEMENT

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.

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02_BOOKS

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

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03_LAWS

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

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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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TeMA

有关土地使用、交通和环境的杂志

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评述页 (REVIEW PAGES) : 适用于可持续资源管理的智能环境

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，智慧城市 (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

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

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SMART CITIES CHALLENGES: SMART ENVIRONMENT FOR SUSTAINABLE RESOURCE MANAGEMENT

REVIEW PAGES: WEB RESOURCES

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In this number

ICTS FOR A SMART AND SUSTAINABLE ENVIRONMENT

Already a quarter of the world's population is connected to the Internet, which can be considered the defining technological invention of our era. Information and communication technologies (ICTs) affect the way we work, live, and communicate, enabling the development, production, exchange and delivery of goods and services. Almost every aspect of our life has been touched by this digital revolution, which is having huge impacts on culture, business, politics and the environment: today, building a sustainable environment is easier thanks to the contribution of ICTs, which allow the global spread of information.

The first web resource analyzed in this number is the website of the International Telecommunication Union (ITU), which is the specialized agency of the United Nation for ICTs. As more and more people get connected, ITU drives innovation by allocating global radio spectrum and satellite orbits, setting technical standards, which all improve access to ICTs.

The other two web resources presented in this number refer to specific sectors affected by information and communication technologies: agriculture and waste disposal.

The application of ICTs in agriculture is increasingly important, but unfortunately, all over the world, many farmers still don't have access to the Internet and ICTs, or sometimes, they are not able to use them; for this reason, during the World Summit on the Information Society in 2005 it was decided to establish the e-Agriculture community of practices, with the goal of sharing knowledge and information about the role of ICTs in building a sustainable agriculture. E-Agriculture website is described below.

In the end, a focus on the use of ICTs in the waste management industry concludes this number: the Waste Management World website represents a point of reference for the stakeholders involved in the sector because it gathers information, news, article and much more about the latest innovation for the waste disposal, many of which involve the use of ICTs.

The aforesaid web resources clearly bear out that ICTs are fundamental for the development of a sustainable and smart environment.



INTERNATIONAL TELECOMMUNICATION UNION - ITU
<http://www.itu.int/en>

The International Telecommunication Union (ITU) is the United Nation specialized agency for information and communication technologies (ICTs), whose goal is to preserve people's right to communicate by improving access to ICTs.

Although ITU was born in 1865 as the International Telegraph Union, in 1934 it took its current name and it now covers the entire ICT sector and not only the telegraph as when it was founded.

ITU has three main areas of activity: Radiocommunications, Standardization and Development.

- Radiocommunication means space services such as satellites and radio-frequency, that today play a fundamental role in our everyday lives: phone calls and TV programmes are possible thanks to satellites, while wireless communications need radio-frequency spectrum to provide broadband services. ITU's Radiocommunications Sector coordinates these radiocommunication services and organizes meetings and study groups in order inform and to keep up-to-date those who are involved in the sector.
- Standardization can be considered one of the most relevant activities carried out by ITU, because without ITU's *Recommendations* things as simple as a phone calls or surfing the Internet would not be possible, in fact, every year, ITU generally produces over 100 standards that allow systems to work efficiently.
- The Development Sector's goal is to increase access to ICT worldwide. In order to achieve this target, ITU promotes a wide number of different initiatives, such as ITU Connect events, and it also publishes statistics and indicators, which are an important tool to support deployment of ICT networks and services globally.

All the information relating to the three main areas of activities are available on ITU's website, together with a variety of other material on the Agency and the ICT world.

Articles, latest news and events about ITC are available on the Home page of ITU's website, which also includes direct link to *Join ITU*, to *Get Involved* with its work and to access the *Video Corner*, which gathers all videos published by ITU on YouTube with interviews, debates, conference speeches, etc.

Furthermore, one section of ITU's website is dedicated to ITU Telecom World, a knowledge-sharing platform that involves public and private stakeholders belonging to the ICT sector; the platform aims to stimulate dialogue and debate, encouraging connections and collaboration among experts in the field. High level events allow to extend the virtual conversation offered on ITU Telecom platform and offer interactive discussion with renowned speakers. ITU counts over 700 members and represents the leading world forum for the development of the ICT industry.



E-AGRICULTURE
<https://www.e-agriculture.org>

E-Agriculture counts over 11.000 members from all over the world; the goal of the community is sharing knowledge and experiences related to the use of information and communication technologies (ICT) for

agriculture. Different professional profiles are part of the e-Agriculture community of practice, such as researchers, farmers, politicians, entrepreneurs and volunteers, all of which interested in rural development. Such heterogeneity of figures allows for a greater exchange of information, encouraging constructive dialogue between different disciplines.

E-agriculture was officially born in 2007, but the idea was already clear after the World Summit on the Information Society in 2003 and 2005, when problems related to the weakness of communication in the rural context became evident. Nowadays, the community is still growing and one of its most popular activities is the e-Agriculture Forum, available for registered members only on e-Agriculture website.

The Forum is just a small part of what the website offers to visitors, in fact, it collects over 2.000 news, 500 events and discussions. The Home includes a section gathering a wide range of international Blogs and, yearly, a countdown of the ten most popular blogs of the year is arranged on twitter; for example, the blog “Current Scenario of India Farmers” by Rakshit Agrawal was read 730 times and won the first position in the list of the Top 10 blogs of 2013.

The numerous posts published by the community are organized into four main sections: *Agricultural Value Chains and ICT*; *Gender, ICTs and Rural Livelihoods*; *Mobile telephony in Rural Areas*; *Public Private Partnerships (PPP)*.

In the section *Agricultural Value Chains and ICT*, there are several materials looking at key opportunities and challenges of ICT interventions in the agricultural value chain with a special focus on the most beneficial actions in rural areas.

The section *Gender, ICTs and Rural Livelihoods* is dedicated to the critical role of women in agriculture, and the positive benefits that ICTs can have in the livelihoods of rural women.

Furthermore, posts about mobile phones and their contribution in creating economic benefits and in improving communication are included in the section *Mobile telephony in Rural Areas*.

In the end, the section *Public Private Partnerships (PPP)* offers a great variety of posts regarding how PPPs can facilitate the generation and delivery of relevant and timely contents, particularly to reach the most isolated farmers.

In order to facilitate dialogue and connection between the members of the global network, it is possible, for registered members only, to see member’s profile and easily connect with them; different colored badges identify different type of members: current members of the e-Agriculture team have an orange badge on their profiles, previous members of the e-Agriculture team have a gold one, and featured members have a green one.

For those who are interested in staying up to date with the latest information about the Community, you can follow its profile on Twitter, Facebook, LinkedIn, YouTube and Delicious.

WASTE
management world.

WASTE MANAGEMENT WORLD
www.waste-management-world.com

Waste Management World (WMW) is an open access digital journal entirely dedicated to the industry of waste management. The bimonthly magazine collects information about the industry main news, innovative technologies, products and services with special focus on recycling and sustainability.

Each volume is dedicated to a specific theme but it also includes a regular section with the editorial, comments, product news and information on the International Solid Waste Association.

In compliance with the idea to support the free global exchange of knowledge, all the magazine’s contents can be easily accessed on line at the WMW website, which is a rich source of information for the industry.

WMW website is organized into eight sections, each of which including articles, videos, news and events on a given topic; the eight main topics are: collection/transport, recycling, landfill, biological treatment, waste to energy, markets & policy, video and products.

Proving the strong relationship between Waste Management World and the International Solid Waste Association (ISWA), WMW website gives users the opportunity to download the full *State-of-the-art Report* of ISWA on Waste-to-Energy plants, which offers technical information and data on the plants in U.S. and 18 European countries. Moreover, the section on Opinions collects a significant number of interviews with leading figures of the industry, explaining their point of view on specific issues and contributing to widen the debate on the topic. For example, one of the latest interviews is that made to the managing director of a waste management machinery manufacturer, who explains why the waste and recycling industry should be more proactive in communicating its achievements to encourage an inflow of investment and talent.

The managing editor of the magazine daily updates the website with detailed articles on the latest news about waste management, gathering information from all over the world in order to provide the industry a useful tool to keep up to date; he is also the conductor of the *WMW Weekly Newscast*, that together with a wide range of video with different contents, constitutes an attractive video library easily accessible to everyone. The video library includes video about ongoing waste management projects as well as a mini collection of short film aiming to raise public awareness of the benefits of recycling beverage cans.

In order to better exploit the potential of the internet, Waste Management World does not limit itself having only the website, in fact, it uses several different social networks to expand its diffusion, such as Facebook, You Tube, Twitter, LinkedIn and Google Plus, showing a great number of subscriptions. This success proves the strong interest for this type of industry, especially by insiders who want to be informed and updated on the latest news and technological innovation.

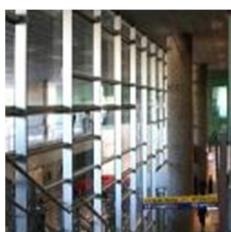
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SMART CITIES CHALLENGES: SMART ENVIRONMENT FOR SUSTAINABLE RESOURCE MANAGEMENT

REVIEW PAGES: BOOKS

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In this number

ICT ROLE IN THE CURRENT ENERGY AND ENVIRONMENTAL CHALLENGES

In the late 1980s and early 1990s, the publication of the Brundtland Report *Our Common Future* and the first Earth Summit held in Rio de Janeiro, focused the world's attention on sustainable development. The world has been changing more and more since then and the sustainable growth, such as the wide use of information and communication technology (ICT), represent the two main issues in the worldwide and current debate about a low-carbon development. Sustainability is a critical challenge that must be overcome, while ICT is seen as both an opportunity and a strategic way to reach environmentally sustainable forms of economic and social growth, within an important historic context of growing world population, without requiring an end to growth.

More and more studies have been dealing with the role of ICT (broadband, mobile communications) in energy efficiency and climate change solutions, including the effects on the productivity of the economy and the role in monitoring and environmental management (Fuhr *et al.* 2007; Laitner 2008; ITU 2008). In regard to climate change, ICT can contribute to mitigate its effects especially in developing countries where emissions have been steadily got worse due to the necessity of developing faster and faster.

World poor countries are more vulnerable to climate change than the more developed ones, because low incomes and limited resources make the ability to cope with climate change impacts weak. Furthermore most of world poor people live in rural areas, which are highly dependent on natural resources and engaged in climate-sensitive livelihoods. These countries also use high carbon footprint technologies in energy applications and transport, as well high-carbon fossil fuels are used intensively. In order to create a low-carbon society where a strategic role has to be played by local communities, considering that most energy is consumed in urban areas, authorities should know how ICT-based energy efficiency solutions can be implemented.

According to these brief considerations, this section proposes three documents related to three main opportunities of ICT application: the first one concerns how new technologies can be used for improving climate change adaptation capacity of developing countries; the second one focuses on local initiatives to promote energy efficiency through ICT; the third one describes how emission reduction and energy saving in the ICT sector itself can be reached.



Title: Africa transformation-ready: the strategic application of information and communication technologies to climate change adaptation in Africa

Author/ editor: AA VV

Publisher: n.d

Download: :<http://siteresources.worldbank.org/>

Publication year: 2010

ISBN code: n.d.

The International Institute for Sustainable Development (IISD) has been commissioned by the African Development Bank and the World Bank Group to study constraints, opportunities, implementation risks and challenges related to the use of ICT for adaptation to climate change. This report represents the up-to-date account of what has been done (chapters 1 and 2), what can be done (chapters 3 and 4), and what should be done (chapter 5) in order to contribute to building Africa adaptation capacities through ICT. Africa countries are highly vulnerable to climate change: the temperatures are increasing faster and faster compared to the global average, the dominant economic sectors (such as agriculture or fishing) are very climate-sensitive and stress factors (such as disease or land degradation) limit the adaptive capacity of communities more and more. All African governments are working collaboratively through intergovernmental bodies both preparing national adaptation strategies and identifying several priority areas in which ICT can be used in order to reduce the vulnerability:

- managing and communicating information about the risks resulting from climate change, and extreme climate events, as well as preparing for their effects on food security and water supply;
- improving an information system within the food sector that is better able to reflect household access to food and food consumption;
- developing early warning and hazard risk information systems to deal with the additional fire hazards associated with climate change and to enable integrated fire management;
- mapping vulnerable areas and provide spatial representations of climate change impacts.

Three case studies are described within the report so as to show examples of ICT programs and applications that can be replicated elsewhere. In Uganda ICT has been applied to extend existing meteorological services to help farmers adapt to climate change, while in Senegal national and local authorities have been developing online platforms for the sharing of data, knowledge and information for adaption actions. In Malawi GIS tools are used by local communities in order to create a centrally located model that can be used to determine current and future water needs. Nevertheless these three positive examples, the implementation of new technology in the most recent adaptation plans and strategies is still weak, and there are few adaptation and mitigation projects in which ICTs are explicitly intended or expected to play a central role. According to these issues IISD provides Africa governments with some main recommendations: ICT initiatives should support social and economic development (instead focusing narrowly on a specific sector), in order to reduce dependence on current sources of income that are vulnerable to the impact of climate change; the adaptation planning processes should embed ICT developing long-term programs and actions and including private sector especially mobile phone companies and Internet Service Providers, because any ICT action needs to be permanent and supported by lasting financial resources; policy makers and planners need to be able to connect with and learn from one another and this knowledge exchange needs to be made by open data and crowd-sourcing tools to generate real-time data on impacts of climate change.



Title: The contribution of ICT to energy efficiency: local and regional initiatives

Author/ editor: AA VV

Publisher: ICLEI

Download: [http:// ec.europa.eu/information_society](http://ec.europa.eu/information_society)

Publication year: 2011

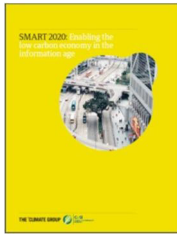
ISBN code: n.d.

Thanks to the collaboration with the Committee of the Regions European Commission developed this research and dissemination project focusing on local and regional initiatives in order to promote energy efficiency through the direct and enabling roles of ICT. The product is a toolkit for local and regional authorities, including guidance and a series of case studies, articulated in two main parts: the first one (sections 2-9) is related to a broad range of energy efficiency and ICT initiatives realized at different scales; the second one (sections 10-13) describes specific kinds of initiatives, providing detailed information on the operational issues. The ICT energy efficiency actions analyzed are related to:

- ICT infrastructure and equipment;
- ICT enabled buildings and construction;
- ICT enabled transport sector;
- ICT enabled carbon/energy management and reporting.

At local level, in order to encourage and implement ICT energy efficiency measures, the first step is the setting-up of an energy agency that supplies several services based on the specific local energy needs. Both in Slovenia and in the Bretagne region the local energy agencies have allowed to reduce energy use in public buildings, municipal lighting and transport sector, through IT software. Transport demand management measures are one of the main application areas involving ICT solutions, especially the road user charging schemes, also known as road pricing and congestion charging schemes. London and Stockholm represent two success congestion charging schemes which have applied some of the main types of electronic technologies (Automatic Number Plate Recognition, Dedicated Short Range Communication, Global Navigation Satellite Systems) and have monitored and evaluated the scheme's performance through economic, social, environmental and ICT energy efficiency indicators.

In addition to urban mobility local authorities are improving the energetic and overall rehabilitation of buildings, both public and private ones, more and more through ICT systems: for instance, in Aalst (Belgium) a real time information system of the energy building management has been set up, such as in Maribor (Slovenia) for over one hundred public buildings. It is worth noting that in all the case studies related to "ICT-based building automation tool" the key element to bring these initiative to success has been the participation of the final users: local residents have to be always involved, establishing a good cooperation with them to help create sustainable behaviour. In fact, the use of new and efficient technology alone is not enough, without a radical change in the energy habits of the users to reach both carbon emission reduction and energy efficiency targets that EC has established. Awareness raising and adopting technologies, which are accessible to all, represent two important strategies to ensure that the technology selected can be easily used by the final users. The adoption of ICT has also pushed local administrations to learn managing ICT risk, such as financial, operational and technological risk. In order to minimize and control these risks successfully, a traditional project risk assessment (initiation, planning and design, execution, monitoring and control, closure) is recommended within the toolkit.



Title: SMART 2020: enabling the low carbon economy in the information age

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The partnership between not-for-profit organisation The Climate Group and ICT sector group Global e-Sustainability Initiative (GeSI) has allowed to identify and quantify specific ICT impacts and opportunities, related to carbon emission savings and potential economic value. This report is aimed at giving a clear picture of the key role that the ICT industry plays in addressing climate change globally and supporting a low carbon development. In order to reply to three main questions, what is the direct carbon footprint of the ICT sector, what are the quantifiable emissions reductions that can be achieved by ICT applications in other economy sectors and what are the new market opportunities related to reaching these reductions, the study outlines five key actions to demonstrate the potential role the ICT sector supporting a SMART transformation: ICT can provide information about standard (S) forms on energy consumption and emissions, across different sectors; it can incorporate monitoring (M) information into the design and control for energy use; it can provide the capabilities and platforms to improve accountability (A) of energy and carbon emissions; this knowledge can be used to rethink (R) the current ways of learning, living and working; it can apply integrated approaches to energy management of systems and processes, transforming (T) all sectors of the economy. The report predicts that the ICT sector emissions will represent an estimated 2,8% of total global emissions by 2020 but, at the same time, ICT will be able to reduce these emissions by 7,8 GtCO₂e by 2020 (remaining on a BAU trajectory), an amount five times larger than its own carbon footprint. In this perspective the report describes the four biggest opportunities for reducing emissions, and points up the role of ICT and the hindrances to be overcome. These four opportunities have been analysed associating them four case studies, selected because of the size of their abatement potential, the scale of the economic opportunity and the quality of data available.

- Smart logistics (Europe): ICT can improve the design of transport networks, allow the running of centralised distribution networks and run management systems that can facilitate flexible home delivery services, in order to save 1.5 GtCO₂e in 2020;
- Smart motor systems (China): reducing electricity consumption in industry through optimised motors and automation could save almost 1 GtCO₂e in 2020;
- Smart grids (India): improving the efficiency of electricity grids is the largest opportunity identified in the study, with a potential saving of 2 GtCO₂e;
- Smart buildings (North America): ICT-based monitoring, feedback and optimisation tools can be used to reduce both at every stage of a building's life cycle, from design and construction to use and demolition, saving 1.7 GtCO₂ in 2020;

In addition to these four opportunity sector dematerialization has been considered; by replacing physical objects and activities with electronic or “virtual” alternatives could save 500 Mt CO₂e in 2020, the equivalent of the total global footprint of the ICT industry in 2002. Many companies are still reluctant to adopt dematerialisation technology, because it requires both adopting new ways of working and significant cultural shifts.

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SMART CITIES CHALLENGES: SMART ENVIRONMENT FOR SUSTAINABLE
RESOURCE MANAGEMENT

REVIEW PAGES: LAWS

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In this issue
EUROPEAN AND ITALIAN REGULATORY FRAMEWORK
AGAINST FLOODING

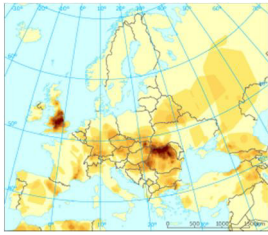
Between 1998 and 2004, Europe suffered over 100 major floods, causing some 700 fatalities, the displacement of about half a million people and insured economic losses totalling at least 25 billion (EU 2007). These phenomena is not related only to climatic factors and to the geology and geomorphology of the national territory, but also to human actions (clearing of forests, straightening of rivers, and extensive building in high-risk areas) that have increased uncontrolled during the last decades. Atmospheric phenomena of considerable intensity over short periods of time accompanied to an improper use of the land, lead to a considerable increasing of the number of people and goods affected by flood risk.

Also Italy is extremely exposed to flash floods and pluvial flooding as witnessed by the recent catastrophic events occurred in Modena in January 2014 and in Sardinia in November 2013.

To effectively respond to repeated emergencies related to hydrogeological risk, in recent years various parties responsible for water and soil conservation, both at Community and national level, responsible for water and soil conservation are trying to pursue the goal of sharing the importance of risk prevention and mitigation. A brief analysis of the relevant legislation indicates, in fact, the intention of the lawgiver to move from a logic of interventions "ex post", aimed at recovering the damages, to an approach finalized to the identification of risk conditions and to the adoption of measures to reduce significantly the potential impacts of the events.

On this basis, the laws section in this number examines the European and the Italian regulatory framework related to the prevention and mitigation of flood risk. The current regulations about flooding are represented by Directive 2007/60/EC on the assessment and management of flood risks transposed into Italian Legislative Decree of February 23, 2014 n . 49.

Both at national and Community level, the legislation related to flood risk hinges on the Plan instrument that, according to the latest regulations will evolve from the general hydrogeological management Plan to the specific flood risk management plan of which the characteristic aspects have been investigated in this issue.



DIRECTIVE 2007/60/EC: A FRAMEWORK FOR THE ASSESSMENT AND MANAGEMENT OF FLOOD RISKS

The European Directive n. 2007/60/EC of 23 October 2007 seeks to establish "a framework for the assessment and management of flood risks, aiming at the reduction of the adverse consequences for human health, the environment, cultural heritage and economic activity associated with floods in the Community."(art. 1) and it is connected to the WFD 2000/60/EC, according to which the Water Management Plans have been drawn up. For the purposes of this Directive, Member States shall implement three phases of activity according to predetermined dates:

- set up a preliminary flood risk assessment and identify areas of potential flood risk by December 2011; this includes gathering information on the boundaries of river basins in the concerned district, on floods that have occurred in the past, on the likelihood of future floods and on the estimated consequences. On the basis of the assessment, Member States must categorize river basins according to whether or not they have a significant potential flood risk. This assessment and the resulting categories assigned to river basins must be published and reviewed by 22 December 2018 and every six years thereafter.
- draw up flood hazard maps and flood risk maps by December 2013; flood hazard maps shall cover the geographical areas which could be flooded according to the following scenarios: floods with a low probability, or extreme event scenarios; floods with a medium probability (likely return period ≥ 100 years); floods with a high probability. For each scenarios the flood risk maps shall show the potential adverse consequences such as the indicative number of inhabitants and the type of economic activities potentially affected, the indication of areas where floods with a high content of transported sediments and debris floods can occur, etc.;
- establish flood risk management plans to support measures for each river basin district by December 2015. Where the area concerned extends into several countries, the Member States must cooperate in preparing, as far as is possible, a single management plan. In preparing a management plan, appropriate levels of protection must be established for each river basin, sub-basin and stretch of coastline and measures must be drawn up to achieve those levels of protection. Management measures must focus on reducing the probability of flooding and the potential consequences of flooding.

They must cover prevention (i.e. preventing damage caused by floods by avoiding construction of houses and industries in present and future flood-prone areas or by adapting future developments to the risk of flooding), protection (by taking measures to reduce the likelihood of floods and/or the impact of floods in a specific location such as restoring flood plains and wetlands) and preparedness (e.g. providing instructions to the public on what to do in the event of flooding) and must take account of relevant aspects, such as water management, soil management, spatial planning, land use and nature conservation. Each management plan must contain certain components, including the level of protection, the measures planned, flood risk maps, and, in subsequent management plans, an assessment of the progress made since the last management plan was implemented.



THE ASSESSMENT AND MANAGEMENT OF FLOOD RISKS IN ITALY: FROM THE ENVIRONMENTAL CODE TO THE LEGISLATIVE DECREE 49/2010

In Italy, the regulatory framework in the field of hydro-geological risk is represented by Legislative Decree of 3 April 2006, n. 152 named "Environmental Code". The third part of the code, entitled "Provisions relating to soil protection and combating desertification, waters protection against pollution and water management", is aimed at ensuring the protection and remediation of soil and subsoil, the hydrological restoration of the territory through the prevention of instability phenomena, the safety of the risk situations and combating desertification. Article 64 of the Code provides for the division of the whole country into eight river basin districts and the establishment, for each river basin district, of a River Basin Authority District.

The latter have to draw up the river basin Plans which represent the cognitive, regulatory, technical and operational tool through which actions and rules of use for the protection and the defense of the soil and the proper use of the waters, based on the physical and environmental characteristics of the area concerned, are planned and programmed. Pending approval of the river basin plans, the Basin Authority shall approve, in accordance with Article 67, provisional hydro-geological management Plans (PAI), which in particular contains the identification of hydro-geological risk areas, the perimeter of the areas to be safeguards, and the determination of those safeguards measures. These plans, drawn up by the River Basin Authority District, had the aim of identifying the hydrogeological risk areas and determine the protective measures to be implemented in the identified areas. These measures provide for both non-structural measures, aimed at regulating land use management as a preventive action, and protection interventions to reduce the existing risk. Within the PAI were highlighted areas of hydraulic hazard for events with different return periods and in some cases was also shown the level of risk associated with them.

However, reducing the risk of floods is not one of the main objectives of this Decree, nor does it take into account future changes in the risk of flooding due to climate change.

It is only with the legislative decree 49/2010 of 23 February 2010 that the assessment and management activities of flood risks are regulated, implementing the EU Directive 2007/60/EC. The implementation of the EU Floods Directive in Italy provides an opportunity to revise the model of flood risk governance and confront the shortcomings encountered during more than 20 years of organized flood risk management (Mysiak et al. 2013). Before the adoption of Directive 2007/60/EC, in Italy the flood risk management was implemented through the above more general "hydrogeological management Plans" (PAI). With the Legislative Decree n. 49 of 2010, there is a shift from the PAI to the Flood Risk Management Plans (FRMP). According to this decree, the River Basin Authorities have to:

- set up a preliminary flood risk assessment through the preparation of: thematic maps of the river basin district; the description of the floods that occurred in the past that had significant negative consequences for the human health, land, property, environment, cultural heritage and economic and social activities and that, with high probability, can still occur in the future; the evaluation of the potential adverse consequences of future flooding, taking into account factors such as topography, location of surface water bodies and their hydrological and geo-morphological characteristics, the effectiveness of existing man-made flood defense, location of populated areas and economic and social activities. Italian Government considered the existed "hydrogeological management Plans (PAI)", prepared in accordance with Law 183/89, sufficient and appropriate to provide the information required by the preliminary flood risk assessment. This situation has led to national decision not to conduct such

an assessment and then proceed directly to the elaboration of hazard and flood risk maps with the criteria laid down by the European Directive.

- identify areas prone to potentially significant flood risk through the drawn up of flood hazard maps and flood risk maps; specifically, flood hazard maps shall cover the geographical areas which could be flooded according to the following scenarios:
 - a) rare floods of extreme intensity: return time up to 500 years after the event (low probability);
 - b) floods infrequent return period between 100 and 200 years (mean probability);
 - c) frequent floods: payback time of between 20 and 50 years (high probability).

On the other hand, the flood risk maps show the potential adverse consequences associated with floods under the previous scenarios expressed in terms of:

- a) the indicative number of inhabitants potentially affected;
 - b) infrastructure and strategic structures (highways, railways, hospitals, schools, etc.) ;
 - c) environmental heritage, history and culture of considerable interest in the area potentially affected;
 - d) the distribution and type of economic activities potentially affected ;
- develop the flood risk management plans coordinated at the river-basin level.

On the other side Regions, in coordination with each other and with the national Department of Civil Protection, are committed to prepare the management plans for the emergency alert system both at national and regional level. The time limits for the preparation of the flood hazard maps and flood risk maps (art. 6) and for publication of flood risk management plans (Article 7) are, respectively, June 22, 2013 and June 22, 2015.

In accordance with Annex I of the decree 49/2010, the FRMP must contain:

- a description of the objectives of the flood risk management;
- a summary of the measures and their prioritization for achieving the above objectives;
- the description of the prioritization and procedures for monitoring the status of implementation of the plan;
- the summary of the measures or actions taken to inform and consult the different actors involved;
- a list of the competent authorities.

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IMAGE SOURCES

The image of page 142 is taken from: www.eea.europa.eu; the image of page 143: news.panorama.it;

SMART CITIES CHALLENGES: SMART ENVIRONMENT FOR SUSTAINABLE
RESOURCE MANAGEMENT

REVIEW PAGES: URBAN PRACTICES

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In this number

ICTS AND CLIMATE CHANGE: THREE CASE STUDIES

According to the United Nations (UNFCCC, 1992), the climate change can be defined as “a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods”. Unlike this definition makes a distinction between “climate change” attributable to human activities altering the atmospheric composition, and “climate variability” attributable to natural causes, many researchers agree that the human activity is the dominant cause of observed changing since the mid-20th century (Stocker *et al.* 2013).

Climate change is a problem that is affecting people and the environment worldwide. Many places, especially in the southern and south-eastern regions of the world (already suffering from environmental or other changes) have seen changes in rainfall, resulting in more floods, droughts, or intense rain, as well as more frequent and severe heat waves (Loarie *et al.* 2009). As these and other changes become more pronounced in the coming decades, they will likely present challenges to our society and our environment.

The climate change is a long-term challenge. However, given the pace and the scale of its effects, innovative strategies are urgently required. In this contest, the Information and Communication Technologies (ICTs) has shown to provide a valuable tool to tackle the challenges imposed by the changing climate. An increasing number of ICT-based actions have been recently developed around the globe in the past two decades. In this paper, we present three relevant case studies:

- The Sri Lanka Disaster and Emergency Warning Network;
- The Indian e-Arik project;
- The Brazilian Deforestation Monitoring System.

The case studies aim to analyze the currently emerging opportunities offered by the Information and Telecommunication Technologies in addressing climate changes challenges and to identify common successful factors. In this regard, a strong collaboration between key players (i.e. local governments, public utilities, research centres and local communities) has emerged as important common conditions for the successful implementation of climate change related actions.

With different strategies and different solutions, the case studies analysed have shown how ICTs can be key factors to better mitigate, monitor and adapt to the impacts of the changing climate.



THE DISASTER AND EMERGENCY WARNING NETWORK (DEWN) INITIATIVE – SRI LANKA

On December 2004, the mega-tsunami unleashed by the earthquake of magnitude 9.1 in the Sumatra-Andaman subduction zone caused enormous loss of lives and damage to property in Sri Lanka and in several other countries bordering the Indian Ocean. In Sri Lanka, 13 of the 14 districts lying along the coastal belt were affected: the natural disaster caused nearly 40.000 victims with 15.000 injured and about 89.000 housing units either completely or partially damaged, leaving one million people homeless and causing massive disruption to livelihoods (Wijetunge 2006). When this natural disaster took place in 2004, there was no mechanism in place to alert the vulnerable communities. Of particular significance is the fact that there was ample time for the people leaving along the Southern and South-western coast of Sri Lanka to be warned and evacuated after the Tsunami strike on the Eastern coast (Wijesinghe *et al.* 2008).

This unprecedented tragedy clearly underscored the need to have a proper system in place for tsunami early warning as well as for quick evacuation of vulnerable coastal communities to safer areas.

After completing a successful pilot period, in January 2009 the Disaster Management Centre (the responsible agency of the island for all the disaster management issues), together with Dialog (the Sri Lanka's largest mobile telecommunications company) and other partners launched the Disaster Emergency Warning Network (DEWN) - Sri Lanka's first mass alert early warning system. The DEWN initiative is a multi-agency collaboration aimed to deliver a cost effective and multi-modal mass alert system which can be deployed for the purpose of warning key stakeholders in disaster management as well as the general public in advance of the occurrence of life threatening situations.

When information is received by the DMC, the information is verified, and customized alerts (with message text and recipients specified) are issued. Messages can be received by mobile phones or by the specially developed DEWN alarm devices. In a potential disaster scenario, DEWN will be used to first alert the emergency personnel on their individual phones. Public alerts will issued only when a threat is adequately verified.

The remote alarm is activated through SMS or Cell Broadcasting. Short Messaging Service (SMS) will be used for directed messages while Cell Broadcasting will be used for mass-alerts. Cell Broadcasting is also suitable for post-disaster operations since it is immune to network congestion.

The specially developed DEWN alarm devices are designed to be fixed indoors in public buildings such as places of worship, hospitals, markets, etc. They contains a loud siren, a flashing lamp, a LCD display to show the trilingual message, a radio and inbuilt call-back facility. The radio can be tuned to a Disaster Frequency if available. Special phones have been developed for Java/Symbian capable (smart) phones that causes the phone to rings continuously until acknowledged and displays the messages in all three local languages. DMC District Coordinators and other key contact members, being the first contact in each district, will be instrumented with such phones.

The cost and the benefits of the project are hard to estimate. However, with approximately half of the Sri Lankan population using GSM mobile phones, DEWN is in a good position to make use of this advantage to dispel emergency warnings. According to Wickramasinghe (2011), the benefits can be expected to much higher than the costs. There are also some more quantitative benefits, from greater feelings of security within communities that can access the warnings, to reputational and other benefits for the mobile operator.



THE E-ARIK PROJECT – INDIA

Agriculture is highly exposed to the climate change, as farming activities directly depend on climatic conditions. Continued changes in the frequency and intensity of precipitation, heat waves, and other extreme events have a strong impact on the agricultural production. Furthermore, compounded climate factors can decrease plant productivity, resulting in price increases for many important agricultural crops.

In this context, accessing to appropriate agricultural information is considered a key factor for rural farmers in order to increase crops' productivity and to provide opportunities for their self-development. Access to the appropriate agricultural information is a difficult task for the farmers of North-East India. Due to inadequate dissemination of advanced farm information and technologies, agriculture exhibits low productivity and creates food insecurity problems. Indeed, on one hand, the economic growth of the entire region depends, to a large extent, on the progress of agriculture sector. On the other hand, inadequate information on advanced farm technologies, market intelligence and rural development hinder the progress of the agricultural sector. To address these issues, a research study was initiated in August 2007. The project named e-Arik ("Arik" means "agriculture" in the tribal dialect of Arunachal Pradesh) aims to experiment the application of ICTs in agricultural extension services provision. The project is a collaborative effort that involves different key players such as the Indian Ministry of Science and Technology and a multi-disciplinary team of researchers from different Indian Universities. Presently, 500 farmers from 12 remote tribal villages of the North-East India are registered under the e-Arik system.

The main objective of the project is to provide the farmers with better information about climate-smart agriculture in order to raise awareness and adoption of practices that are sustainable. The aim of such practices is to increase productivity and resilience, to mitigate greenhouse gas emissions and to enhance food security and development. The focus of the project is on two crops: paddy rice and Khasi mandarin oranges. In the early stage of the project, a survey was conducted in selected villages during 2007, to understand the current situation and future needs of information exchange on agriculture. The results indicated that only 4 per cent of farmers had regular access to agricultural information. A majority of tribal farmers who were growing paddy, expressed a strong need for information on pest and disease management. The survey also looked into the access and use of communication tools by local communities. While very few farmers possessed cellular phones, none of them owned a computer nor was there internet facility in the surrounding three villages. In fact, more than half of the households had no power supply. To tackle this problem, a Village Knowledge Centre with computer, internet, printer was established at Yagrung village. Farmers are assisted through agricultural professionals, a computer instructor and farmer-facilitators. Additionally a project portal was created which provides information on agricultural practices, responsible governmental departments, markets and weather forecasts. Information is adjusted by project staff who visit fields and diagnose problems and document these issues using ICTs in the field. Another approach to disseminate information is by supporting the establishment of local self-help groups and farmer-to-farmer communication. The project has originate significant progress in terms of crops productivity that, in turns, has determinate a growth in the income level of the farmers. It is estimated that the e-Arik approach is 3.6 times cheaper than a conventional agricultural extension system and that farmers can access information 16 times faster. Giving the success of this initiative, a scale-up phase of the project is planned with further government funding. The goal is to replicate the project in the other seven north-east states of India.



THE BRAZIL DEFORESTATION MONITORING SYSTEM

The forest of Amazonia is home of the most diverse and numerous arrays of species in the world and represents a major component of the Earth system (Soares-Filho *et al.* 2012).

The majority of the forest (about 60 percent) is contained within Brazil. In the last few decades the Brazilian Amazon forest has faced the dual threats of deforestation and stress from climate change. Between May 2000 and August 2006, Brazil lost nearly 150,000 square kilometers of forest – an area larger than Greece – and since 1970, over 600,000 square kilometers of Amazon rainforest have been destroyed (Butler 2008).

The Brazilian rainforest plays a major role in the world's climate system by storing large stocks of carbon and by regulating energy and water fluxes.

The release of this carbon to the atmosphere through deforestation and forest degradation is the second largest source of greenhouse gas emissions. Indeed, about 70 percent of Brazil's emissions come from the destruction of its forests, making it one of the world's top greenhouse gas emitters (Greenpeace 2011).

In one of the greatest environmental conservation challenges in history, Brazil has established a target for reducing Amazon deforestation by 80% below the historical baseline of 19,500 km² year by 2020.

Monitoring systems based on advanced ICT play a key role in tackling climate change by allowing policy makers and other policy stakeholders to make informed choices about strategies to curb greenhouse emissions.

Since the early nineteen, Brazil set in motion a plan to develop a satellite-based system for tracking changes in forest cover. Today Brazil has two major systems for tracking deforestation: PRODES (Program to Calculate Deforestation in the Amazon) and DETER (Real-time Detection of Deforestation), which allow it to rapidly identify where deforestation is occurring. PRODES, which has a sensitivity of 6.5 hectares, provides Brazil's annual deforestation estimates (measured each August), while DETER, which has a coarser resolution of 25 hectares, is a year-round alert system that updates Brazil's environmental protection agency (IBAMA) every two weeks.

This gives authorities the technical capacity — although not necessarily the political will — to combat deforestation as it occurs. In particular DETER is used for supporting the law enforcement actions, since data is provided rapidly.

PRODES is used for carbon accounting and year to year comparison. Both this two project have been developed by Brazil's National Institute for Space Research (INPE). PRODES and DETER detect deforestation based on satellite images captured through the US Landsat, which are then processed by computer algorithms developed by INPE and interpreted by a local team of technicians and scientists.

Following this process, it is possible to generate a georeferenced map for the whole Amazon with individual polygons indicating the location of deforestation.

Furthermore, since 2003 this estimates are available to the world through the INPE website, making transparency in the dissemination of Amazon deforestation data.

PRODES is the largest forest monitor project in the world, based on orbital remote sensing. It has become recognized as the standard-bearer for deforestation tracking and reporting worldwide. Data provided by these two projects has become the main baseline for discussing policies in the Amazon.

The wide acceptance of this systems in policy making in the Amazon and the related reduction in deforestation represent the main results of these projects.

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IMAGE SOURCES

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SMART CITIES CHALLENGES: SMART ENVIRONMENT FOR SUSTAINABLE RESOURCE MANAGEMENT

REVIEW PAGES: NEWS AND EVENTS

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In this number SMART ENVIRONMENT

In recent years it has been increasing the interest by the private investors, organizations and governments in the development of new solutions and strategies that have as target the reduction of energy consumption. To promote this, the authorities of the EU member states have defined the Community strategies, not only through a new definition of regulatory guidance, but also by financing numerous infrastructure projects and research that will significantly reduce energy consumption. Not only in Europe, but also in most countries of the world, it is starting numerous programs to encourage the development of energy efficiency solutions. One of the nations in the world where there are more investments in this sector is America, which with the American Recovery and Reinvestment Act of 2009 has planned to invest about seventy billion dollars in the energy sector. In particular, the federal funds allocated for scientific research in this area are about eight billion dollars.

In America, the interest in respect of this topic has grown thanks to the diffusion of the citizens, the professionals and the administrators of the need to make major changes to the energy sector. For the definition of the different needs and the individuation of new effective solutions is fundamental the organization of meeting moments between the various actors that have the task of initiating the improvement of this sector. In the 2007, a lot of leaders and international delegates took part in the Energy Efficiency Global Forum (EE Global), which in recent years has become the most important world conference for the energy efficiency.

In the last six years, EE Global was held in different places in the world and has gained an international following of experts and leaders. In the 2014, a lot of executives and politicians from all sectors that deal with energy efficiency will gather in Washington, DC from 20 to 21 May with the aim to present and develop new effective policies and practices for energy efficiency. EE Global 2014, hosted by the Alliance to Save Energy a non-profit organization that brings together businesses, government agencies, environmental groups and consumers. The Alliance to Save Energy, founded in 1977, promotes energy efficiency worldwide to achieve a correct economy, a cleaner environment, and improved energy security. To achieve this mission, the Alliance:

- leads worldwide energy efficiency initiatives in policy advocacy, research, education, technology deployment and communications that impact all sectors of the economy;
- provides vision and activism which includes active and engaged members of Congress, leaders from business, the public interest sector and academia;

- initiates and participates in public-private partnerships, collaborative efforts and strategic alliances to optimize resources and expand its sphere of influence;
- executes its mission through a team of recognized energy efficiency experts and professionals.

The initiatives organized by the Alliance to Save Energy, are structured according to different sectors, and ranging from energy recovery of the buildings to improve energy efficiency in the manufacturing sector.

In the 2012, the Alliance to Save Energy took part to the National Commission on Energy Efficiency Policy, this committee that includes federal and local politicians, energy experts and productive organizations working to promote the implementation of strategies that promote energy saving. This committee has worked for a year to identify the most incisive energy policy most widely shared. This work brought to the definition of the Energy Action Plan 2030, which urges policy makers at all levels of government – local and federal – to act in three main lines of action:

- invest in energy productivity in all sectors of the economy;
- modernize of U.S. infrastructure, buildings, transportation, and equipment;
- educate consumers, business leaders and policymakers to encourage smarter energy use.

In summary the goal of the Alliance is to work with all levels of Government and with the private sector to successfully implement the Commission recommendations, in order to double the productivity of the nation's energy by 2030 and reduce dramatically the consumption energy.

Recently, the knowledge of the negative effects of the current methods of waste disposal has led to greater accountability of those involved in the effective management of the waste cycle.

As regard to the situation in Europe, every year are produced about two billion tons of waste (Eurostat 2010). A part of these are also particularly dangerous in constantly increasing.

Now there is knowledge that the availability of landfills or other waste storage sites isn't a sustainable solution, their destruction is an optimal solution due to the pollutant emissions and waste resulting from their highly polluting incineration. The best solution is to intervention at the source of the waste cycle, so start of a concrete reduce of the production of waste and must be used when there are sustainable solutions ecologically and economically, so as to recycle the various components of the products. Due to the increasing of the volume and complexity of household and industrial waste and his management is a major problem in modern society. To achieve these objectives it is necessary to encourage the search for new methods or solutions to facilitate disposal of waste in a more sustainable way.

Every two years, the Wessex Institute of Technology (WIT) organizes the International Conference on Waste Management and the Environment. It's sponsored by WIT Transactions on Ecology and the Environment, and the International Journal of Sustainable Development and Planning. This year the conference begins from 14 to 15 May in the city of Ancona in Italy, now it's seventh edition, provides an opportunity for professionals, researchers and governments to initiate a constructive exchange of scientific information and discuss the current situation and the possible future developments in waste management.

For the energy efficient sector, it is giving particular importance to the implementation of programs and solutions that want promote to improve energy behaviour of the users. The importance of the behaviours revealed by a study conducted by a leading American companies working in the field of energy behaviours that showed that only with the use of adequate energy behaviours can reduce the energy consumption of the United States of approximately 18 MWh per year. This amounts to a reduction of CO₂ emissions by about 10 million tons in a year and a consequent saving of \$ 2.2 billion for American consumers every year.

To promote the achievement of this objective Behave The Energy Conference is dedicated to the theme of reducing energy consumption through the change individual behaviour. The conference will be held 3 and 4 September at the Said Business School in Oxford, UK.

The title chosen for this conference "Behave Energy" is to emphasize that a important aspect for the correct use of energy efficiency solutions and to start a change in the habits of life of citizens. The main topics that will be covered in this conference, with the contribution of numerous participants, are:

- reduction of energy through the use of feedback;
- programs for Community Energy: consumption, procurement and production;
- transport and mobility;
- moving in time the demand for energy;
- the consumption of energy in organizations;
- reduce energy consumption in buildings;
- social practices and energy consumption;
- gamification and social media.

Recently another sector that is evolving much is that of the Intelligent Environments (IEs) that use computer technologies to create networked environments, sensitive and responsive to the presence of people. These systems are built using a mix of innovative software and hardware systems, structured so as to promote the efficiency of the operations and activities, facilitate the presence and participation, improve the user experience and allow to better or change styles of life or methods of production. The IEs are spaces in which computation is seamlessly used to enhance ordinary activity. One of the driving forces behind the emerging interest in highly interactive environments is to make computers, not only genuine user-friendly but also essentially invisible to the user (Steventon, Wright, 2006). The development of this new information technologies and their application require the combined use of numerous disciplinary skills, ranging from science, engineering, architecture, sociology, education and the economy. The need to reconcile all these skills in order to enable the development of technical solutions that are able to cope with the demands of the market related IEs. It is therefore essential the organization of moments that will enable constructive dialogue on these issues. The 10th Intelligent Environments conference is organized by the Departments of Computer Science & Engineering with the Department of Department of Automation of Shanghai Jiao Tong University (SJTU). The Conference will take place in Shanghai, China from 2 to 4 July. Another collateral event at the conference, to be held forever in Shanghai from 30 June to 1 July, with the organization of eleven different workshops dedicated to specific sectors that deal with the implementation of solutions that involve the use of Intelligent Environments (IEs).

The workshops are organized to allow the participants to showcase their research and to discuss in a constructive way with the wider scientific community present at the conference.

In relation to the development of solutions IEs, one of the research areas in recent years has been attracting great interest of private investors both scientific research institutions is that of Wearable technology. This sector covers all technologies, portable and wearable, modelled around the body of the people, that are used as natural support for their operation. The main goal of the use of these new technologies is to enable the detection and monitoring of exogenous and endogenous signals of the human body, also of an emotional nature, allow these technologies to become a valuable assistant to solve the user's needs broadening also sensory abilities. The possible applications of these new technologies are varied and range from the simple use during sports and recreation, their use as tools for decision support for the planning of special services such as education, mobility, tourism, etc. (Tirri, 2013) or for use in the medical industry for prevention or monitoring of health conditions of patients (Signorini et al., 2014). The need for further actions on behaviours to reduce energy consumption has been highlighted recently by some studies in which it was verified that the incorrect behaviour of the energy could also undo all the positive effects resulting from the introduction of new technological solutions.



**THE 7TH INTERNATIONAL CONFERENCE ON WASTE
MANAGEMENT AND THE ENVIRONMENT**

Where: Ancona – Italy
When: 12 - 14 May 2014



ENERGY EFFICIENT GLOBAL FORUM

Where: Washington, D.C. - USA
When: 20 - 21 May 2014



**THE 10TH INTERNATIONAL CONFERENCE ON INTELLIGENT
ENVIRONMENTS**

Where: Shanghai – China
When: 2 - 4 July 2014



BEHAVE ENERGY CONFERENCE 2014

Where: Oxford – United Kingdom
When: 3 - 4 September 2014

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