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2nd International Conference

Smart and Sustainable Planning for Cities and Regions 2017

Bolzano/Bozen (Italy), 22-24 March 2017

PROGRAMME & ABSTRACT BOOKLET

Green Event
Klimahaus Südtirol Alto Adige

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SECTION I
AGENDA & INFO

WELCOME MESSAGE

WOLFARM SPARBER - EURAC RESEARCH

Dear Guests, Speakers, Organizers, it is my pleasure to welcome you to Bolzano/Bozen for the second edition of the international conference on Smart and Sustainable Planning for Cities and Regions. The first edition took place here in Bolzano/Bozen in November 2015 and saw the involvement of over 60 participants coming from 17 different countries. The conference proceedings have been recently published by Springer in a volume collecting over twenty most valuable contributions on smart and sustainable planning among the papers presented.

The SSPCR conference series is organized by the Institute for Renewable Energy of Eurac Research (EURAC); EURAC is a private research center collecting researchers from all over the World dedicating themselves to the greatest challenges of our nearest future: people's health, energy, well-functioning political and social systems and environment protection. The Institute for Renewable Energy conducts applied research on advanced energy systems, sustainable energy sources and smart energy city approach. The Institute is involved in numerous national and international research projects as well as in direct industrial partnerships, delivering both scientific publications in peer-reviewed journals as well as new product prototypes and technology evaluation. We also supports the promotion of renewable energy technologies and assists policy makers and regulators with scientific consultancy.

Today over 40% of the European population and 54% of the global population live in cities and the urbanization trend is in constant growth. Cities are hubs for economic growth, job creation, new ideas, technological evolution, communication and networking, information and social transformation. However, they also origin of climatic, environmental, and economic challenges, making cities both the sources and at the same time the potential healers of those challenges. This convergence explains why cities are pivotal players for the development of a future smart, sustainable, and low-carbon economy. Thus, this second edition of Smart and Sustainable Planning for Cities and Regions focuses on innovative planning methodologies, tools, experiences and case-studies aimed at supporting the transition of our cities towards a smarter and more sustainable dimension, approaching different environments and perspectives.

Concluding, I would like to thank all the collaborators actively involved in the organization and promotion of this conference, in particular Adriano Bisello, Daniele Vettorato, and EURAC's meeting management team for their technical assistance. My gratitude also goes to our keynote speakers and sessions chairs and to all of you actively contributing to the conference through their papers, posters and presentations. Finally, thanks to our supporting partners for patronizing the event and contributing with their financial support, communication and dissemination activities.

I wish all of you a fruitful time at the conference and a pleasant stay in Bolzano/Bozen.

Wolfram Sparber

Head of the EURAC Institute for Renewable Energy

KEYNOTE SPEAKERS

PIERRE LACONTE - FOUNDATION FOR THE URBAN ENVIRONMENT

Pierre Laconte is President of the Foundation for the Urban Environment (FFUE), which seeks to link urban planning, transportation and the environment.

A past President of the International Society of City and Regional Planners (ISOCARP), and former Secretary General of the International Association of Public Transport, he was evaluator for the European Green Capital Award in 2012 and 2013 and a member of the Lee Kuan Yew World City Award Council. He is one of the three planners responsible for Louvain new university town in Belgium, which received the Abercrombie Award of the International Union of Architects.

Laconte's presentation will confront the following questions **Smart and sustainable cities: what is smart? What is sustainable?** He will introduce the latest findings included in "Sustainable cities. Assessing the Performance and Practice of Urban Environments" (I.B. Tauris, London-New York). The book illustrates international best practices and proposes a critical assessment of the techniques used to assess urban environments, including factors affecting climate change.

HANS DUBOIS - EUROPEAN FOUNDATION FOR THE IMPROVEMENT OF LIVING AND WORKING CONDITIONS

Hans Dubois is Research manager of Living Conditions and Quality of Life unit at the European Foundation for the Improvement of Living and Working Conditions (EUROFOUND).

EUROFOUND is a tripartite European Union Agency, delivering knowledge in the area of social and work-related policies. Eurofound was established in 1975, since then its role is to provide information, advice and expertise - on living and working conditions, industrial relations and managing change in Europe - for key actors in the field of EU social policy on the basis of comparative information, research and analysis.

Hans Dubois, will talk about **Inadequate housing in Europe: costs and consequences** and **Quality of life in urban and rural Europe**. He will further present a forthcoming project on **Neighbourhood quality and role of local level measures in building up quality of life**.

SABINE SULZER - LUCERNE UNIVERSITY OF APPLIED SCIENCES AND ARTS

Sabine Sulzer is head of the Lucerne Competence Center for Energy Research (LUCCERNE) and she teaches Sustainable Energy Systems at the Lucerne University of Applied Sciences and Arts (HSLSU).

Her research is dedicated to the development of new solutions to overcome the diffusion gap in the context of the energy transition (specifically focusing on business model innovation and the consideration of multiple benefits). After her PhD at the ETH in Zurich, she worked in industry for more than ten years, where she introduced and lead the global innovation management for Sulzer Pumps AG.

Sabine Sulzer will speak about her coordinated research project in Switzerland on energy efficiency in buildings & districts. The goal of the project is to **reduce the environmental footprint in the Swiss building stock by a factor of 3**. Buildings represent the largest share of energy demand in Switzerland: heating, ventilation and air conditioning (HVAC) account for roughly 40% of final energy demand. Therefore, the goals of the Energy Strategy 2050 and the Swiss Climate Strategy can be met only if buildings become much more energy efficient relative to their current performance, and if the remaining demand is primarily met by renewable sources. Accordingly, key performance indicators include the energy intensities (in kWh/m^2) used for buildings' operation, and their relative carbon content (in g CO_2 /kWh). The environmental footprint of the building stock, defined as the product of these two KPIs, should be reduced by a factor of 3 by 2035.

MARK DEAKIN - EDINBURGH NAPIER UNIVERSITY

Mark Deakin is Professor of Built Environment and Head of the Centre for Smart Cities, Institute for Sustainable Construction, at the Edinburgh Napier University.

Inter-disciplinary in nature and cutting across scientific and technical boundaries, the Centre for Smart Cities (CSC), studies the on-going restructuring of the telecommunications, energy, food, water and waste management sectors championed by the European Commission (EC). CSC's studies include:

- SmartCities and CLUE (CLimate neutral Urban Environment) projects commissioned by the EC;
- Smart and Sustainable Cities Study conducted on behalf of the European Investment Bank;
- Smart Accelerator project carried out for the Edinburgh Centre of Carbon Innovation;
- Smart City Food Governance Symposia, conducted under the auspices of the 2015 Milan World Expo;
- S3 (Smart Specialisation Strategy) platform procured by the European Commission.

At SSPCR 2017, Mark Deakin will provide **a critical synthesis on smart cities literature** based on an inter-disciplinary reading of smart cities. His Triple Helix inspired account conveys insight on future internet-based developments into the digital infrastructures, data management systems and renewable energies for cloud computing.

TAMARA KRAWCHENKO - ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Tamara Krawchenko is a policy analyst in the Regional Development Policy Division of the Organisation for Economic Co-operation and Development (OECD). The OECD's mission is to promote policies that will improve the economic and social well-being of people around the world. The OECD works with governments to understand what drives economic, social and environmental change and provides a forum in which governments can work together to share experiences and seek solutions to common problems. Tamara holds a PhD in public policy and political economy from Carleton University, Canada. Her multi-disciplinary research has covered a wide range of topics—from community capacity building and rural development, to intergenerational equity and most recently, land use and spatial planning.

Tamara Krawchenko will present the findings of the OECD's forthcoming report on **The Governance of Land use in OECD Countries**. This two-volume report offers analysis and recommendations on land-use policies and practices with particular attention paid to the interactions between planning tools, fiscal frameworks, and incentives. It also provides a descriptive overview of land-use planning systems across OECD countries. It calls for a broader range of policies to be drawn on to achieve spatial goals and the need for more flexible approaches to planning. This demands interdisciplinary, new processes and new ways of working.

MANEL SANMARTÌ - CATALONIA ENERGY RESEARCH INSTITUTE

Manel Sanmartì is the Head of the Electrical Engineering Research Area (EERA) at the Catalonia Energy Research Institute (IREC).

With more than 20 years' experience leading and participating in international and national R&D projects in the field of energy systems and international scientific facilities, he is presently focusing his research on energy efficiency systems, buildings and communities. In particular, he works on low energy districts, smart grids and renewables and electric mobility integration. He is part of the Smart Cities Joint Programme of the European Energy Research Alliance and co-Operating Agent of the V2X Task 28 of the Hybrid and Electrical Vehicle Technology Program of the IEA. He is also leading the RIS3CAT Energy Community, a €15 Million Action Plan to develop and improve competitiveness of the energy sector in Catalonia. He actively contributed to the Catalonia Electric Mobility White Book, the Barcelona Energy and Air Quality Plan, Catalonia Energy Guides, the Data Collection and Reporting Guidelines for European electro-mobility by JRC and several scientific publications in energy efficiency, electric mobility and smart grids.

At SSPCR 2017, Manel Sanmartì will present the **Growsmarter project**: a Smart Cities lighthouse project funded by the European Commission (SCC1-2015 call) with the objective of transforming the cities of Stockholm, Cologne and Barcelona adopting the perspective of a smart, sustainable Europe. The goals will be reached by deploying in the three cities 12 smart energy, mobility and ICT solutions with the aid of a technical and economical evaluation strategy, especially focused on the Barcelona case.

DEBATE: CULTURE-LED SMART REGENERATION STRATEGIES

Over the past twenty years cultural resources and culture-led regeneration strategies have played a crucial role in the transformation of many European post-industrial cities. Such approaches to local development - closely linked to economic competitiveness, attraction of investments and cultural tourism - can now benefit of additional smart innovations. This element brings up an international debate that tackles the challenges and benefits of adopting smart cultural planning approaches in relation to both local cultural ecology and quality of the urban environment.

The discussion will follow the lines of international case studies concerning places that have put an emphasis on culture as their driver of change. The event will kick off with a short introduction by Lia Ghilardi, who will also moderate the discussion among case study representatives and conference chairmen.

Introduction & Moderation

LIA GHILARDI - NOEMA

Lia Ghilardi is a creative polymath, based in London. She is the founder and director of NOEMA, a UK-based organization working internationally to deliver place mapping and strategic cultural planning projects. Internationally recognized as a leader in the field of cultural urban development, she has worked for more than twenty years with civic leaders, urban designers, architects and arts organizations to provide creative and integrated solutions to the challenges of place making in contemporary cities.

Lia's background is in urban sociology (Trento University, Italy); she has an MA with Distinction in Arts Criticism from City University (London) and a Diploma in Creative Thinking Skills from the De Bono Seminars Programme (Malta).

Case Studies

MATERA, THE EUROPEAN CAPITAL OF CULTURE 2019. Presented by ANDREA VERRI (Director General of Fondazione Matera-Basilicata 2019). Since 1998 his concern are cities and urban development. He was director of the Strategic Plan for the city of Turin (2000-2006), of the Fondazione Atrium for promotion of the Torino 2006 Winter Olympics (2004-2006) and the Italia 150 Committee for the celebrations of the 150th anniversary of Italian Unification (2007-2010). In 2011, he became director of the Matera 2019 Committee and after the successful selection of Matera as 2019 European Capital of Culture; he was appointed director of the Matera-Basilicata 2019 Foundation, the body responsible for the implementation of Matera 2019's programme. He also works as consultant for various cities for the development of their strategic plans.

PRAGUE, THE NEW METROPOLITAN PLAN. Presented by JAROMIR HAINC (Deputy Head of Urban Planning at the Prague Institute of Planning and Development). Jaromir is involved in projects with the OECD, Eurocities and EU Triangulum project. Beyond his interest in European cities, Jaromír also studies urbanism in the Middle Eastern cities.

MAKING SPACE FOR URBANITY, COMPREHENSIVE STRATEGIC PLANNING IN AMSTERDAM. Presented by RICK VERMEULEN (Senior Urban Planner at the Municipality of Amsterdam). Rick represents the City of Amsterdam in the METREX network and is specialized in European urban-rural development and cooperation models, and social and territorial cohesion. Amsterdam has perhaps the most unique approach in this regard - they have tradition of "active" planning and several cultural led regeneration projects.

TARANTO, THE #OPENTARANTO INTERNATIONAL IDEAS COMPETITION. Presented by MARIA CRISTINA PETRALLA (Freelance engineer and architect, specialized in Landscape Architecture). Maria Cristina represents the temporary consortium prize-winning of the international ideas competition, intended as a way to create a future vision of the Taranto Old Town and a means to kick-start the engine of regeneration through an Action Plan.

Discussants

SSPCR KEYNOTE SPEAKERS: Piere Laconte, Hans Dubois, Sabine Sulzer.

SSPCR CHAIRMEN: Adriano Bisello, Francesco Calabrò, Simona Costa, Pietro Elisei, Christian Hoffmann, Ezio Micelli, Bruno Monardo, Stefano Moroni, Alessandra Proto, Elisa Ravazzoli, Petra Scudo, Daniele Vettorato.

ENERTOUR

ENERTOUR is an initiative that consists of guided visits to outstanding sites in the Bolzano area (e.g. green buildings, installations of renewable energy systems and municipal systems, etc.) During such tours, the planners and managers of the systems and buildings give directly on the location explanations on the concept, as well as technical and economic aspects. The purpose of the ENERTOURs is to disseminate knowledge and new practical technological solutions to benefit a more sustainable energy. We will go by bus to the Hydrogen Centre in Bolzano Sud and South Tyrol's technology park "NOI".

Meeting point: EURAC main entrance, on Thursday 23rd at 14:20.

HYDROGEN CENTRE (H2)

This innovative plant for Hydrogen production is managed by the Bolzano Institute for Technological Innovation (IIT). The South Tyrol H2 production plant profits of a strategic location, at the center of Bolzano's highway and freeway hub, which guarantees an easy access to Hydrogen production and distribution areas to all vehicle types. Since 2014, the plant produces "green Hydrogen" through a hydrolysis process harnessing exclusively renewable energies. The Hydrogen produced allows to replace yearly about 525,000 liters of gasoline (440,000 liters of diesel), reducing CO_2 emissions by about 1,200 tons. The gas produced is used today to power about 20 public buses of Bolzano's city lines. **Guide: Walter Huber, President IIT**.

NOI TECHPARK

The South Tyrol's "NOI" Techpark was conceived as a technology network hub connecting enterprises, startups, researchers and students to generate innovation. Construction works started in March 2015 and will reach a first completion stage by mid 2017. The project fosters a highly innovative energy concept: it represents the first Italian LEED-certified neighborhood; its heat will derive from the waste of the nearby Aluminum industry; its cooling will exploit aquifer water and it will connected to the district heating plant. Part of NOI's buildings will be compliant with the European standards on Nealy Zero Energy Buildings and will be awarded the CasaClima Work & Life certification. The NOI Techpark will serve as headquarters of Sudtyrols chief energy authorities and institutions - CasaClima Agency, Institute for Renewable Energies of Eurac Research, Free University of Bolzano, Institute for Technological Innovation IIT, EcoResearch Lab.
Guide: Martin Vallazza, Project Manager NOI Technology Park.

SHORT PROGRAMME

Time	Wednesday 22nd March							
09:30 - 11:00	**Conference Hall**							
	P.1	WELCOME MESSAGE OPENING PLENARY SESSION	*PIERRE LACONTE:* **Smart and sustainable cities: what is smart? What is sustainable?** *HANS DUBOIS:* **Inadequate housing in Europe: costs and consequences** and **Quality of life in urban/rural Europe**					
11:00 - 11:30	Coffee Break - Poster Exhibition							
11:30 - 13:00	**Conference Hall**		**Seminar Room 1**		**Seminar Room 2**		**Seminar Room 8**	
	1.1	PLANNING FOR ADAPTATION AND MITIGATION	4.1	STRATEGIES AND ACTIONS FOR GOOD GOVERNANCE	2.1	ICT, SPACES & SOCIETY	5.1	URBAN-RURAL INNOVATIVE RELATIONSHIPS
13:00 - 14:30	Standing Lunch							
14:30 - 16:00	**Conference Hall**		**Seminar Room 1**		**Seminar Room 2**		**Seminar Room 8**	
	1.2	PLANNING FOR ADAPTATION AND MITIGATION	4.2	STRATEGIES AND ACTIONS FOR GOOD GOVERNANCE	2.2	ICT, SPACES & SOCIETY	5.2	URBAN-RURAL INNOVATIVE RELATIONSHIPS
16:00 - 16:30	Coffee Break - Poster Exhibition							
16:30 - 18:00	**Conference Hall**							
	P.2	INTERNATIONAL DEBATE on "**Culture-led smart regeneration strategies**" (EURAC & OECD joint event) MODERATOR: *LIA GHILARDI* CASE STUDIES: *Matera, Amsterdam, Prague, Taranto*						
18.00 - 19.00	Welcome Reception							

Time	Thursday 23rd March							
09:30 - 11:00	**Conference Hall**							
	P.3	PLENARY SESSION	*MARK DEAKIN*: **Critical synthesis of smart city studies: demonstrating how urban morphology matters in "under-gridding" the sustainability of energy efficient-low carbon zones** *SABINE SULZER:* **Factor 3 reduction of environmental footprint in Swiss building stock**					
11:00 - 11:30	Coffee Break - Poster Exhibition							
11:30 - 13:00	**Conference Hall**		**Seminar Room 1**		**Seminar Room 2**		**Seminar Room 8**	
	1.3	PLANNING FOR ADAPTATION AND MITIGATION	4.3	STRATEGIES AND ACTIONS FOR GOOD GOVERNANCE	2.3	ICT, SPACES & SOCIETY	-	-
13:00 - 14:30	Standing Lunch							
14:30 - 16:30	ENERTOUR (Guided **tour to the HYDROGEN CENTRE and SOUTH TYROL'S TECHNOLOGY PARK "NOI"**) *Meeting point: EURAC main entrance at 14:20*							
16:30 - 17:00	Coffee Break - Poster Exhibition							
17:00 - 18:30	**Conference Hall**		**Seminar Room 1**		**Meeting Room "GF"**		**Seminar Room 8**	
	1.4	PLANNING FOR ADAPTATION AND MITIGATION	4.4	STRATEGIES AND ACTIONS FOR GOOD GOVERNANCE	2.4	ICT, SPACES & SOCIETY	3.1	NEXT ECONOMY FOR THE CITIES

20.00 - 22.00	Conference Gala Dinner *Meeting point/location: see the flyer in the conference bag*

Time	Friday 24th March							
	Conference Hall		**Seminar Room 1**		**Meeting Room "GF"**		**Seminar Room 8**	
09:30 - 11:00	5.3	URBAN-RURAL INNOVATIVE RELATIONSHIPS	7.1	IMPLEMENTATION & EDUCATION PROJECTS	6.1	RETHINKING MOBILITY	3.2	NEXT ECONOMY FOR THE CITIES
11:00 - 11:30	Coffee Break - Poster Exhibition							
11:30 - 13:00	**Conference Hall**							
	P.4	PLENARY SESSION	OFFICIAL LAUNCH OF THE OECD REPORT "**The Governance of Land use in OECD Countries**" PRESENTER: *TAMARA KRAWCHENKO*					
			MANEL SANMARTI: **Growsmarter project: transforming Stockholm, Cologne and Barcelona in smart cities**					
			SSPCR 2017 CLOSING DEBATE					
13.00 - 14.30	Closing Aperitif							

DETAILED PROGRAMME - WEDNESDAY 22nd

WEDNESDAY 22nd	**P.1 PLENARY SESSION - SSPCR 2017 OPENING**				
ROOM	CONFERENCE HALL		TIME	9:30-11:00	
CHAIR	ADRIANO BISELLO - EURAC RESEARCH				
WELCOME MESSAGE	SPARBER	EURAC RESEARCH, INSTITUTE FOR RENEWABLE ENERGY		BOLZANO / BOZEN	ITALY
SMART AND SUSTAINABLE CITIES: WHAT IS SMART? WHAT IS SUSTAINABLE?	LACONTE	FFUE - FOUNDATION FOR URBAN ENVIRONMENT		BRUSSELS	BELGIUM
INADEQUATE HOUSING IN EUROPE: COSTS AND CONSEQUENCES AND QUALITY OF LIFE IN URBAN AND RURAL EUROPE	DUBOIS	EUROFOUND - EUROPEAN FOUNDATION FOR THE IMPROVEMENT OF LIVING AND WORKING CONDITIONS		DUBLIN	IRELAND

WEDNESDAY 22nd	**1.1 PLANNING FOR ADAPTATION AND MITIGATION**				
ROOM	CONFERENCE HALL		TIME	11:30-13:00	
CHAIR	DANIELE VETTORATO - EURAC RESEARCH JAROMIR HAINC - PRAGUE INSTITUTE OF PLANNING AND DEVELOPMENT				
ASSESSING TECHNOLOGY OPTIONS FOR HIGH SHARES OF RENEWABLE ENERGIES IN URBAN (DISTRICT) HEATING SYSTEMS - A CASE STUDY FOR THE CITY OF HERTEN IN GERMANY	STEINBACH	FRAUNHOFER INSTITUTE FOR SYSTEMS AND INNOVATION RESEARCH ISI	KARLSRUHE	GERMANY	
ENERGY RETROFIT OF FACADES: INTRODUCING PERFORMANCE CRITERIA IN PUBLIC TENDERS AT EARLY DESIGN STAGE	VULLO	EURAC RESEARCH	BOLZANO/BOZEN	ITALY	
INNOVATIVE TECHNICAL SOLUTIONS WITHIN EU-GUGLE, A SUSTAINABLE RENOVATION PILOT PROJECT FOR SMART CITIES	LOZOWSKI / HEIDENREICH	UNIVERSITY OF NATURAL RESOURCES AND LIFE SCIENCES, VIENNA	WIEN	AUSTRIA	
HOTMAPS - HEATING AND COOLING: OPEN SOURCE TOOL FOR MAPPING AND PLANNING OF ENERGY SYSTEMS	FRITZ	VIENNA UNIVERSITY OF TECHNOLOGY	WIEN	AUSTRIA	
PLACE-BASED POLICY-MAKING AND COMMUNITY SECURITY: A DECISION SUPPORT SYSTEM FOR INTEGRATED PLANNING OF URBAN ECOSYSTEM SERVICES AND DISSERVICES	SACCHELLI	DEPARTMENT OF AGRICULTURAL, FOOD AND FOREST SYSTEMS MANAGEMENT - UNIVERSITY OF FLORENCE	FLORENCE	ITALY	

WEDNESDAY 22nd	**2.1 ICT, SPACES & SOCIETY**				
ROOM	SEMINAR ROOM 2		TIME	11:30-13:00	
CHAIR	ADRIANO BISELLO - EURAC RESEARCH PETRA SCUDO - EURAC RESEARCH				
MAPPING CITY INDICATORS METHODOLOGIES	GARCIA LOPEZ	SMART&CITY SOLUTIONS - TECHNICAL UNIVERSITY OF MADRID		MADRID	SPAIN
PROJECT SU.MO: UNLOCK THE POTENTIAL OF EXISTING DATA FOR THE GOVERNANCE OF SUSTAINABLE MOBILITY	GIOVANNINI	SINERGIS SRL		CASALECCHIO DI RENO	ITALY
AN URBAN FRAMEWORK AS AN ADAPTIVE SPATIAL PLANNING TOOL FOR SUB-SAHARAN CITIES - AN EXAMPLE OF LILONGWE, MALAWI	GALL	URBAN FRAMEWORK		BRAUNSCHWEIG	GERMANY
ANALYSING CITIES WITH REMOTE SENSING: A METHODOLOGY TO COMPARE URBAN GROWTH WITH THE GLOBAL HUMAN SETTLEMENT LAYER	MELCHIORRI	URBAN HABITAT LAB		DOMODOSSOLA	ITALY

WEDNESDAY 22nd	**4.1 STRATEGIES & ACTIONS FOR GOOD GOVERNANCE**				
ROOM	SEMINAR ROOM 1		TIME	11:30-13:00	
CHAIR	STEFANO MORONI - UNIVERSITY POLITECNICO DI MILANO PIETRO ELISEI - URBANSOFIA				
THE MEANING AND ROLE OF ENERGY COMMUNITIES IN A DISTRIBUTED ENERGY SCENARIO	ALBERTI	DEPARTMENT OF PLANNING DESIGN TECHNOLOGY OF ARCHITECTURE, SAPIENZA UNIVERSITY OF ROME		ROME	ITALY
ON THE DEVELOPMENT OF A COMMUNITY PLATFORM TO FOSTER THE ENERGY TRANSITION OF A SWISS SUB-URBAN MUNICIPALITY	SULZER	LUCERNE UNIVERSITY OF APPLIED SCIENCE		HORW	SWITZERLAND
CLIMATE CHANGE GOVERNANCE AND POLICY LEARNING. THE ROLE OF CITY NETWORKS	DOMORENOK	DEPARTMENT OF POLITICAL SCIENCE, LAW AND INTERNATIONAL RELATIONS, UNIVERSITY OF PADOVA		PADOVA	ITALY
URBAN SUSTAINABILITY AS THE NEW NORMAL - SETTING THE AGENDA THROUGH THE GLOBAL CITIES SUSTAINABLE DEVELOPMENT GOALS & THE NEW URBAN AGENDA AS PRINCIPLE FOR ACTION	KUHLE	UN-SDSN		PARIS	FRANCE
FROM SOCIOPETAL TO SOCIOFUGAL, A REVERSE PROCEDURE OF TEHRAN URBAN SPACES, CASE STUDY RETHINKING FUTURE DEVELOPMENTS OF SHEMIRANAT	HEIDARISOURESHJANI	ISLAMIC AZAD UNIVERSITY BRANCH SHAHREKORD		SHAHR-E KORD	IRAN

WEDNESDAY 22nd	**5.1 URBAN-RURAL INNOVATIVE RELATIONSHIPS**				
ROOM	SEMINAR ROOM 8		TIME	11:30-13:00	
CHAIR	FRANCESCO CALABRÓ - UNIVERSITY MEDITERRANEA OF REGGIO CALABRIA CHRISTIAN HOFFMANN - EURAC RESEARCH				
URBAN-RURAL BIOENERGY PLANNING AS A STRATEGY FOR SUSTAINABLE DEVELOPMENT OF INNER AREAS: A GIS-BASED METHOD TO ENHANCE FOREST CHAIN		CIOLLI	DEPARTMENT OF CIVIL, ENVIRONMENTAL AND MECHANICAL ENGINEERING, UNIVERSITY OF TRENTO	TRENTO	ITALY
THE ROLE AND FUNCTIONS OF SMALL TOWNS WITHIN A REGION: TOWARDS A PLANNING AND DEVELOPMENT FRAMEWORK FOR PIKETBERG, WESTERN CAPE, SOUTH AFRICA		DIMITROVA	CAPE PENINSULA UNIVERSITY OF TECHNOLOGY	CAPE TOWN	SOUTH AFRICA
PROVINCIAL, BUT SMART: URBAN-RURAL RELATIONSHIPS IN BRANDENBURG/ GERMANY		MATERN / SCHRÖDER	BTU COTTBUS-SENFTENBERG	COTTBUS	GERMANY
SMART TERRITORIAL RELATIONSHIPS TO COPE WITH THE RURAL URBAN DIVIDE IN MOUNTAINS REGIONS		HOFFMANN	EURAC RESEARCH	BOLZANO/BOZEN	ITALY
THE LINKS BETWEEN SMART SPECIALIZATION STRATEGY, QUINTUPLE HELIX MODEL AND LIVING LABS *		PROVENZANO	UNIVERSITY OF PALERMO	PALERMO	ITALY

*** VIRTUAL PRESENTATION VIA SKYPE**

WEDNESDAY 22nd	**1.2 PLANNING FOR ADAPTATION AND MITIGATION**				
ROOM	CONFERENCE HALL		TIME	14:30-16:00	
CHAIR	DANIELE VETTORATO - EURAC RESEARCH JAROMIR HAINC - PRAGUE INSTITUTE OF PLANNING AND DEVELOPMENT				
DIGITALISATION FOR ENVIRONMENTAL SUSTAINABILITY IN A REGIONAL CONTEXT - A FOUR-STEP PRINCIPLE	HÖJER	KTH ROYAL INSTITUTE OF TECHNOLOGY		STOCKHOLM	SWEDEN
INCENTIVE POLICIES FOR BUILDINGS ENERGY RETROFIT: A QUANTITATIVE ANALYSIS OF REBATES PROGRAMS	BONIFACI	UNIVERSITY IUAV OF VENICE - DEPARTMENT OF DESIGN AND PLANNING		VENICE	ITALY
BIOGAS AND BIOMETHANE TECHNOLOGIES: AN AHP MODEL TO SUPPORT THE POLICY MAKER IN INCENTIVE DESIGN	CANESI	UNIVERSITY OF PADUA, ICEA		PADOVA	ITALY
A SMART PLANNING APPROACH FOR SUSTAINABLE RENEWAL OF BUILDING HERITAGE OF HISTORIC CENTERS *	PILI	UNICA		CAGLIARI	ITALY
ENERGY CONSUMPTION AND INDOOR COMFORT IN HISTORIC REFURBISHED AND NOT REFURBISHED BUILDINGS IN SOUTH TYROL: AN OPEN DATABASE	ROBERTI	EURAC RESEARCH		BOLZANO/BOZEN	ITALY

*** VIRTUAL PRESENTATION VIA SKYPE**

WEDNESDAY 22nd	**2.2 ICT, SPACES & SOCIETY**				
ROOM	SEMINAR ROOM 2		TIME	14:30-16:00	
CHAIR	ADRIANO BISELLO - EURAC RESEARCH PETRA SCUDO - EURAC RESEARCH				
ASSESSING REGULATORY COMPLIANCE OF MOBILE PHONE TOWERS IN RESIDENTIAL AREAS	ALWEHAB	UNIVERSITY OF BAGHDAD / URBAN AND REGIONAL PLANNING CENTER		BAGHDAD	IRAQ
SPATIAL FOOTPRINTS OF CONTEXT-AWARE DIGITAL SERVICES. EVENTUAL SELF-REGULATED URBAN SHAPE ALIGNMENTS ON DATING APPS.	LORENTE RIVEROLA	DEPARTMENT OF URBAN AND REGIONAL PLANNING. TECHNICAL UNIVERSITY OF MADRID		MADRID	SPAIN
A GOAL-ORIENTED FRAMEWORK FOR ANALYSING AND MODELING CITY DASHBOARDS IN SUSTAINABLE CITIES	GARAU	DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING, DIEE, UNIVERSITY OF CAGLIARI		CAGLIARI	ITALY
UNDERSTANDING TOURISM DESTINATION SYSTEMS FROM USER GENERATED CONTENT DATA. A CO-CREATION APPROACH THROUGH TRIPADVISOR DATA FOR THE CITY OF BOLZANO, ITALY	BERTOCCHI	UNIVERSITY IUAV OF VENICE		FAVARO VENETO	ITALY
GEOGRAPHIC INFORMATION SYSTEMS AND RESIDENTIAL PROPERTY MARKET: DOES ENERGY EFFICIENCY HAVE A PRICE PREMIUM?	BISELLO	EURAC RESEARCH		BOLZANO/BOZEN	ITALY

WEDNESDAY 22nd	**4.2 STRATEGIES & ACTIONS FOR GOOD GOVERNANCE**				
ROOM	SEMINAR ROOM 1		TIME	14:30-16:00	
CHAIR	STEFANO MORONI - UNIVERSITY POLITECNICO DI MILANO PIETRO ELISEI - URBANSOFIA				
SMART CITIES IN THE NEW ERA OF URBAN INNOVATION: INSIGHTS FROM THE FIRST TWO DECADES OF RESEARCH	MORA	POLITECNICO DI MILANO		MILANO	ITALY
POSTWAR STRATEGY ITZLING - A METHODOLOGICAL APPROACH	KARNUTSCH / NETSCH	UNIVERSITY OF APPLIED SCIENCES SALZBURG		KUCHL	AUSTRIA
'YOU CAN FEEL THE HOT BREATH!' - EXPLORING TENSIONS BETWEEN SPECIFIC PROBLEM-SOLVING AND INSTIGATING EXPLORATIVE INNOVATION IN DUTCH LIVING LABS	NEEF / GUGERELL	UNIVERSITY OF GRONINGEN, DEPARTMENT OF SPATIAL PLANNING AND ENVIRONMENT		GRONINGEN	NETHERLANDS
WHAT IS THE IMPACT OF THE POLICY FRAMEWORK ON THE FUTURE OF DISTRICT HEATING IN EASTERN EUROPEAN COUNTRIES? THE CASE OF BRASOV	BÜCHELE	TU WIEN		VIENNA	AUSTRIA
BARRIERS TO SWITCHING IN RETAIL ELECTRICITY MARKETS: A REGIONAL ANALYSIS OF THE ITALIAN MARKET	IORI	DESPINA BIG DATA LAB, UNIVERSITY OF TURIN		TURIN	ITALY

WEDNESDAY 22nd	**5.2 URBAN-RURAL INNOVATIVE RELATIONSHIPS**				
ROOM	SEMINAR ROOM 8		TIME	14:30-16:00	
CHAIR	FRANCESCO CALABRÓ - UNIVERSITY MEDITERRANEA OF REGGIO CALABRIA CHRISTIAN HOFFMANN - EURAC RESEARCH				
THE PLACE OF URBAN-RURAL FRINGES IN THE TERRITORIAL PLANNING CASE OF METROPOLITAN CITIES		SORIN	UNIVERISTY OF CRAIOVA,NATIONAL INSTITUTE FOR ECONOMIC RESEARCH COSTIN C. KIRITESCU	CRAIOVA	ROMANIA
DIFFERENCES IN URBAN -RURAL WELL-BEING: WHEN THE CITY SIZE MATTERS. THE CASE OF ITALY		VIGANÓ	LUB	BRIXEN/BRESSANONE	ITALY
NEW MODEL OF URBAN-RURAL COOPERATION BASED ON INTELLECTUAL CAPITAL OF SMART CITIES *		KLASINC	IDEMO INSTITUTE FOR DEMOCRACY	ZAGREB	CROATIA
POLICY TO PRACTICE IN TRANSITION FROM CONVENTIONAL AGRICULTURE TO HI-TECH URBAN FOOD PRODUCTION SYSTEM. A CASE STUDY OF SHANGHAI.		HOSSEINI FARHANGI	UNIVERSITÀ IUAV DI VENEZIA	ROSETO DEGLI ABRUZZI	ITALY
ENHANCING THE ENDOGENOUS POTENTIAL OF AGRICULTURAL LANDSCAPES: STRATEGIES AND PROJECT FOR AN INSIDE RURAL REGION OF SICILY *		PRESTIA	MIUR	AGRIGENTO	ITALY

*** VIRTUAL PRESENTATION VIA SKYPE**

WEDNESDAY 22nd	**P.2 INTERNATIONAL DEBATE ON CULTURE-LED SMART REGENERATION STRATEGIES**				
ROOM	CONFERENCE HALL		TIME	16:30-18:00	
CHAIR	LIA GHILARDI - NOEMA				
MATERA, THE EUROPEAN CAPITAL OF CULTURE 2019	VERRI	MATERA-BASILICATA 2019 FOUNDATION	MATERA	ITALY	
THE NEW METROPOLITAN PLAN OF PRAGUE	HAINC	PRAGUE INSTITUTE OF PLANNING AND DEVELOPMENT	PRAGUE	CZECH REPUBLIC	
MAKING SPACE FOR URBANITY, COMPREHENSIVE STRATEGIC PLANNING IN AMSTERDAM	VERMEULEN	MUNICIPALITY OF AMSTERDAM	AMSTERDAM	NETHERLANDS	
#OPENTARANTO INTERNATIONAL IDEAS COMPETITION	PETRALLA	#OPENTARANTO PRIZE-WINNING TEMPORARY CONSORTIUM	TARANTO	ITALY	

DETAILED PROGRAMME - THURSDAY 23rd

THURSDAY 23rd	**P.3 PLENARY SESSION**				
ROOM	CONFERENCE HALL		TIME	9:30-11:00	
CHAIR	ADRIANO BISELLO - EURAC RESEARCH				
DAY 1 WRAP UP		SC MEMBERS	SSPCR 2017	BOLZANO / BOZEN	ITALY
CRITICAL SYNTHESIS OF SMART CITY STUDIES: DEMONSTRATING HOW URBAN MORPHOLOGY MATTERS IN "UNDER-GRIDDING" THE SUSTAINABILITY OF ENERGY EFFICIENT-LOW CARBON ZONES		DEAKIN	EDINBURGH NAPIER UNIVERSITY	EDINBURGH	UNITED KINGDOM
FACTOR 3 REDUCTION OF ENVIRONMENTAL FOOTPRINT IN SWISS BUILDING STOCK		SULZER	LUCERNE COMPETENCE CENTER FOR ENERGY RESEARCH, LUCERNE UNIVERSITY OF APPLIED SCIENCE AND ARTS	LUCERNE	SWISS

THURSDAY 23rd	**1.3 PLANNING FOR ADAPTATION AND MITIGATION**				
ROOM	CONFERENCE HALL		TIME	11:30-13:00	
CHAIR	DANIELE VETTORATO - EURAC RESEARCH SABINE SULZER - LUCERNE UNIVERSITY OF APPLIED SCIENCE AND ARTS				
ASSESSING URBAN SYSTEM VULNERABILITIES TO FLOODING TO IMPROVE RESILIENCE AND ADAPTATION IN SPATIAL PLANNING		PASI	UNIVERSITÀ IUAV DI VENEZIA	VENEZIA	ITALY
SOIL SEALING IN PADUA AND GREEN SCENARIOS: THE CASE OF SAN LAZZARO DISTRICT		PERONI	UNIVERSITÀ DEGLI STUDI DI PADOVA	PADOVA	ITALY
THE LAVAZÉ PROJECT (TRENTINO-SOUTH TYROL, I). A LANDSCAPE APPROACH FOR A HIGH ALTITUDE ALPINE RESORT		PONTICELLI	A²STUDIO_PROJECT FOR AND RESEARCHES INTO THE ALPINE LANDSCAPE	TRENTO	ITALY
EUROPE´S BUILDING STOCK AND ITS ENERGY DEMAND: A COMPARISON BETWEEN AUSTRIA AND ITALY		PEZZUTTO	EURAC RESEARCH	BOLZANO/BOZEN	ITALY

THURSDAY 23rd	**2.3 ICT, SPACES & SOCIETY**				
ROOM	SEMINAR ROOM 2		TIME	11:30-13:00	
CHAIR	ADRIANO BISELLO - EURAC RESEARCH PETRA SCUDO - EURAC RESEARCH				
GEOSMARTCITY: COLLECTION, INTEGRATION, HARMONIZATION AND MANAGEMENT OF BUILDINGS' ENERGY-RELATED DATA IN THE REAL LIFE	CIPRIANO	SINERGIS-DEDAGROUP		CASALECCHIO DI RENO	ITALY
DIGITALLY UNITED? CONDITIONS FOR JOINT MEDIA START-UPS ACROSS THE DIVIDE IN CYPRUS: AN ENTREPRENEURIAL AND ECONOMIC OVERVIEW	ERKUT	DRESDEN UNIVERSITY OF TECHNOLOGY		DRESDEN	GERMANY
OPEN DATA ASSESSMENT IN ITALIAN AND SPANISH CITIES	SISTO	SMART&CITY SOLUTIONS / UNIVERSIDAD POLITECNICA DE MADRID		MADRID	SPAIN
ASSESSING PREFERENCES FOR ATTRIBUTES OF CITY INFORMATION POINTS: RESULTS FROM A CHOICE EXPERIMENT	GRILLI	EURAC RESEARCH		BOLZANO/BOZEN	ITALY
MODELLING FUTURE SETTLEMENT PATTERNS IN LIGURIAN INTERNAL REGIONS USING GEOSIMULATION *	LOMBARDINI	DAD – DIPARTIMENTO DI ARCHITETTURA E DESIGN – UNIVERSITÀ DI GENOVA		GENOA	ITALY

*** VIRTUAL PRESENTATION VIA SKYPE**

THURSDAY 23rd	**4.3 STRATEGIES AND ACTIONS FOR GOOD GOVERNANCE**				
ROOM	SEMINAR ROOM 1		TIME	11:30-13:00	
CHAIR	STEFANO MORONI - UNIVERSITY POLITECNICO DI MILANO PIETRO ELISEI - URBANSOFIA				
KEY ISSUES FOR THE FUTURE OF SUSTAINABLE LAND MANAGEMENT AND DEVELOPMENT AT THE LEVEL OF STRUCTURAL UNITS IN EASTERN EUROPEAN COUNTRIES, IN THE CONTEXT OF THE EUROPEANISATION OF PLANNING SYSTEMS		DHRAMI	POLIS UNIVERSITY	TIRANA	ALBANIA
CHALLENGES OF SOCIAL SUSTAINABILITY OF IRANIAN NATIONAL MEHR AFFORDABLE HOUSING DEVELOPMENTS, RETHINKING FUTURE STRATEGIES FOR LOCAL GOVERNANCE		HEIDARISOURESHJANI	ISLAMIC AZAD UNIVERSITY BRANCH SHAHREKORD	SHAHR-E KORD	IRAN
GREEN AND INTEGRATED CITIES: URBAN MEETS FOREST - A CASE STUDY		CANTIANI	DICAM UNI TRENTO	TRENTO	ITALY
GOVERNANCE AND URBAN DEVELOPMENT PROCESSES: EVALUATING THE INFLUENCE OF STAKEHOLDERS THROUGH A MULTI-CRITERIA APPROACH. THE CASE STUDY OF TRIESTE		CRESCENZO	POLITECNICO DI TORINO	TURIN	ITALY
THE CITY AS A COMMONS. REFLECTIONS ON EXPERIENCES OF SUBSIDIARITY AND CO-PRODUCTION IN ITALY		NESTI	DEPARTMENT OF POLITICAL SCIENCE, LAW AND INTERNATIONAL STUDIES - UNIVERSITY OF PADOVA	PADOVA	ITALY

THURSDAY 23rd	**1.4 PLANNING FOR ADAPTATION AND MITIGATION**				
ROOM	CONFERENCE HALL		TIME	17:00-18:30	
CHAIR	DANIELE VETTORATO - EURAC RESEARCH SABINE SULZER - LUCERNE UNIVERSITY OF APPLIED SCIENCE AND ARTS				
PHOTOVOLTAIC ROOFTOP GARDEN - INNOVATIVE SYSTEMS FOR THE FUTURE		SATTLER	UNIVERSITY OF NATURAL RESOURCES AND LIFE SCIENCES, VIENNA	VIENNA	AUSTRIA
ACCOMPANY CITIES IN ENERGY STRATEGY: THE ACCENT SMART CITY VIEW		CIPRIANO	SINERGIS-DEDAGROUP	CASALECCHIO DI RENO	ITALY
MULTICRITERIA APPROACH FOR A MULTISOURCE DISTRICT HEATING		DENARIE	POLITECNICO DI MILANO	MILANO	ITALY
CONFIGURATIVE SPATIAL DEVELOPMENT - DIRECTIONS RELATED TO CLIMATE CHANGE *		VANTURACHE	UAUIM BUCHAREST	BUCURESTI	ROMANIA

*** VIRTUAL PRESENTATION VIA SKYPE**

THURSDAY 23rd	**2.4 ICT, SPACES & SOCIETY**				
ROOM	MEETING ROOM "GF"		TIME	17:00-18:30	
CHAIR	ADRIANO BISELLO - EURAC RESEARCH PETRA SCUDO - EURAC RESEARCH				
OPPORTUNITIES AND NEW CHALLENGES IN LEARNING ENVIRONMENT FOR GISSCIENCE IN THE ERA OF "DRONES FOR GOOD"	PAPPALARDO	UNIVERSITÀ DEGLI STUDI DI PADOVA		PADOVA	ITALY
FROM CARRYING CAPACITY TO CARRYING CAPABILITY: AN INTERPRETATIVE MODEL FOR MOUNTAIN AREAS WITH HIGH HUMAN SETTLEMENT. THE CASE OF THE DOLOMITES (FASSA VALLEY, I)	PONTICELLI	A²STUDIO_PROJECT FOR AND RESEARCHES INTO THE ALPINE LANDSCAPE		TRENTO	ITALY
THE CITYGML ENERGY APPLICATION DOMAIN EXTENSION (ADE) FOR ENERGY ANALYSES AT URBAN SCALE	AGUGIARO	AIT AUSTRIAN INSTITUTE OF TECHNOLOGY		VIENNA	AUSTRIA
SINFONIA PROJECT AND ENERGY REFURBISHMENT: SOCIAL-HOUSING BUILDINGS AND TENANTS	BALEST	EURAC RESEARCH		BOLZANO/BOZEN	ITALY
URBAN COMMONING IN A CIVIC SOCIAL NETWORK: THE CASE STUDY OF FIRSTLIFE	LUPI	UNIVERSITY OF TURIN		TORINO	ITALY

THURSDAY 23rd	**3.1 NEXT ECONOMY FOR THE CITIES**				
ROOM	SEMINAR ROOM 8		TIME	17:00-18:30	
CHAIR	EZIO MICELLI - UNIVERSITY IUAV OF VENICE ALESSANDRA PROTO - OECD LEED TRENTO CENTRE FOR LOCAL DEVELOPMENT				
SHARING ECONOMY AND REAL ESTATE MARKET		SDINO	POLITECNICO DI MILANO	MILANO	ITALY
PUBLIC AND PRIVATE BENEFITS IN URBAN DEVELOPMENT PROJECTS		OPPIO	POLITECNICO OF MILANO	MILANO	ITALY
THE EX-POST EVALUATION AS DRIVING TOOL FOR CULTURAL HERITAGE VALORIZATION STRATEGIES: THE CASE STUDY OF CROTONE		CASSALIA / DELLA SPINA	MEDITERRANEA UNIVERSITY OF REGGIO CALABRIA, PAU DEPT	REGGIO CALABRIA	ITALY
REGIONAL IMPACT ASSESSMENT OF TRANS-SECTORAL URBAN PLANNING: DEVELOPING A METHODOLOGY FOR VISUALISING THE REGIONAL ECONOMIC, ENVIRONMENTAL AND SOCIAL VALUE ADDED OF TRANS-SECTORAL URBAN PLANNING ACTIVITIES		CARIUS	IZES GGMBH	SAARBRUECKEN	GERMANY
EVALUATING HEALTH BENEFITS OF URBAN ENERGY RETROFIT: AN APPLICATION FOR THE CITY OF TURIN.		DELL'ANNA	POLITECNICO DI TORINO	TORINO	ITALY

THURSDAY 23rd	**4.4 STRATEGIES AND ACTIONS FOR GOOD GOVERNANCE**				
ROOM	SEMINAR ROOM 1		TIME	17:00-18:30	
CHAIR	STEFANO MORONI - UNIVERSITY POLITECNICO DI MILANO PIETRO ELISEI - URBANSOFIA				
THE ROLE OF KM4CITY DASHBOARD IN URBAN POLICIES: GOVERNANCE STRATEGIES FOR DYNAMIC URBAN SYSTEMS	GARAU	DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING AND ARCHITECTURE (DICAAR), UNIVERSITY OF CAGLIARI		CAGLIARI	ITALY
CAFÉ DES VISIONS: HOW TO ANTICIPATE AND CONSOLIDATE URBAN NEGOTIATION THROUGH ART; A PRACTICE-BASED ARTISTIC RESEARCH	GRABER	RPDP GENÈVE		ZÜRICH	SWITZERLAND
PUBLIC SPACE AND VIBRANT GROUND-FLOOR ZONES IN SUSTAINABLE CITY QUARTER DEVELOPMENT. INNOVATIONS IN AND LEARNINGS FROM SMART CITY GRAZ	GRABNER	INSTITUTE OF URBANISM, GRAZ UNIVERSITY OF TECHNOLOGY		GRAZ	AUSTRIA
TOWARDS A GENUINE AND REALISTIC MODEL OF REGIONAL GOVERNANCE IN ALBANIA *	SHUTINA	CO-PLAN, INSTITUTE FOR HABITAT DEVELOPMENT		TIRANA	ALBANIA

*** VIRTUAL PRESENTATION VIA SKYPE**

DETAILED PROGRAMME - FRIDAY 24th

FRIDAY 24th	**3.2 NEXT ECONOMY FOR THE CITIES**				
ROOM	SEMINAR ROOM 8		TIME	09:30-11:00	
CHAIR	EZIO MICELLI - UNIVERSITY IUAV OF VENICE ALESSANDRA PROTO - OECD LEED TRENTO CENTRE FOR LOCAL DEVELOPMENT				
COMMUNITY ENERGY ENTERPRISES: COMMUNITIES, SOCIO-INSTITUTIONAL SYSTEMS AND MANAGEMENT OF THE FUTURE DISTRIBUTED ENERGY GEOGRAPHY		TRICARICO	POLITECNICO DI MILANO / DASTU	MILAN	ITALY
REGENERATING OBSOLETE GRANDES ENSEMBLES: EVIDENCE FROM SOME DEEP-RETROFIT FRENCH EXPERIENCES		MANGIALARDO	UNIVERSITY OF PADUA	PADUA	ITALY
~~**INFORMAL PLANNING IN GREECE: A TOOL FOR PROMOTING COLLABORATION**~~		~~PAPAMICHAIL~~	~~ETH ZURICH~~	~~ZURICH~~	~~SWITZERLAND~~
PROPERTY EVALUATION FOR RESIDENTIAL STRUCTURE: AN APPROACH FOR VALUING VIEW AND SPATIAL ATTRIBUTES *		ABDELALIM	FAYOUM UNIVERSITY	FAYOUM	EGYPT
PRESERVING THE BUILT HERITAGE IN ALEXANDRIA BY LESSENING THE ECONOMIC LOSSES OF THE OWNERS		AGGOUR	ALEXANDRIA UNIVERSITY	ALEXANDRIA	EGYPT

*** VIRTUAL PRESENTATION VIA SKYPE**

FRIDAY 24th	**5.3 URBAN-RURAL INNOVATIVE RELATIONSHIPS**				
ROOM	CONFERENCE HALL		TIME	09:30-11:00	
CHAIR	FRANCESCO CALABRÓ - UNIVERSITY MEDITERRANEA OF REGGIO CALABRIA ELISA RAVAZZOLI - EURAC RESEARCH				
LANDSCAPE AND WIND ENERGY: EVALUATION MODELS		CAMPEOL	UNIVERSITY OF PADUA	BELLUNO	ITALY
PLACEMAKING, LIVABILITY AND PUBLIC SPACES: ACHIEVING SUSTAINABILITY THROUGH ECO-LIV@BLE DESIGN *		SEPE	IRISS-CNR	NAPOLI	ITALY
HERITAGE-LED SYSTEMIC APPROACHES: CULTURAL HERITAGE AND IDENTITY AS A DRIVER FOR URBAN-RURAL DEVELOPMENT		CASSALIA	MEDITERRANEA UNIVERSITY OF REGGIO CALABRIA, PAU DEPT	REGGIO CALABRIA	ITALY
GREEN ECONOMY, MULTIFUNCTIONAL AGRICULTURE AND CORPORATE SOCIAL RESPONSIBILITY MODELS IN PERI-URBAN REGENERATION PROCESSES: AN ITALIAN EXPERIENCE FOR THE HISTORICAL FARMHOUSES SYSTEM		COSCIA	POLITECNICO DI TORINO	TORINO	ITALY

*** VIRTUAL PRESENTATION VIA SKYPE**

FRIDAY 24th	**6.1 RETHINKING MOBILITY**				
ROOM	MEETING ROOM "GF"		TIME	09:30-11:00	
CHAIR	MANEL SANMARTÌ - IREC CATALONIA ENERGY RESEARCH INSTITUTE ALYONA ZUBARYEVA - EURAC RESEARCH				
ADAPTING INNOVATIONS FOR SUSTAINABLE APPLICATION OF SERVICE DELIVERY IN THE URBAN LIGHT-RAIL TRANSPORT SYSTEM		ALADE	ERASMUS UNIVERSITY ROTTERDAM	ROTTERDAM	NETHERLANDS
MIND-SETS - A NEW PERSPECTIVE TO UNDERSTAND MOBILITY		GAGGI / KERSHAW	ISINNOVA	ROMA	ITALY
RETHINKING THE TAXI: CASE STUDY OF HAMBURG ON THE PROSPECTS OF URBAN FLEETS FOR ENHANCING SUSTAINABLE MOBILITY		SCHATZINGER	FRAUNHOFER IAO	STUTTGART	GERMANY
SUSTAINABLE URBAN MOBILITY PLANS IN EUROPE. OBJECTIVES AND ACTIONS FOR BICYCLE AND PEDESTRIAN MOBILITY *		PANUCCIO	DIIES	REGGIO CALABRIA	ITALY

*** VIRTUAL PRESENTATION VIA SKYPE**

FRIDAY 24th	**7.1 IMPLEMENTATION & EDUCATION PROJECTS**				
ROOM	SEMINAR ROOM 1		TIME	09:30-11:00	
CHAIR	BRUNO MONARDO - SAPIENZA UNIVERSITY, ROME SIMONA COSTA - MUNICIPALITY OF GENOA (BRUSSELS OFFICE), ACTION CLUSTER LEADER EIP SMART CITIES				
WHAT INTERPRETATIONS FOR SMART SPECIALIZATION STRATEGIES IN EUROPEAN URBAN REGIONS? LESSONS FROM THE BOSTON AREA		MONARDO	'SAPIENZA' UNIVERSITY OF ROME	ROMA	ITALY
SMART CAMPUS ZERNIKE GRONINGEN: A LIVING LAB FOR SMART(ER) CITIES?		HOECKNER	UNIVERSITY OF GRONINGEN	GRONINGEN	NETHERLANDS
INTEGRATED PLANNING POLICIES FOR THE ECOLOGICAL TERRITORIES AND THE ECOCITIES: IMPLEMENTATION OF A SMART SUSTAINABLE APPROACH		ARAGONA	DEPARTMENT OF HERITAGE, ARCHITECTURE, URBAN PLANNING, UNIVERISTY MEDITERRANEA OF REGGIO CALABRIA	REGGIO CALABRIA	ITALY
GAME OVER OR JUMPING TO THE NEXT LEVEL? EXPERIENCES FROM TESTING THE CO-LOCATED SERIOUS LEARNING GAME MOBILITY SAFARI IN VIENNA		GUGERELL	UNIVERSITY OF GRONINGEN, DEPARTMENT OF SPATIAL PLANNING AND ENVIRONMENT	GRONINGEN	NETHERLANDS
THE EUROPEAN INNOVATION PARTNERSHIP ON SMART CITIES AND COMMUNITIES		COSTA	EIP SMART CITIES	BRUSSELS	BELGIUM

FRIDAY 24th	**P.4 PLENARY SESSION**				
ROOM	CONFERENCE HALL		TIME	11:30-13:00	
CHAIR	WOLFRAM SPARBER - EURAC RESEARCH				
THE GOVERNANCE OF LAND USE IN OECD COUNTRIES	KRAWCHENKO	OECD - ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT		PARIS	FRANCE
THE GOVERNANCE OF LAND USE: EXPERIENCES IN AMSTERDAM	VERMEULEN	MUNICIPALITY OF AMSTERDAM		AMSTERDAM	NETHERLANDS
GROWSMARTER PROJECT: TRANSFORMING STOCKHOLM, COLOGNE AND BARCELONA IN SMART CITIES	SANMARTI	IREC CATALONIA ENERGY RESEARCH INSTITUTE		BARCELONE	SPAIN
DAY 2 AND DAY 3 WRAP UP, CLOSING DEBATE	SC MEMBERS	SSPCR 2017		BOLZANO / BOZEN	ITALY

POSTER EXIBITION

Poster exhibition is from Wednesday 22nd to Friday 24th in the Auditorium Foyer at the EURAC main entrance level.

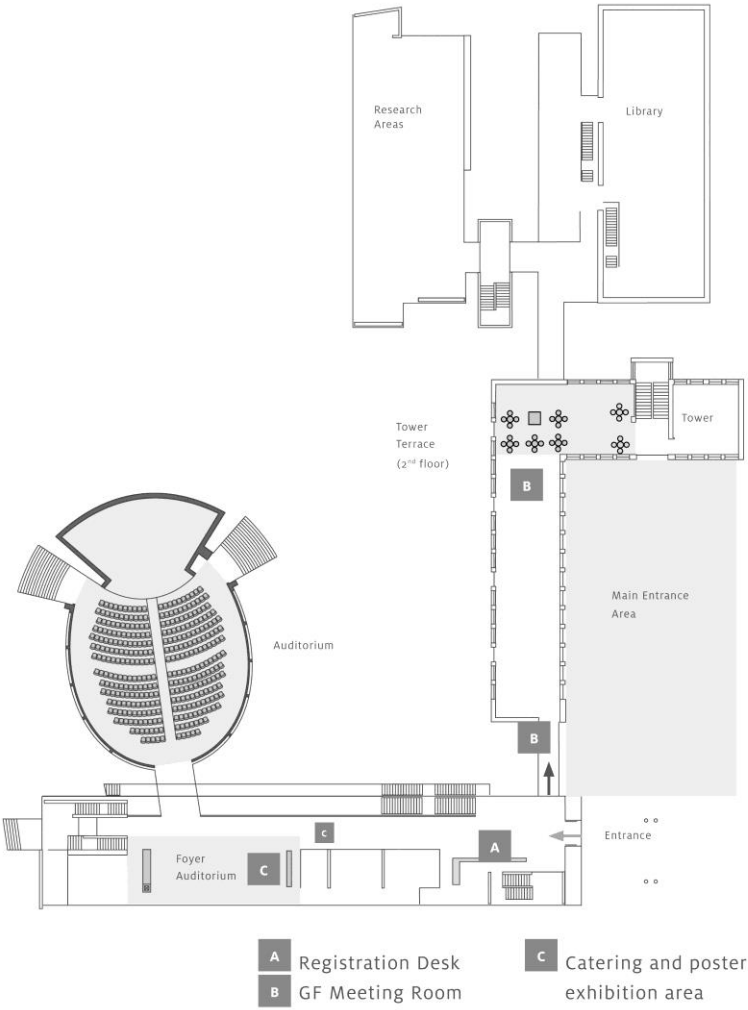
Poster authors can present their posters in plenary during the conference coffee breaks.

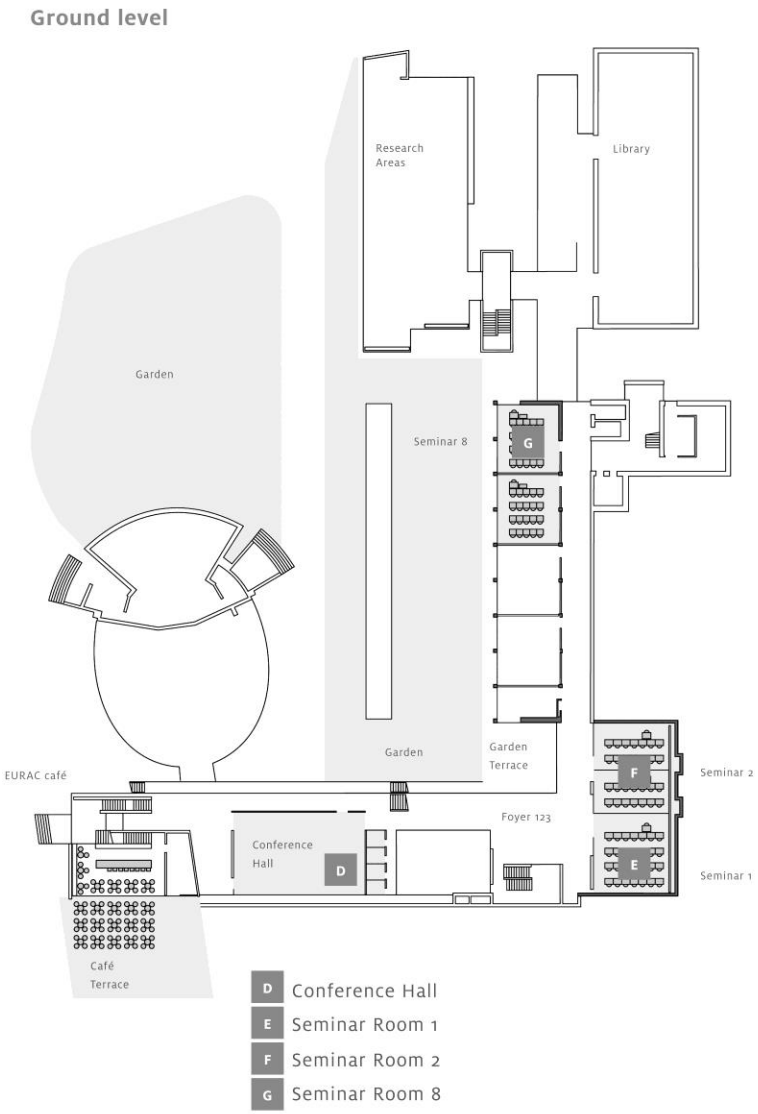
ROOM	AUDITORIUM FOYER		TIME	FROM WEDNESDAY 22nd TO FRIDAY 24th	
[redacted]	**SMART PLANNING FOR ADAPTATION AND MITIGATION**				
THE ROLE OF WATER SCARCITY IN MIGRATION OF FARM OWNERS AND WORKERS. A CASE STUDY OF RAFSANJAN, IRAN.	HOSSEINI FARHANGI	UNIVERSITÀ IUAV DI VENEZIA		ROSETO DEGLI ABRUZZI	ITALY
EMPOWERING PRESENTS THINKING ABOUT FUTURES A CASE STUDY IN THE CENTRAL DOLOMITES	ANDREOTTA	TECHNISCHE UNIVERSITÄT WIEN		VIENNA	AUSTRIA
THE GRETA PROJECT: HOW TO INTEGRATE THE NEAR-SURFACE GEOTHERMAL ENERGY IN THE ENERGY PLANS OF ALPINE REGIONS	D'ALONZO	EURAC RESEARCH / GRETA CONSORTIUM		BOLZANO / BOZEN	ITALY
[redacted]	**STRATEGIES & ACTIONS FOR GOOD GOVERNANCE**				
NEIGHBORHOOD DEVELOPMENT STRATEGY	KARNUTSCH / NETSCH	UNIVERSITY OF APPLIED SCIENCES SALZBURG		KUCHL	AUSTRIA
SEA FOR SUSTAINABLE CITIES: HOW THE STRATEGIC ENVIRONMENTAL ASSESSMENT HAS DRIVEN THE ESI PROGRAMME TOWARDS URBAN SUSTAINABILITY	LORGEOUX	T33		ANCONA	ITALY
NEW PLANNING AND DEVELOPMENT METHOD FOR SMARTER CITY DISTRICTS TO BRING TOGETHER TOP DOWN- WITH BOTTOM UP- APPROACH	BERNEGGER	ZURICH UNIVERSITY OF APPLIED SCIENCES		WÄDENSWIL	SWITZERLAND

ROOM	AUDITORIUM FOYER		TIME	FROM WEDNESDAY 22nd TO FRIDAY 24th	
[redacted]	**URBAN-RURAL INNOVATIVE RELATIONSHIPS**				
URBAN VEGETABLE GARDENS AS LOCAL POLICIES: EXPERIENCES AND PROSPECTS	RIZZARDO / BELCARO	VENETO REGION	VENEZIA	ITALY	
SOCIAL INNOVATION IN MARGINALIZED RURAL AREAS (SIMRA)	RAVAZZOLI / DALLA TORRE	EURAC RESEARCH / SIMRA CONSORTIUM	BOLZANO / BOZEN	ITALY	
[redacted]	**RETHINKING MOBILITY**				
SPATIAL CHARACTERISTICS OF URBAN TRANSPORTATION SYSTEM IN CRAIOVA METROPOLITAN AREA	SORIN	UNIVERISTY OF CRAIOVA,NATIONAL INSTITUTE FOR ECONOMIC RESEARCH COSTIN C. KIRITESCU	CRAIOVA	ROMANIA	
LOW CARBON TRANSPORT: READY TO PAY A CAR TAX? LITHUANIAN CASE	DAGILIUTE	VYTAUTAS MAGNUS UNIVERSITY	KAUNAS	LITHUANIA	
[redacted]	**SMART AND SUSTAINABLE CITY IMPLEMENTATION & EDUCATION**				
MOUNTAIN MARGINAL AREAS: STARTING OVER FROM THE SMART COMMUNITIES. THE CASE STUDY OF SEREN DEL GRAPPA	OMIZZOLO	EURAC RESEARCH	BOLZANO / BOZEN	ITALY	
SMART CITIES FOR LOCAL GROWTH.THE EXPERIENCE OF SMART CITY IN LIGURIA, ITALY. THE CASE STUDIES OF THE MUNICIPALITIES OF SAVONA AND LA SPEZIA	SERGI	ARCHITECT AND LECTURER IN TOWN PLANNING GENOA UNIVERSITY	SENIGALLIA	ITALY	
THE ROLE OF UNIVERSITY MUSEUMS IN A NEW CULTURAL WELFARE: THE CASE STUDY OF MUVERE, VENETIAN SCIENCE MUSEUMS NETWORK	MARIN	UNIVERSITÀ DEGLI STUDI DI PADOVA	ROMANO D'EZZELINO	ITALY	

FLOOR PLAN

Entrance level




Ground level
Research Areas
Library
Garden
Seminar 8
G
EURAC café
Garden
Garden Terrace
F
Seminar 2
Foyer 123
Conference Hall
D
E
Seminar 1
Café Terrace
D Conference Hall
E Seminar Room 1
F Seminar Room 2
G Seminar Room 8

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INSTRUCTIONS TO SESSION CHAIRMEN

To those of you chairing a session, thank-you.
Below are a few suggestions to help chair the session:

- Before the session begins, please check the authors´ presentation schedule concerning your session. If there are any changes, we will attempt to ensure that you are notified before the session. You can also check the Registration desk for updates.
- Please ensure that you arrive to the room 5 minutes before the session is due to start - your presenters have been asked to do the same.
- Check the speaker table for a "Chairs kit". This contains cards you can hold to warn speakers before they run out of time.
- Before the session starts, please ensure all speakers have arrived and they are aware of the running order.
- Please ensure that the session starts promptly and speakers keep to their allocation time.

We recommend that you:

- Suggest speakers stand/sit towards the front
- Sit at the front of the room during all presentations where you can see both the audience and the speaker.
- Please ask delegates to state their name and affiliation when asking a question.

TIMINGS

Speakers will only need a very brief introduction mentioning name, institution and paper title.
A session of 90 minutes allows for 4-5 speakers 18-15 minutes each, including questions.
Please comply with the allotted times and ensure that the session does not over run.
In the "Chairs kit" in each room, we have provided signs for you to hold up: "5 minutes to go", "2 minutes to go", and "please stop now". Please use these, as they can be an effective way of managing the session. If a speaker fails to turn up, we suggest you use the extra time for discussion, rather than allowing the other speakers extra time to present.

PRACTICAL INFORMATION

Conference location
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Institute for Renewable Energy
Meeting Management
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SECTION II
PRESENTERS & ABSTRACTS

AUTHORS

2nd International Conference

Smart and Sustainable Planning for Cities and Regions 2017

Bolzano/Bozen (Italy), 22-24 March 2017

Amro Abdelalim[1], Ayman Ismail[2]

PROPERTY EVALUATION FOR RESIDENTIAL STRUCTURES: AN APPROACH FOR VALUING VIEW AND SPATIAL ATTRIBUTES

Tags: Property Value, Meter Price, Integration, Choice to Depth, Spatial Attributes

Abstract: Nowadays, cities all over the world are growing more and more and they are expected to grow much bigger in the future. The future of civilization and sustainable urbanism will be surely linked to cities and their form. Cities should be thought of not only as buildings and streets. They compose of buildings and linking & connecting lines between such buildings. Cities enclose residential, commercial, educational, industrial and other uses. But managing them to work altogether is the most complicated part. It is like the software of the computer. Without the software installed on the hardware in harmony, then all the hardware parts will not function properly. Relationships exist between buildings and structures of any city. Analyzing the relations could be more important than analyzing the components. It is the process in which we make sure the components - even if they are not all present - are functioning together in an integrated way. Therefore, cities are required to be more effective, inclusive and capable of fulfilling the various needs of people on a limited land. Residential, commercial, educational and other uses should meet the needs of different classes of the inhabitants and the outcomers as well. To ensure that all properties and structures of the city are used effectively, computational simulation softwares and analytical scientific methods ought to be used for more accuracy. This paper investigates the relation between property value for residential structures and view of property and its spatial attributes as two of the primary factors affecting property value. It also proposes an approach on how to compare between various factors for the aim of measuring the weight of them. The paper proposes the primary urban factors that mainly affect property value of residential buildings in the form of residential apartments price per meter. Space syntax, as a means of modeling, simulation and analysis, is perfect for the investigating process. Space syntax measures and identifies changes in the configuration of urban form, using accessibility as a main variable for its analyses. That's the reason it is used to measure spatial attributes and notice the change in their values by time. A sample of buildings is chosen in the city of Fayoum, Egypt to make the comparisons. Spatial attributes and view of the building are the two primary elements investigated in the research. Space syntax is the method used for the urban layout analysis through Depth-Map application. The Spatial attributes of a property (in the form of integration and choice to depth values) and apartment price per meter (referring to property value) is done. Integration and choice to depth values are values used to measure spatial accessibility and attributes. View of the building is measured from Google Earth as the distance in front of the building including pavement, street, ... till the opposite building. Fayoum City streets map is constructed in Autocad as a segment map by the researcher according to the map in google open maps. Regression Analysis and correlation is used for the investigation process and comparing of the relation between the variables.

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Heba Aggour[1]

PRESERVING THE BUILT HERITAGE IN ALEXANDRIA BY LESSENING THE ECONOMIC LOSSES OF THE OWNERS

Tags: Built Heritage, Urban policies, Owners' economic losses, Incentive programs, Heritage preservation

Abstract: The rapid destruction of the 19th century tangible heritage in Alexandria is one of the biggest dilemmas confronting the city. The built heritage is a type of resources, being demolished is considered to be a waste of the previous efforts of the architects and also a waste of the materials and money consumed. The conversion of the value of the heritage to be perceived by the locals and the owners according to its economic value rather than its culture and aesthetic values make it more complicated for the city to deliver the importance of the heritage to the citizens because of its low economic benefits. The economic value of the land occupied by a historical building is most of the time less than the property value occupied by any other real estate project especially a residential use. This situation occurred due to the high demand for housing from the citizens and the low offers that led in the end to the raising of the new housing units compared to the price of the historic building. Although a vast amount of literature concerned with discussing the cultural and aesthetic importance of the heritage and omitted the economic valuation. The first aim of the paper is to find the gap that can be covered to stop the destruction phenomenon of the listed buildings in Alexandria. The paper attempt focusing first on the methods of evaluating the heritage economically by its use and non-use values in Alexandria. It can depend on books and the previously done interviews with owners, contractors, economic experts, the authority and locals to evaluate the heritage economically. After discussing the ability to assess the heritage financially, the paper may try to apply it on the built heritage found in Alexandria city center on a specific number of these buildings in the second section of the research paper. The aim is to explain these findings towards showing how significant is the economic losses for the owners compared to the profits he can gain from building another project on the same land. The third part attempts to discuss how the financial value of the heritage can be advanced to invite the local participation of the citizens towards protecting the historical buildings and partake in its conservation process. The major focus will be on the incentives that can be offered to the owners to adjust their economic disadvantages issued from granting a restricted historical building. The improvement of the economic gains of the listed buildings for their owners could have a tremendous performance in saving the heritage of Alexandria from being devastated. The paper's objective is to end with a general outline of the possible incentive programs that can be offered, how it can be managed and which institute should be introduced to follow up with it.

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Taslim Alade[1], Jurian Edelenbos[2], Alberto Gianoli[3]

ADAPTING INNOVATIONS FOR SUSTAINABLE APPLICATION OF SERVICE DELIVERY IN THE URBAN LIGHT-RAIL TRANSPORT SYSTEM.

Tags: Innovation-Adaptation, Multi-actor processes, Sustainable Application, Service- Delivery, Urban Light-Rail Transport

Abstract: Dynamic and complex nature of service delivery for a sustainable urban light-rail transport system in different and uncertain socio-economic conditions of cities are evident, especially cities in transition. Studies of the relationship between innovation characteristics and innovation adoption at the level of organization are limited (Fariborz and Marguerite, 2010). The effective innovation adoption process has also received little attention to date (Ross, Mitchell, et al., 2012). Emphasis are that innovations seem to be much less technologically driven and most of them are organizational or social in nature. Moreover, such innovations, if found, are usually somewhat unsystematic work of individuals in the firms, i.e. the innovation process is more informal in service than in manufacturing. Innovations in service firms also tend to be more driven, among other factors, by the market and by consumers.

An innovation, according to Rogers' theory defined innovation as an idea, thing, procedure, or system that is perceived to be new by whomever is adopting it (Rogers Everett, 1995). The innovation does not need to be new to the person or organization that is adopting and implementing it (Lundblad, 2003). The idea or actions may relate to a product, service, technology, system, or practice.

Lagos, Abuja and Addis Ababa are cities new to adapting innovations of the light-rail transport system from China. These innovation adoptions are for onward adaptation into different socio-economic and environmental conditions of the cities, which is a complex process. This is in order to keep up with the dynamic nature of service provision for a sustainable rail transport system.

The aim of the research is to understand the specific processes involved in adapting service innovations and how these adapted innovations are contextualized to suit the innovation receiving cities in their peculiar socio-economic conditions. This study relates to the service delivery aspect of the light-rail transport system. This research focuses more on the non-technological innovations, such as pricing, regulation and infrastructure. Organizations create innovation for their own use or for use in other organizations. The adoption of innovation is a process that results in the assimilation of a product, process, or practice that is new to the adopting organization (Damanpour and Wischnevsky 2006; Kimberly and Evanisko 1981; Walker 2008) in (Fariborz and Marguerite, 2010).

The innovation adoption process has two main phases: initiation and implementation (Nystrom, Ramamurthy, and Wilson 2002; Rogers 1995; Zaltman, Duncan, and Holbek 1973) in (Fariborz and Marguerite, 2010). The authors further argued the two phases have usually been distinguished by the

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decision to adopt, i.e., initiation and implementation, reveal respectively, the pre- and post-adoption decision processes of the innovation adoption procedure.

The capacity and capability of applying adaptive methods from adopted innovation in a manner that will guarantee its provision of quality service to the light-rail commuters is very important. This is because it plays a role in nurturing the economy; in enhancing and sustaining high performance of organizations; in building competitiveness; in creating better quality; in improving standards and efficiency (Talukder, 2014). This research brings together a combination of variables into a framework, capable of influencing the adoption of innovation in a sustainable manner into a coherent process: Such as service innovations, multi-actor processes, policy instruments, sustainability values/trade-offs, quality of service, adapted sustainable innovation and the best practices of contextualizing adapted innovations. This is to maximize its use in the peculiar socio-economic and environmental status for a sustainable urban light-rail public transport.

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Abdelwehab Alwehab[1], Waleed Al Jumaily[2]

ASSESSING REGULATORY COMPLIANCE OF MOBILE PHONE TOWERS IN RESIDENTIAL AREAS

Tags: (Mobile Phone Towers Regulations) (Mobile Radiation Impact) (Mobile Towers in Residential District)

Abstract: As urban centers grow in size and population, so does the demand for telecommunication services. Cities around the world have witnessed and are still witnessing the erection of thousands of mobile phone towers throughout urban areas. The distribution and location of these towers, which emit non-ionizing electromagnetic ray within the frequencies 900 to 1800 MHz, is regulated in many countries based on the exercise of the precautionary principle to mitigate any possible health and environmental impact. The sudden and rapid presence of these towers in densely populated urban areas coupled with lack of solid scientific corroboration has generated anxiety amongst residents as to the impact of mobile phone towers radiation on public health and environment. This fact was a major impetus for conducting this research. The review of a number of studies reveals the absence of any scientific evidence pointing at negative short or long term effects resulting from the radiation of such towers. The assessment of regulations that govern the technical and location requirements of Towers and antennas in a number of countries are countries show more similarities than differences.

Iraq is a classic case of a country where mobile phone service commencing prior to a regulatory framework put in place. In 2007, technical and environmental regulations were enacted while towers spread dramatically and was 4 years following the start of service in 2003. A wide network of mobile phone towers propagated in the capital Baghdad, and in all provinces prior to any environmental and health guidelines to control the new technology. Fierce competition emerged among the three major mobile phone companies to acquire the largest number of subscribers in cities and provinces of Iraq, and sought to spread thousands of communications towers in residential areas. Matters were exasperated by the feverish desire of some home owners to lease their roofs or home gardens to telecom companies, which led to an unplanned and irregular proliferation of towers throughout the urban fabric. As of 2014, Baghdad city had 2264 towers belonging to the three major mobile providers.

A field study was conducted to analyze the random spatial distribution of mobile towers in a relatively high density residential district within the city of Baghdad. The study area has a population of 9800 residents within a land area of 7.5 Km², and has 18 mobile phone towers. A major objective of the study was to measure the magnitude of electromagnetic radiation emitted within a radius of 5, 30, and 50 meters during multiple time intervals of the day. The data collected were compared with permissible benchmarks. Analysis outcome indicated that all measurements of electromagnetic power density were significantly lower than the upper acceptable limit of 0.4 milliwatts/cm² set by national and international standards. Moreover, minimum distances between towers (BSC-Base Transceiver station and BSCBase Switching Center), number of antennas installed on towers, and height of antennas affixed to towers in relation to height of adjacent buildings were found to be within allowed

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standards. It was not possible to determine if these positive results were the outcome of a preplanned and coordinated process, notwithstanding, the need remain for continued control and monitoring of mobile phone towers positioning to ensure a sustainable residential environment.

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Chiara Andreotta[1]

EMPOWERING PRESENTS THINKING ABOUT FUTURES; A CASE STUDY IN THE CENTRAL DOLOMITES

Tags: visioneering, futures, low-carbon, visions

Abstract: This abstract reports the use of the visioneering mode of planning in the Cadore area (Italy), and how it enhanced a regional response toward possible low-carbon futures. Nowadays issues like climate change, shrinking region, and transition towards lowcarbon energy system, dominate spatial planning agendas. Particularly a current focus on the carbonized society is the center of several attempts to plan our cities and regions as places where to reduce carbon emissions. A planning approach that increases local agents' awareness on a low-carbon future, it might enhance the transition of the areas that neglect or postpone the reduction of carbon emissions. Visioneering mode of planning, with its participatory events in which the local agents take part, gives the chance to design possible futures. Visioneering is a mode of doing strategic planning introduced by the 'Department of Regional Planning and Development' at the Vienna University of Technology. Visioneering merges the envisioning process to the engineering process: it serves to draw visions of possible futures on maps, and then design feasible paths to support the walk toward those visions.

The transition to a low-carbon future challenges particularly the Alpine region. The temperature in this region has increased by 2 °C in the last hundred years, impacting on the environmental safety and on the seasonal pattern on which the alpine economy is based. Alps are suffering not only from an environmental and economical crisis, but also from a cultural crisis. The todays industrial and tertiary imprint endangers the alpine cultural with the mistreatment of natural resources and loss of human capital. Visioneering the low-carbon futures of Alps might become the trigger for envisioning diverse futures, and not the mere thinking of a potential decarbonized energy system.

In the Alpine region, the Cadore area emerges as an interesting case study where visioneering low-carbon futures. This area, composed of 22 municipalities, is the northern part of the Veneto region. Cadore has a high amount of natural resources and it is partially covered by the Dolomites UNESCO natural heritage, thus it asks for a meticulous caution in the use of the landscape and its maintenance. In spite of that Cadore lacks of a solid regional energy strategy for the future, and it is strongly depending on fossil fuel, it offered therefore an optimal chance to test the visioneering mode of planning for possible low-carbon futures.

The use of visioneering in Cadore demonstrates that, for the local decision-makers, was important to have a framework within which exchange ideas about futures. Visioneering and its collaborative process was a good chance for them to give-andtake knowledge and opinions, to reason about actions that need collaboration in a long-term prospect. In conclusion visioneering, and its visions designed on maps, are beneficial to strengthen awareness of local decision-makers, to better understand each agent's role in the path toward diverse low-carbon futures.

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Stefano Aragona[1]

INTEGRATED PLANNING POLICIES FOR THE ECOLOGICAL TERRITORIES AND THE ECOCITIES: IMPLEMENTATION OF A SMART SUSTAINABLE APPROACH

Tags: Implementation site, Innovation, Integrated approach, Ecological approach, Crisis as opportunity

Abstract:

Objectives: The purpose of the paper is to consider the natural and cultural resources as key elements in the planning and design of the territory and the city. That is to think the local conditions as guidelines in the transformations both of the space and the social environment. So overturning the logic that in most cases has guided the formation of the modern city: i.e. to build everywhere without caring the sustainability of the areas and thinking the land as an infinite resource. The chances and opportunities possible thank to smart city must be used by a "cultured technology" (Del Nord, 1991) to build "local Communities inclusive and sustainable, either materially and socially" (Smart City, 2010), that is "ecological".

Methods: A multidisciplinary vision, thus multicriteria, is the base of the proposed methodology. It requires an integrated approach of material and immaterial elements. With the overall vision that characterizes the Leipzig Charter (2007) where it are required "…planning strategies that connect rural and not rural areas, small, medium, big towns, metropolitan areas". And the focus that Smart City gives to the flows of things and energy, with the goals of Horizon 2020.

The starting point consists in considering the city as common good characterized by a number of physical and social local resources. Remembering that the mission of the modern town planners, from the Athena Chart 1931, is the wellbeing of the inhabitants. Renewable resources and interactive communications may help to better the design. But all that must be done having as goal construct local communities and not only to reinforce individual power.

Flows of energy and flows of communications characterize the contemporaneous city: the immaterial city (Aragona, 1993, 2000). The town, its shape, its economical structure and the functional one, are changing. For the most the town planners accept these changes without trying to address them. In the countries where the city as common good is less felt these changes for bettering wellbeing and social sustainability are not caught or left to the "free market" alone. While Ecolonia (1989-1993) or Sustainable Copenhagen (2009) are examples of what can be done.

All this leads to redevelop the territory and the cities using indicators of life quality, going beyond GDP as the 134 of the Fair and Equitable Wellbeing and (BES) proposed by ISTAT - CNEL alongside those suggested by the Charter of Quality by AUDIs since 2007.

Conclusions: The current crisis, can be a turning point - the meanings of the originary Greek word κρίσις - of the model based on the industrial paradigm (Kuhn, 1962) whose limits were declared in

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"The Limits of Growth" (1972). This paper suggests to replace the industrial model of “making the city” with the ecological approach that starts from the local conditions such as indications of plan/project/construction for the transformation of the anthropocosmo. That is to relate the λόγος, discourse, analyses, with the οίκος, the environment (www.ekistics.org): finally the purpose of Smart City.

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Ali Aydemir[1], Daniel Bellstädt[2], Eftim Popovski[3], Tobias Fleiter[4], Jan Steinbach[5], Richard Büchele[6]

ASSESSING TECHNOLOGY OPTIONS FOR HIGH SHARES OF RENEWABLE ENERGIES IN URBAN (DISTRICT) HEATING SYSTEMS - A CASE STUDY FOR THE CITY OF HERTEN IN GERMANY

Tags: energy planning, district heating, renewable energies, building stock, climate protection

Abstract:

Introduction

Germany intends to cut greenhouse gas emissions by 80 up to 95 percent in 2050 compared to 1990. To achieve the reduction goals several states in Germany implemented climate protection laws. In North Rhine-Westphalia the "Klimaschutzgesetz NRW" was enforced in 2013. As a consequence among others local heat and energy planning is required by the communities. Such planning requires information about the future heat demand and resulting potentials for renewable energy sources (RES) heat supply, especially with regard to district heating (DH) networks. Many earlier studies have assessed the DH generation mix without taking explicitly into account future changes in the building stock and the heat demand.

Therefore, we present an approach to assess the future use of RES for heating and cooling in an urban context with respect to CO_2 emissions and heat generation cost. The approach is integrated and explicitly considers the evolution of the heat demand and the mix of supply technologies. The approach is applied for the city of Herten, with special emphasis on the DH network. In Herten the DH network is currently provided by coal fired combined heat and power plants (CHPs) and the city seeks opportunities to use RES instead.

Approach

The approach consists of three steps, combining stock modelling, energy demand forecasting and the simulation of energy technologies.

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1. First, we construct a detailed residential building stock model for Herten using remote sensing together with a typology for the German building stock.
2. Second, we us a bottom-up simulation model that calculates energy demand for heating and cooling based on energy-related investments in buildings to project the heating demand up to 2050 (cf. Figure 1).
3. Third, we assess solar thermal fields in combination with large scale heat pumps to substitute the current coal-fired CHPs with an energy simulation tool, taking an hourly demand profile into account.

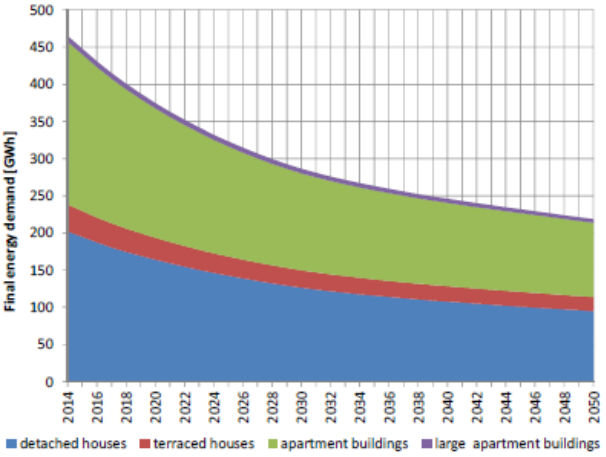

Figure 1 Final energy demand projection for residential buildings in Herten

We finally benchmark the new set of generation units with regard to CO_2 emissions reductions and levelized cost of heat (LCOH) for two scenarios.

1. In Scenario 1 no additional DH expansion is assumed, so that better building insulation in future results in a falling energy demand for the DH network.
2. In Scenario 2 better building insulation is compensated by connecting additional buildings, with the aim that the energy demand for the DH network remains constant until 2050.

Results

Main conclusions are the following.

- Up to 2030 and 2050 a substantial reduction in buildings heat demand due to improved building insulation is expected.

- The falling heat demand in the DH substantially reduces the economic feasibility of new RES generation capacity.
- The reduction in heat demand can be compensated by continuously connecting apartment buildings to the DH network until 2050.
- The local approach identifies challenges and opportunities communities are facing, when it comes to the deployment of RES (i.e. heat pumps). Thus it might serves as source of information for the design of policy instruments.

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Jessica Balest[1], Daniele Vettorato[2]

ENERGY REFURBISHMENT IN SOCIAL-HOUSING BUILDINGS: THE ROLE OF TENANTS IN SINFONIA PROJECT

Tags: energy refurbishment - social-housing - SINFONIA - tenants - cluster analysis

Abstract: SINFONIA is a FP7 European project. SINFONIA aims to create smart initiatives for optimized energy systems in the middle European city of Bolzano. SINFONIA project includes energy refurbishment activities of some social-housing buildings. The energy refurbishment of a big amount of inhabited flats is one of the main challenges. Therefore, tenants are important actors for permitting effective energy refurbishment and consequent effective use of refurbished flats and new energy technologies. Accordingly, SINFONIA project needs to know the individuals and the typologies of families that live in the involved social-housing buildings.

Data on socio-demographic characteristics of the SINFONIA tenants are analysed according to descriptive and cluster analysis. Firstly, the data are collected with the support of the socialhousing building owners. Secondly, tenants and families are described according to gender, age, citizenship, language, number, and relative relationships of components. Finally, tenants belong to typologies of families investigated through cluster analysis. The cluster analysis is a multivariate method that aims to classify a sample through the grouping of homogeneous groups. Cluster analysis works on several methods. In this case, hierarchical method is used.

Seven hundred and ninety-five tenants compose SINFONIA population. The tenants live in three hundred eighty-five social-housing flats in Bolzano city. In particular, they are females (54%) and males (46%). Involved tenants have 0-101 years old. In detail, 15% of tenants are 0-18 years old, 42% are 19-59 years old, and 43% are 60-99 years old. The cluster analysis shows three main groups of tenants that live in several typologies of families:

a) The first group of tenants lives in families composed by one or two components that have mostly 60-101 years old. The relationships between the components are mainly of marriage. Three hundred forty-two tenants belong to the first cluster or group;

b) The second group of tenants is mainly composed by sons and daughters from 0 to 29 years old. These people live in families of three, four, five, or six components. One hundred eighty-one tenants belong to this group of families.

c) Two-, three- or four-components families involve the third group of tenants. These families include main tenant, spouse, and sons or daughters. The age is mostly between 30 and 59 years old. Two hundred seventy-two tenants belong to this cluster.

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These analysis and results are important to organize future activities with tenants in SINFONIA project. Indeed, SINFONIA project will use these analysis and results to support the development of an innovative smart energy meter, and the organization of learning and informative activities on the most appropriate energy behaviours in refurbished flats. Furthermore, future data collection and analysis will relate socio-demographic information with energy consumption data.

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Donatella Banzato[1], Rubina Canesi[2], Chiara D'Alpaos[3]

BIOGAS AND BIOMETHANE TECHNOLOGIES: AN AHP MODEL TO SUPPORT THE POLICY MAKER IN INCENTIVE DESIGN

Tags: biogas and biomethane, participatory governance, policy maker, integrated approach, MCDA.

Abstract: Over the last decades, increased environmental awareness and growing concern about GHG emissions motivated many Governments in the adoption of incentive schemes to encourage green energy production through renewable energy sources (RES). In order to meet the EU long-term 2050 greenhouse gas reduction target, in 2014 EU countries agreed on a new 2030 Framework for climate and energy, that includes EU targets and policy objectives for the period between 2020 and 2030. These targets consist in a 40% reduction in greenhouse gas emissions compared to 1990 levels, at least a 27% share of renewable gross energy consumption, and at least a 27% improvement in energy efficiency. In this respect, compared to other energy sources, biogas (and in turn biomethane) can play a key role because of its versatile technology to produce electricity, heat and biofuels and its potential in succeeding in environmental improvements related to greenhouse gas reduction, carbon equestration, and fertilizer production.

Over the past six years, biogas production in Italy has experienced an economic boom: more than 4.5 billion euro investments, about 2 billion cubic meters (NMC) of methane gas equivalent produced (i.e. 20% of the national natural gas production) and 12 thousand opportunities for job creation. Currently the operating plants are about 1,300, with 1,000 MWel installed capacity -and 7.4 thousand GWh electricity production. Biogas production has been one of the most dynamic sectors in Italy, attracting many investors from the agroindustrial sector, that have been encouraged in their investment decisions by the generous incentive (feed-in-tariff) scheme set by the Italian Government.

By contrast, biomethane production in Italy is not widespread. Regardless biomethane technology is mature and biomethane has a high market potential as a well-known energy carrier in transport sector and stationary applications (heat and power), to date only 7 upgrading plants are operating. This limited spread is partially due to the Italian legislation that is still vague with respect to norms and standards on the injection of biomethane in the natural gas system; but it substantially depends on the lack of rewarding Government incentives to biomethane production. Incentives are currently contingent on natural gas prices (for biomethane injected in the natural gas system) or are based on tradable certificates, called CIC (for biomethane used as a fuel). In the near future, the Italian Government is expected to fix new feed-in tariff (FIT) schemes for energy production by RES and

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specifically by biogas and biomethane. In this context, the policy maker is at a turning point and it becomes of paramount importance to identify the "best" technology that will receive the highest FITs. In other words, it is fundamental to identify whether it will be preferable to introduce more generous FITs to favour biogas production for electric power generation vs biomethane production through biogas upgrading.

In this paper, we propose a multi criteria decision model to support the policy maker in the definition of sustainable development policies for biogas and biomethane production. Specifically we implemented an Analytic Hierarchy Process (AHP) model to multi-criteria prioritisation of biogas and biomethane technologies in order to address public incentives to, and in turn favour private investments. According to group decision making approaches, we selected a pool of experts that structured the decision problem and decomposed it into a hierarchy by identifying quantitative and qualitative criteria and sub-criteria to evaluate each technology. We then organized focus groups with experts and stakeholders involved in the energy sector, to validate the hierarchy and fill the judgments matrixes through an open group process and majority rule ordering.

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Cristina Becchio[1], Marta C. Bottero[2], Stefano P. Corgnati[3], Federico Dell'Anna[4]

EVALUATING HEALTH BENEFITS OF URBAN ENERGY RETROFIT: AN APPLICATION FOR THE CITY OF TURIN

Tags: co-benefits; energy refurbishment; stated preferences; socio-economic assessment; questionnaires

Abstract: According to current European energy policies, the building sector offers a significant potential for energy consumption savings. Indeed, in 2020 the European Union (EU) committed to lower GHG emissions by 20% with respect to 1990, 40% by 2030 and 80% by 2050. Moreover, it aims to reach a share of renewable sources of 20% by 2020 and at least 77% by 2030. Competitive low-carbon energy solutions are proposed to reply to EU decarbonization call. To reach this target in the building sector, the development of innovative technologies is supported. The EU research follows new objectives leading to highly innovative technologies and materials to tackle CO_2 emissions. The introduction of renewables sources in the retrofit process designs new scenarios that take into account not only energy issues but also social, economic and environmental ones.

Energy savings represent the direct economic benefit arising from building retrofit. Several studies highlight how the benefits of energy refurbishment and system efficiency outweigh the costs of realization, taking into account all costs and benefits that concern the full range of stakeholders involved. Furthermore, the EU puts in evidence the need to incorporate the socio-economic benefits inside the project evaluation (such as increased national security, improvement of the conditions of the environment, public health, and economic growth to name a few). In this context, there is a strong need for an overall evaluation framework that is able to provide a fair and realistic assessment, by ensuring a balanced distribution of costs and benefits among the various issues. To compare different alternatives with the same objective, a complete assessment of the full range of co-impacts is crucial. In particular, an objective and standardized joint evaluation meter is necessary at national level. In fact, in order to implement a tool to assess the feasibility of a retrofit project in relation to the investment made, firstly it is indispensable to identify and define in a standardized manner and in monetary terms the various possible benefits; secondly, it is fundamental to specify the logical path for assessing their achievement on the basis of the project features.

The present paper considers the themes related to the appraisal of socio-economic benefits that arise from building retrofit operations, focusing in particular on the analysis of the social impacts. The social aspects indeed are a very significant part of the possible externalities associated with refurbishment project of the residential sector. More in details, the article investigates the health benefits connected to buildings retrofit interventions, such as envelope thermal insulation, systems' efficiency

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improvements, increases the indoor comfort and external environmental conditions and air quality. These health benefits are mostly March 22-24, 2017 Bolzano/Bozen (Italy) related to the increase of users' well-being, the reduction of respiratory and cardiovascular disease, the decrease of allergies and rheumatism, the reduced anxiety, the depression and stress level. In public economics, the positive health benefits are reflected in avoided hospitalization and pharmaceutical costs and reduced absence from work or school due to disease.

This study represents the starting point of a wider integrated project in order to provide an overall assessment of retrofit process, interested in determining the net social benefit generated by a certain project. In the present application, a monetary valuation of health benefits in residential buildings was carried out, starting from a case study located in the city of Turin. Health impacts delivered by the energy retrofit of an urban district were estimated by employing a hybrid approach which combined stated preference methods and economic analysis. In particular, a bidding game, frequently used in Contingent Valuation studies, is elicited to converge to the respondent Willingness to Pay (WTP), in order to measure and monetize the health improvements correlated to energy efficiency actions.

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PROVINCIAL, BUT SMART: URBAN-RURAL RELATIONSHIPS IN BRANDENBURG/ GERMANY

Tags: smart regions, urban-rural relations in Brandenburg, Germany, innovation

Abstract: While the idea of intelligent or smart cities started a vivid discussion and brought up a whole variety of strategies to transform urban areas to smart cities, the discussion about smart regions is less developed and rather vague. By looking into trends and strategies developed in first implementation projects, one general lesson learned is that there is not just one approach to transforming regions into smart regions, but that innovation and smartness need to be related to their specific spatial, infrastructural and socio-political contexts (place-based approach).

The German debates

In Germany we can identify different strands of debates that relate to smart and innovative region. The first strand discusses concepts of cooperation and networking to strengthen urban-rural linkages. These debates base on concepts of urban-rural-partnerships and innovative or learning regions, which facilitate the cooperation among the fields of politics, administration, science, the business sector and support cooperation between urban and rural areas from a rather regional development perspective. Objective of the networking is to create partnerships for innovation and growth by mobilising synergies and endogenous developments in regions as well as strategies of smart specialisation.

Benefits of urban-rural networking

Besides economic benefits of networking, ecological challenges and concepts to support the energy transition, more circular economic approaches and resource management in regions are discussed (in the second strand). In order to improve the ecological efficiency of public services and ecological footprints of metropolitan regions options and challenges of digitalization are scrutinised. Hence the smartness of regions is characterised by using digitalization and networking, e.g. to foster energy and resource efficiency of regions (e.g. IR Smart Region Nord), to create new forms of circular flow economy and by mapping and redirecting resource flows.

Both strands target new regional development strategies that improve the quality of life and competitiveness of regions under the condition of (demographic, structural and climate) change. And for the matter the economic and ecological efficiency of services, material flows and linkages as well as cooperation structures should be improved.

New approaches in Brandenburg

In our paper, we will follow up on discussions about structures and objectives of smart regions and analyse recent developments and achievements in transforming traditional (manufacturing) regions.

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We are going to present an analysis of strategies in 16 case study regions from Brandenburg/ Germany.

We will focus on rural-urban-interrelation and indicate different forms of understanding of innovation and smartness as well as categorise regional strategies and approaches to implement concepts of smart regions. These concepts may either focus on knowledge or technology, on social innovations or climate change, on energy transition or regional added values and integrate new forms of multi-level-governance.

Knowledge from current case studies

The German State of Brandenburg initiated the "city-region competition" among communities/ municipalities in 2016 to promote communal cooperation in the realization of specific projects. From the 34 entries 16 were chosen for subsidization of their projects. These 16 case studies receive funding (266 Mio. EUR, ESI-Fonds) to develop strategies for innovative relations and networking between small and mid-sized towns in Brandenburg and their respective rural regions.

These projects and their respective sub-projects will be analyzed with respect to their "smartness", i.e. components which can be considered "smart". In addition, we will examine the transferability of both "smart" content and procedure to other regions.

These case studies may include such aspects as inter-communal cooperation, urban-rural linkages, food sovereignty, material flows and circulation, public and private actors, digitalization in rural areas, adaptation to climate change, division of labor between town and region (for example as culture and nature, work and recreation and the chance to generate new businesses for the rural regions) etc. In conclusion we aim to evaluate to what extent the projects within the competition contribute to making the respective regions as well as the State of Brandenburg as a whole "smart". The review of the competition projects will be precluded by a definition of "smart".

As a result we contribute to the discussion of innovative urban-rural relations by answering the following research questions: To what extent do innovative urban-rural relationships differ from traditional ones? Does size matter (is it even possible for peripheral, provincial regions to become smart?) And how do relations between urban and rural areas change during a process of becoming smart?

Cristina Benvegnú[1], Lorella Biasio[2], Giovanni Campeol[3], Sandra Carollo[4], Silvia Foffano[5], Nicola Masotto[6]

LANDSCAPE AND WIND ENERGY: EVALUATION MODELS

Tags: Landscape, Wind energy, Evaluation models

Abstract: Considering the landscape as a "tool" to produce the territorial and urban planning has always fascinated and involved experts with very different backgrounds. In this regard, also the Italian lawmaker has issued rules and regulations, in different periods, which have imposed the need to establish urban landscape plans.

However, although the landscape represents the source of knowledge, since it is able to describe the historical evolution of the territory, in Italy the effectiveness of urban landscape planning has been very low.

The landscape has been interpreted, often for the only goal of protection, through reading keys based upon the "opinion" of experts (government officials, superintendents, planning boards, etc.), resulting from simplistic and often apodictic value judgements. Such an approach cannot be methodologically included in the evaluation processes; it has not produced any progress in the field of territorial and urban planning, rather it has led to a wasteful conflict between "conservationists" and "transformists".

This paper does not aim at debating the evolution of the landscape concept in urban studies or the legal nature of the rules that have introduced the obligation of landscape planning, since there exists a rich literature on the matter. Instead, it seeks to deals with a much more practical and substantial topic: how to evaluate the landscape transformations caused by the construction of wind power plants, since these are emblematic projects for their physical size.

In this respect, the landscape evaluation is based on different stages, which define the general evaluation model.

The first stage is the *analysis of the state of fact* in which the places and protection levels are geographically described, with the goal of characterising the intervention area following two main reading keys of the context: on one side the landscape qualities, on the other the landscape, anthropic and environmental risks.

The second stage concerns the *description of the project* in its engineering and architectural aspects, as well as its application in the intervention area.

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In the third stage, the evaluation is carried out through the definition of the assessment model in relation to the levels of modification and alteration of the landscape quality after the project inclusion.

In the fourth stage the judgement of landscape compatibility is expressed through the identification of the conditions of coherence/conflict between project and environmental context, as well as any measures of mitigation and/or compensation.

Finally, the paper aims especially to address the third stage, the evaluation, which presents proper techniques of qualitative and quantitative a of the landscape transformations by comparing the ex ante stage (without the wind power plant) with the ex post stage (with the wind power plant).

In order to do that, it is necessary to define three evaluation levels, here below described.

The First level identifies the areas of visual influence by elaborating a “paper of intervisibility”, to define at what distance the wind power plant can be seen. This evaluation level allows the definition of the fields of visual perception, which will be evaluated more in details in the following level. The Second level represents the fields of visual perception represented through photographic optical cones that read the “shot” and “reverse shot”, with a quantitative evaluation of the landscape qualities (ex ante) and the calculation of their variation after the construction of the power plant (ex post). This evaluation is performed through a matrix of “ex ante quality/ex post quality” produced on the visual optical cone. This optical cone is de-structured into foreground, middleground and background. The Third level represents a qualitative evaluation of “alterations” (negative impacts) or of the “added values” (positive impacts) that are shown in each field of visual perception.

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Heinz J. Bernegger, Evelyn Lobsiger-Kägi

NEW PLANNING AND DEVELOPMENT METHOD FOR SMARTER COMMUNITIES TO BRING TOGETHER TOP DOWN- WITH BOTTOM UP- APPROACH

Tags: City Concepts, Sustainable Development and Certification, Smart and Social Urbanization, Guideline of Participatory Processes und Local Low-Tech Microprojects

Abstract: In Switzerland and worldwide, a huge effort is put into the development and implementation of Smart City concepts. But quite often, they remain theoretical, and their implementation is rather vague. Another problem is that many smart city concepts are aligned technologically while social aspects are neglected.

The EU and the Swiss Smart City concepts show a lot of differences, when compared. Therefore, a cross-comparison is made with the standard Swiss sustainability instruments in order to demonstrate which areas overlap and in which aspects the Smart City concepts go beyond the classic sustainability view (SIA 112/1, 2000 W-Areal, DGNB-CH and SNBS). These aspects are broken down from city scale to the scale of smaller urban areas and reduced to a guideline structure for smart housing estates. On the basis of a concrete research project finished now in 2016 with several housing associations, it will be demonstrated how appropriately implementation concepts have been developed as part of a phased, structured, and participatory process and what subsequent implementation steps will be. The detailed implementation concepts are showing a wide thematic range, from energy and mobility to nutrition. They are strongly influenced by social aspects and put a lot of emphasis on resilience.

This practical example shows how theoretical Smart City concepts in Switzerland are systematically and quite handily applied to smaller urban areas, with appropriate methods and accompanied by participatory processes. The practical example shows how the bottom up strategy of the City of Winterthur as a leading Swiss smart city can be combined in an intelligent way with the participatory bottom up strategies from the involved neighborhood. The outcomes show a complete new concept of smart neighborhoods scaled down to the needs of the present inhabitants focused on the social and participatory resources and values. The output is a guideline for sustainable initiatives and projects published by the Swiss Government of Energy and Smart Cities.

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Dario Bertocchi[1]

UNDERSTANDING TOURISM DESTINATION SYSTEMS FROM USER GENERATED CONTENT DATA. A CO-CREATION APPROACH THROUGH TRIPADVISOR DATA FOR THE CITY OF BOLZANO, ITALY

Tags: tourism management, social network analysis, tourist destination, travel behaviour, network analysis

Abstract: In the last decades, ICTs and new technologies gave new possibilities to improve cities management through social innovation and stakeholder integration. The recent social media boom gave the opportunity to internet users to be actively involved in creating and sharing information with the community on public platforms. This has caused an exponential growth of different types of platforms collecting and sharing User Generated Content data. Tourism destinations are facing the challenge of collecting, analysing and extracting information and value from social network websites. This study analyses the possibility to extract tourist behaviour data to use as a data-driven monitoring and management destination method which might be a crucial strategy for becoming a smart destination in the nearby future.

This massive infrastructure of information created by the users is nowadays object of study for the entire academic community. Different kinds of methodologies and data have already been used to discover new information affecting and supporting the decision-making process for an innovative management process of a tourist destination. Social network analysis is an important feature to study tourism destination systems and travel behaviour which can provide important insights regarding the user profile and the activities and experiences of the tourists.

This research applied a qualitative and quantitative approach using a network analysis methodology to a User Generated Content data source from one of the main travel 2.0 website, TripAdvisor. Travel 2.0 platforms are considered as rich data sources for national tourism organizations, destination management organizations and other stakeholders, as well as for future travellers. The collected data source consists on reviews on attractions, restaurants and hotels within the urban destination of Bolzano, in Italy, and information from the reviewers' profile that gave the possibility to create different user types, figuring out the behaviour and the most common spatial patterns created by inhabitants, Italian visitors, European and non-European tourists. The type of relational approach, which is looking at destination networks through the eyes of its users have been conducted mainly on an inter-destination scale. This kind of analysis makes possible to describe the structure of relations (displayed by links) between attractions and facilities (displayed by nodes) of the destination.

To discover, analyse and visualise the relational patterns in a destination, three different types of attractions have been taken as main nodes of the networks, representing three different tourism products of the destination: 1. Historical and cultural experience (South Tyrol Museum of Archaeology); 2. Mountaineering and landscape (Renon's cable car) and 3. Urban dynamics and events (Walther's Square, city centre of the destination and Christmas markets location).

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The patterns of clustering found through the spatial and relational analysis give the possibility to discover destination systems created by users. This knowledge can bring recommendations for destination managers as well as attraction managers and tourism SMEs through a co-creation process. Co-creation represents a collaborative process and a new paradigm for management and innovation, providing new approaches to figure out how and by whom destination systems are created.

The case study shows the possibility to underline destination systems created by users using a network analyses methodology applied to user generated content data regarding a tourism destination to extract adding value from the data to manage, improve and strengthen the destination dynamics. This process of interactions between individuals, destination management organisations and companies could represent a data-driven collaboration process to evolve city management procedures.

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Adriano Bisello[1]

GEOGRAPHIC INFORMATION SYSTEMS AND RESIDENTIAL PROPERTY MARKET: DOES ENERGY EFFICIENCY HAVE A PRICE PREMIUM?

Tags: spatial hedonic model; energy performance rating, Geographic Information System, spatial analysis

Abstract: Several studies attempt to demonstrate whether and how the energy efficiency has a price premium in the residential real-estate market. Different territorial contexts provide different results, although investigated by using similar approaches. To analyze this, in the local South Tyrolean community, a spatial hedonic price model has first been theoretically designed and then was started to be tested in Bolzano, the main city. According to the scientific literature, a pool of potentially useful variables have been identified to build up the multivariate methodology. Through a web-based survey involving local real-estate agencies, a database of 1,130 sales advertisements in the city of Bolzano has been built up. Data has been spatialized with a geographical information system (GIS), to better understand how extrinsic characteristics, besides intrinsic ones, affect the local market and to test them for spatial autocorrelation. In fact, a neglected consideration of spatial relationships, in the presence of spatial dependence would lead to biased results in ordinary least-squares (OLS) estimation. After a careful refinement of the sample, the evaluation of the marginal contribution of energy performance class (EPC) in the determination of the asking price has been estimated. The OLS-regression result is confirmed, after checking for spatial autocorrelation and testing the Spatial Lag model (the GIS software ArcMap and GeoDa were used). Preliminary results showed that the EPC is recognized as a relevant issue in the definition of the registered offer prices only in the "premium" classes (A and B), while intermediate are less considered. The strongest and full appreciation needs therefore further development of citizen's awareness, and also a knowledge increase by real estate agents. As a next step, by combining results with additional information available at the district level, such as buildings construction age and current energy consumption, it will be possible to assess the socio-economic value of additional large-scale initiatives, improving energy performance on the existing building stock, and to deliver a more accurate estimation at single property level.

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INCENTIVE POLICIES FOR BUILDINGS ENERGY RETROFIT: A QUANTITATIVE ANALYSIS OF REBATES PROGRAMS

Tags: Energy Policy, Buildings Energy Efficiency, Tax Rebates, Decision Making Process, Retrofit Investment Costs.

Abstract: Starting from the oil crisis that occurred in the early seventies, the issue of energy efficiency has occupied a prominent position in the economic, political, and academic debate. In this context, the construction industry has been considered among the sectors that have the greatest potential for the reduction of energy consumptions and greenhouse gas emissions.

With regard to the European situation, that is the focus of this research, the first regulations on buildings energy performances date back to the mid-seventies. These regulations, which have had a consistent spread until the early eighties, have focused on the definition of minimum performance standards for the building elements.

Over the years, as a result of the recurrent oil shocks, the strategic placement of the construction industry has become ever more evident. Moreover, this has stimulated the introduction of new regulations, which gradually have supported command and control policies, and have established a series of economic instruments for the promotion of energy savings technologies in the building sector.

During the last decade, the use of incentive programs has strengthened. Meanwhile, it has been gradually recognized the role played by the refurbishment of existing buildings in reducing energy consumptions and greenhouse gas emissions. This role appears to be crucial if we consider that residential constructions represent about the 75% of the total floor area of the European Union (EU), according to a study carried out by the Building Performance Institute Europe. Indeed, as it has been stressed by the International Energy Agency, within the EU, nearly 40% of all the residential buildings were constructed before 1960, and almost 84% are twenty years old at least.

Under this framework, incentive policies for buildings energy improvements face a twofold issue. On the one hand, they have to stimulate the increase of buildings renovation rate (which currently is around 1-2 percent depending on the source). On the other hand, they should ensure the achievement of minimum performance standards, according to the EU's goals. Thus, as underlined by the literature, the definition of the amount of the incentive has to deal both with the effectiveness and attractiveness of the instrument for the private investor, as well as with the benefits and costs for the whole society.

Given these premises, this research aims to verify the suitability of tax rebates programs currently in force in Italy, in order to stimulate private investments in buildings refurbishment and to be an effective tool to reduce the EU energy consumption.

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As far as the quantitative analysis provide here is concerned, the investment costs of fourteen refurbishment alternatives, applied to seven single-family buildings, are estimated. The selected buildings and their retrofit alternatives are drawn from the research "Typology Approach for Building Stock Energy Assessment". This research is supported by the Intelligent Energy Europe program, which aims to develop an inventory of the national building typologies representing the residential building stock. The cost estimation considers the retrofit expenses and all the collateral costs that affect the decision-making process of a private investor. The effect of tax rebates is analyzed under the umbrella of the Discounted Cash Flows analysis, in order to take into consideration the time value.

The results we achieve underline that the analyzed tax rebates programs are not completely able to stimulate the achievement of minimum energy standards in buildings. Indeed, the maximum amount of works eligible for the deduction is too high, if linked to an actual increase in the global building energy performance. This mechanism makes more profitable the exploitation of incentives related to the adoption of specific technologies, which, however, do not guarantee the overall increase of building energy performances.

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Richard Büchele[1], Lukas Kranzl[2], Stefan Petrović[3]

WHAT IS THE IMPACT OF THE POLICY FRAMEWORK ON THE FUTURE OF DISTRICT HEATING IN EASTERN EUROPEAN COUNTRIES? THE CASE OF BRASOV

Tags: District heating, heat savings, heat supply, policies

Abstract:

Introduction

Decarbonising the heating sector is essential to reach the climate goals agreed on COP 21 meeting held in Paris. District heating in general is seen as an important technology to decarbonise the heating sector especially in urban areas. In many Eastern European cities district heating systems are already in place. However, they face a number of challenges: These district heating systems typically were installed in the communist era, without relevant re-investments since that time. Thus, they often still have installed old supply technology and are based on fossil fuels and therefore are not suitable to reach the desired level of decarbonisation. High losses due to overdimensioned infrastructure and outdated technology make many district heating systems economically unfeasible and lead to unsecure supply. The association with communism and the lack of confidence ends up in further disconnection of costumers. Many cities with a district heating system in Eastern Europe face these problems. The aim of this work is to find economically and ecologically sound solutions for the heat supply under these difficult conditions and to identify how local and national policy frameworks can be improved to realise such solutions.

Approach

The assessment is based on a case study of the municipality of Brasov, located in the centre of Romania, which is representative for different cities in Romania and Eastern Europe. The modelling framework to analyse the research question combines different tools and models which are described in the following: (1) As a first step, the existing and possible alternative supply portfolios of the district heating system are modelled in energyPRO to obtain the district heating generation costs. (2) Costs for decreasing the thermal losses through the building envelope (heat savings) and costs for supply of heat with individual heating technologies are calculated for ten different building types with three different construction periods. (3) The municipality is divided into various areas according to the availability of a current district heating network or the feasibility and costs of expanding the network into adjacent areas. (4) Finally, for all buildings and all areas within the municipality the cheapest combination of heat savings with district heating or individual heat supply is calculated. This is done for a reference scenario and for various technical alternative scenarios depicting desirable futures regarding the heat supply portfolio. Different indicators like total system costs, total CO_2 emissions, share of renewables etc. are calculated both for the reference and for the alternative scenarios. By

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comparing the indicators between the different scenarios and the reference case, the need for support to reach the respective future will be estimated. The needed support will be incorporated into different policy packages that have the potential to create the required side conditions leading to the desired future scenarios.

Results

Expected results will be the definition of different policy packages and associated costs that allow for a high share of renewables in the heating sector. These packages may include regulations to force certain technologies in certain areas, different kinds of subsidies for different favourable technologies and also the knowledge building to inform people on advantages of different options. Not all of these aspects can be quantified with the used modelling framework but the policy packages will be created to harmonise in best manner. The assessed policy frameworks may be applied to different regions in Eastern Europe. Preliminary results show that a precondition for an economically viable district heating system is an enforced investment into the network infrastructure. Otherwise, the currently high distribution losses of about 50% would never make district heating a competitive solution. To facilitate these investments, frameworks have to be implemented that allow investment decisions to use longer time horizons or to receive preferable conditions for loans. Another prerequisite to make district heating solutions feasible are high connection rates of costumers. Therefore policies have to be adopted that secure high connection rates or that encourage costumers to reconnect to the system.

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Francesco Calabrò[1], Giuseppina Cassalia[2]

HERITAGE-LED SYSTEMIC APPROACHES: CULTURAL HERITAGE AND IDENTITY AS A DRIVER FOR URBAN-RURAL DEVELOPMENT

Tags: (rural-urban economic linkages) (cultural heritage and identity) (valorization of endogenous potentials) (innovative governance approach) (cultural planning)

Abstract: European urban and rural areas are unique resources of cultural heritage. Whilst in the past they were regarded as distinct and opposing territories, the distinction between the two has increasingly blurred in recent years, and the interdependency between them has increased. A growing inter-dependency of rural and urban dwellers on resources offered to each other makes rural-urban linkages a challenging topic to be addressed. Focusing on the European less developed regions, and in particular inner areas, cultural heritage has been subjected in recent years of substantial investments, but in some regions interventions have not yet produced significant social-economic effects on the territory. Despite the continually evolving of the urban-rural living heritage, inner areas are facing economic, social and environmental problems, resulting in unemployment, depopulation, marginalization, disengagement, or degradation of historic and architectural (and human landscape) capital. The complexity of the choice that governmental agencies are facing, requires an ability to implement complex decision making processes, flexibility and innovation in order to ensure a long-term planning, an integrated resource for promoting participation, culture accessibility and social integration.

In order to deal with this relevant issue, the paper suggests an heritage-led systemic approach as holistic policy method able to address the inner areas issue, the urban-rural linkage through an organic local development planning, where cultural heritage plays the role of catalyst.

The paper faces this topic analalyzing an emblematic case study: It is the case of the Metropolitan City of Reggio Calabria and its deep connection with the so-called Area Grecanica, the latter selected as pilot project for the implementation of the Inner Areas Strategy in Calabria Region.

In depth, the paper investigates the potential socio-economic impact of major advancing urban-rural linkage, assessing the critical elements as well as the most interesting aspects coming from the academic literature and policy documents as Thematic Strategy on the Urban Environment (2005), the Lisbon Treaty (2007), The Convention for a Sustainable Urban and Rural Europe (2008), the European Cohesion policy and the Strategy for Inner Areas in Italy (2014). Defined the policy context, the paper focuses on the contextualization and analysis of the effects of culture valorization on the European economic development trajectories of cities and regions. It moves from the recognition that cultural heritage (both tangible and intangible) is a potential key ingredient of inner areas' economic activity, reflecting on how new

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GREEN AND INTEGRATED CITIES: URBAN MEETS FOREST - A CASE STUDY

Tags: Participatory governance, social inclusion, urban agenda, urban forestry, Trento

Abstract: In a world where, by 2050, 70% of the population will be living in cities, a "New Urban Agenda" is considered crucial in order to shape more sustainable, inclusive and resilient cities. Indeed, this was proclaimed as recently as October 2016 at the UN Conference on Housing and Sustainable Urban Development held in Quito, Ecuador. Rethinking the urban agenda means, among other issues, the necessity to build bridges across physical spaces; that is, urban, periurban and rural areas. Special attention should be paid to public spaces, in particular open and green zones, which directly affect the wellbeing of people and the conservation of their cultural heritage.

In this context, a key concern is that of giving people the opportunity to participate in shaping the kind of city they want to live in. For this reason, planners and decision makers need to know what kind of relationship binds the residents to their environment. In effect, governance of the smart, sustainable development of any city has to be based on a bottom-up approach, and requires an inclusive and effective dialogue between local authorities, stakeholders and ordinary citizens. The planners' conception of urban spaces should absolutely be coupled with the inhabitants' perception and sense of place.

In this frame of reference, a long term research project is being carried out, by means of case studies, at the Ecology Lab of the University of Trento. In this instance, we are referring to results concerning the case study of the town of Trento (114,808 inhabitants), whose municipality, in the northeastern Italian Alps, comprehensively reflects the situation of other towns in mountainous, forested European regions. All around the town, forests and farmlands extend over large areas, and are strictly interconnected with the urban expanse. As in many other urban centres of the same size, the ecological links and socio-economic interdependence between urban and rural areas have, traditionally, always been guaranteed. However, urban development and recent socio-economic changes have altered this traditional structure, making boundaries between "the inside" and "the outside" of the town dynamic and intricate. The relationship itself between humans and forest has been profoundly modified, resulting in a different order of priority of values expressed by the population.

The aim of the research is to investigate the connection between people and territory; their cultural identity, knowledge of their own forests, and priority of needs and values.

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In 2006, a self-reporting questionnaire was sent to a random sample of 1,000 household heads. The sample was stratified according to the 12 administrative districts of the town; 6 located on the valley floor, and 6 on the adjacent mountain slopes. The response rate was approximately 35%. After a descriptive analysis, responses were processed by means of Multiple Components Analysis (MCA) and Clustering Analysis (CA). A certain number of themes dealt with in the survey were analysed, keeping data related to the valley floor districts separate from those related to the hilly districts, in order to investigate whether people's perceptions may somehow be affected by their proximity to the forest and hence by the urbanization process.

The results of the first survey show that a strong bond between population and territory still exists. People appreciate the forested landscape surrounding their town, and are knowledgeable about the woods in the area and their management. Some interesting differences were observed between respondents living in the districts on the mountain slopes and those living in the town centre.

A second survey has been planned, and is expected to show differences in perception, reflecting the social evolution of the last decade.

Overall, the research proved to be effective in highlighting people's needs and the values they attribute to the forests. A survey of this type may help in opening up dialogue between community and administrator, and, in the hands of planners and decision makers, may prove a useful tool for focussing attention on the evolution of societal demands. In the long view, this is particularly important in a period of rapid change, such as the one in which we currently find ourselves.

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Nadja Carius[1], Mike Speck[2], Katharina Laub[3]

REGIONAL IMPACT ASSESSMENT OF TRANS-SECTORAL URBAN PLANNING: DEVELOPING A METHODOLOGY FOR VISUALISING THE REGIONAL ECONOMIC, ENVIRONMENTAL AND SOCIAL VALUE ADDED OF TRANS-SECTORAL URBAN PLANNING ACTIVITIES

Tags: regional value added, regional impact, trans-sectoral planning, urban infrastructure planning, performance indicators

Abstract: In times of increasing interest in sustainability topics as well as their high degree of urgency due to depletion of resources, global warming and social inequalities, concepts and respective projects that meet the goals of sustainable development experience high popularity. Additionally, phenomena like globalisation and urbanisation have led to centralised environmentally deprived areas and long, interregional resp. international value chains with winning global players and an ever growing gap between rich and poor. Often, urban growth has outpaced the ability of governments to build essential infrastructures and create regional value.

The research project ***RAPID PLANNING***, funded by the German Federal Ministry of Education and Research, deals with sustainable infrastructure and resource planning for highly dynamic metropolises. It seeks to develop a trans-sectoral urban planning methodology with special focus on the sectors energy, water and wastewater, solid waste and urban agriculture. The investigated case cities are Kigali (Rwanda), Da Nang (Vietnam), Assiut (Egypt) and Frankfurt/Main (Germany). After a comprehensive research on existing conditions, structures and procedures in urban supply and disposal infrastructure and resource planning, a methodology will be developed in a participative process to support local authorities in the transition towards a trans-sectoral planning approach to harness synergies and manage trade-offs. Besides technical support and knowledge enhancement, the RAPID PLANNING approach includes administrative change management and the assessment of the regional impact in all three dimensions of sustainability.

To assess the regional and sustainable impact of trans-sectoral planning in urban areas, a consistent concept is needed that not only includes economic performance indicators, but also social and ecological effects within the region. The visualisation of the regional economic, environmental and social impact can not only support decision-making processes, but can also be used as political argument to promote and foster trans-sectoral planning and sustainable development.

Measuring the total regional impact including direct, indirect and induced effects in all three dimensions of sustainability is a wide-ranging and complex undertaking. Data availability represents a significant limiting factor of most regional value added measurement methods. Up to now, there are various different approaches towards the measurement of regional value added, adapted to the relevant research objectives in each specific case. Current quantitative research mainly focuses on

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methods to measure the economic regional value added of renewable energies comparing value added of different technologies, while qualitative research predominately works with the value chain approach.

To develop a tool measuring the regional impact in terms of economic, social and ecological performance of identified trans-sectoral interfaces and synergies, the author has chosen the indicator based approach to a value chain analysis, where a set of economic, social and ecological indicators is used for measuring the sustainability performance of value creation stages in a region. With the right choice of indicators, the tool is able to quantify the impact within a region in the three dimensions. The developed regional impact assessment tool will then be applied to measure the impact of the trans-sectoral RAPID PLANNING methodology within the project and for the case cities and will be checked for transferability.

A monetary valuation of selected social and ecological performance indicators to come to one allocated monetary value is a further step that might not be adequate to show the full spectrum of impacts but would be a desired outcome for communication of the regional impact in the political and public dialogue.

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Piergiorgio Cipriano[1], Giorgio Agugiaro[2], Romain Nouvel[3], Joachim Benner[4]

THE CITYGML ENERGY APPLICATION DOMAIN EXTENSION (ADE) FOR ENERGY ANALYSES AT URBAN SCALE

Tags: Urban energy modelling, Geographic Information System (GIS), CityGML, INSPIRE

Abstract: As of today no open and widely applicable data model standard exists for **Urban Energy Modelling**: developers of new urban energy tools have created so far their own tailor-made data models, while municipalities and other urban information data administrators use their own database structure to collect and manage urban information. As such, these models generally do not keep into account interoperability and data exchange possibilities between the stakeholders, tools and expert fields.

In order to answer these needs, since May 2014 a growing international group of urban energy simulation developers, geo-information scientists and users from many organisations (19 from 7 European countries and 1 from USA, as of December 2016) has been developing an Energy Application Domain Extension (ADE) for the Urban Information standard CityGML, as defined by the Open Geospatial Consortium (OGC): http://en.wiki.energy.sig3d.org/index.php/Main_Page

The Energy ADE aims to define and store the energy-related information necessary to perform energy analyses at urban scale, such as space heating and cooling simulation and audits, simulation and comparison of low-carbon energy strategies, solar potential analysis, Life Cycle Analysis etc.

In accordance with the philosophy of CityGML, the Energy ADE aims to be flexible in terms of compatibility with different data qualities and levels of details. Its design is driven by the following objectives:

1. store and manage energy-related data collected at urban scale, based on the standard data specification of the INSPIRE Directive and the Commission Regulations (http://inspire.ec.europa.eu), as well as the US Building Energy Data Exchange Specification (BEDES). By benefitting from these international data specification applications and from the data mapping tools, municipalities and data owners could provide easily and massively geodata in the Energy ADE format.
2. provide information data required by different urban energy models and simulation (e.g. from standard energy balance methods as of ISO 13790, to sub-hourly dynamic simulations by means of software programs like CitySim or EnergyPlus). In this sense, different softwares and models of different granularities and precision could be used, depending on the available urban data and the analysis purpose.

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Its structure is conceived to be modular, as of now it consists of 5 modules:

- Building Physics module, extending the existing CityGML Building objects and relate them to new thermal entities (ThermalZone, ThermalBoundary, and ThermalOpenings)
- Occupancy module, which details the building usage (people and the facilities inside the different building zones)
- Construction and Material module, characterizing the building construction parts, detailing their structure and specifying their thermal and optical properties.
- Energy Use and System module, containing the energy forms (demand and sources) and energy systems (conversion, distribution and storage systems)
- Timeseries and Schedules module, which is a floating module required by the other modules

These modules are conceived to be potentially used and extended also for other applications (e.g. the module Occupancy for socio-economics, module Construction and Materials for acoustics or statics, etc.), in particular in the framework of the new CityGML 3.0.

A description of the extensions defined in the Energy ADE, as well as examples of CityGML excerpts are available at

https://github.com/cstb/citygml-energy/blob/master/doc/guidelines/Guidelines_EnergyADE.md

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Piergiorgio Cipriano[1], Luca Giovannini[2], Barbara Leoni[3], Giorgio Saio[4]

GEOSMARTCITY: COLLECTION, INTEGRATION, HARMONIZATION AND MANAGEMENT OF BUILDINGS' ENERGY-RELATED DATA … IN THE REAL LIFE

Tags: Covenant of Mayors, Geographic Information System (GIS), INSPIRE

Abstract: The Covenant of Mayors (CoM) for Climate and Energy is the mainstream European movement involving local and regional authorities, voluntarily committing to reduce the CO2 emissions by at least 40% by 2030 by increasing energy efficiency and through the use of renewable energy sources [1], and to adopt an integrated approach to tackling mitigation and adaptation to climate change (for new signatories).

Actually, Covenant of Mayors is the worldwide policy with biggest impact on climate change mitigation [2].

Within a year following their signature, authorities commit to implement Sustainable Energy Action Plans (SEAP) or a Sustainable Energy and Climate Action Plan (SECAP) on their territory [3]. Furthermore, signatories have committed to submit an implementation report at least every second year for evaluation, monitoring and verification purposes.

In order to answer all these requirements, the **GeoSmartCity** project (http://www.geosmartcity.eu/) is aiming at enhancing the potential of **urban data management**, including the intelligent use of location-based data, for the sustainable and integrated development of energy in urban areas. On one hand it is important to extend the scope of the energy performance analysis from the single building to the district level (and further to the city level), encouraging systems integration for their optimal and mutual balancing.

The project is focused on the implantation of a "data hub" where to publish, discover and access detailed information about geodata related to actions defined by signatories of the CoM.

Indeed, the GeoSmartCity Hub is a proposal for a reusable platform where to collect and share detailed and harmonised geodata, focusing on specific themes like buildings, as well as road networks and traffic, and underground resources.

Many of these data themes are already included in the Annexes of the INSPIRE Directive, and their data specifications will be reused and extended in order to provide harmonised data models for both scenarios.

In the pilot case of Reggio-Emilia Municipality, data were collected from different authoritative sources (2D footprints from the Municipal Register of Buildings, uses with volumes and number of building units from the National cadaster of buildings, annual energy consumption from the National Tax

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Agency, annual energy bills for the buildings used by the Municipality, energy performance certificates from the regional register of energy certificates, location of solar panels from the national GSE agency).

Data have been harmonised through a complex series of automatic procedures from legacy databases into a PostGIS structure implementing an extended version of the INSPIRE schemas for buildings; the data model also considered the ongoing activities of the CityGML Energy ADE working group [4], therefore implementing concepts like ThermalZone objects to store and manage properly the information related to energy performance certificates or to energy consumption.

This gave the opportunity to obtain for each building different "views" with real annual thermal or electrical consumption normalized by the volume and grouped by use. Similarly, data about energy performance and consumption have been anonymized and aggregated at building level.

[1] http://www.eumayors.eu/IMG/pdf/com_in_figures_jrc.pdf

[2] http://www.covenantofmayors.eu/news_en.html?id_news=595

[3] http://www.covenantofmayors.eu/about/signatories_en.html

[4] http://en.wiki.energy.sig3d.org/index.php/Main_Page

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eurac research

Cristina Coscia[1], Valentina Russo[2]

GREEN ECONOMY, MULTIFUNCTIONAL AGRICULTURE AND *CORPORATE SOCIAL RESPONSIBILITY* MODELS IN PERI-URBAN REGENERATION PROCESSES: AN ITALIAN EXPERIENCE FOR THE HISTORICAL FARMHOUSES SYSTEM

Tags: Peri-urban farming, Corporate Social Responsibility, Environmental Management, Economic accounting

Abstract: Nowadays the strategies of the agricultural and environmental policies (the Lisbon strategy "EU 2020") -in particular the *Sixth Environment Action Programme 2010*: *Our Future, Our Choice*- highlight the need to create a market more environmentally friendly and "responsible".

The recent debate shows that the "green" variable in financial management is put at the center of the reflections of employers in both the discretionary dimensional (culture, ethics and responsibility) and in the normative-prescriptive dimension. Some positive experiences bring out the following topics: 1) the approaches of multifunctional agriculture in synergy with the themes of the European debate about the *Corporate Social Responsibility*, 2) the definition of a new business framework, 3) the management model oriented to the stakeholders and to the ethical management. The vision of the entrepreneur green in managing the company is an innovative point of view with respect to the obligations of law and falls within the sphere "responsible" for environmental management. The literature, in fact, focuses on: 1) a responsible model of business management through "stakeholder" model, as opposed to the "shareholder model", where the creation of value is not confined to equity holders of risk, but companies assume the management objectives that bring mutual benefit to the community; 2) the development of specific items in the analysis of financial statements that takes into account aspects of environmental responsability.

According to this, the paper aims to analyze the application of principles of the “responsible” management process to an Italian case study: the scenario of enhancement of historical farmhouses system in Volpiano (Canavese in metropolitan area of Turin, Italy). This territory is paradigmatic, as it is characterized by the coexistence the historical rural settlement patterns (partially altered by the construction of roads infrastructure) with new housing and productive settlement systems: it is an issue of great importance not only local.

As a first step, the paper aims reviewing the large literature (Carroll, 1991; Freeman et al, 2007) on the subject of *Corporate Social Responsibility*. It follows a reflection of the strengths and weaknesses of similar operations: the development of structural frameworks of knowledge of rural landscapes and its settlements, the operational aspects of evaluation and feasibility tests with the introduction of environmental items in the traditional economic accounting approach (the *green value* in the International Standards). The concept of multifunctional agriculture, conceived as agriculture that produces primary goods, on the other as agriculture that produces secondary services.

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The second step is to elaborate the specific *Financial Management Analysis Model* for the enhancement of the historical farmhouses, where particular attention was paid to two technical steps: 1) mapping of the stakeholders in accordance with the Corporate Social Responsibility approach; 2) the identification of specific items in the financial statements (in these phase of testing only at the categorial and descriptive level).

In fact, the final project scenario was checked with traditional instruments for operational feasibility analysis, foreseeing: the functional recovery and the restoration of the farms, the traditional culture with fodder crops and "new" (hazel) and the creation of spaces for the use of agriculture and animal husbandry as a source of therapy, education and ennobling. Some specific reflections were drawn on the estimate of the investment costs for the restoration and re-functioning, on the timing of site preparation and the management data, and on the identification of financing channels (PSR and the European CAP). Finally, the feasibility conditions are linked to the economic social responsibility and presents elements of originality in the feasibility test performance and the new assumptions on the risk/return ratio.

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Mauro Crescenzo[1], Sara De Matteis[2], Marta Bottero[3], Mauro Berta[4], Valentina Ferretti[5]

GOVERNANCE AND URBAN DEVELOPMENT PROCESSES: EVALUATING THE INFLUENCE OF STAKEHOLDERS THROUGH A MULTI-CRITERIA APPROACH. THE CASE STUDY OF TRIESTE

Tags: Stakeholders Analysis, NAIADE, Urban Planning, Weight Assessment, MAVT

Abstract: The proposed study focuses on the investigation of the role of evaluation approaches in the governance of urban regeneration operations with particular reference to the methods that belong to the family of Multicriteria Analysis (Figueira et al. 2005). There is, in fact, a strong need to take into account the different aspects involved in regeneration processes and programmes, in order to eliminate social decline, increase the inhabitants' quality of life, enhance the cultural resources, valorize buildings and public spaces, protect the environmental system, aid the economic development and so on. In particular, this paper considers the case of the historic centre of Trieste, which is named Cittavecchia, where new investments are required due to several past recovery plans that left various problems unsolved, causing identity and trust issues. This study is part of a wider research project where three different regeneration scenarios for Cittavecchia have been evaluated and compared through a Multicriteria approach based on the Multi-Attribute Value Theory (MAVT) (Crescenzo et al. 2016). The MAVT aids the evaluation of the proposed alternatives and the identification of a successful network of planning and design strategies, thanks to its flexible framework that better simplifies, structures and sorts the existing fragmentation. It is then useful to support complex development processes as it considers the broad spectrum of points of view with community awareness and shares visions with governance and politics. In particular, this paper is focused on the examination of the socio-political aspects related to decision-making processes, illustrating the calculation of the *Coalition Index*: an indicator that has been developed with an original application of the NAIADE technique (Munda 2004). The index allows the various actors' opinions to be considered and the strength of the coalitions among the stakeholders involved in the transformation to be investigated. Furthermore this method permits, with the contribution of local experts, to identify the influence of stakeholders on both the performance results and on the overall procedure, aiding decision makers to properly evaluate consequences and priorities. The study is a starting point for the evaluation of complex urban regeneration thanks to the ability of the proposed method to influence governance and urban planning procedures and even to adapt its framework for changes in conditions, objectives, criteria and needs.

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Vîlcea Cristiana[1], Avram Sorin[2]

SPATIAL CHARACTERISTICS OF URBAN TRANSPORTATION SYSTEM IN CRAIOVA METROPOLITAN AREA

Tags: urban transport, innovative infrastructure, connectivity, passengers and freight movement

Abstract: In a world of technology, where the increasing urbanization tries to cope between sprawl and the need to actively manage a sustainable land and resources use, transportation remains among the main challenges for physically active cities like Craiova. Craiova is the major growth pole located in South-West Oltenia which connects most of the settlements in the region (both rural or urban) economically and socially. Thus, the transportation system represents the key element in the relation between time and place in this metropolitan area in a continuous development process. While the city expands, the transportation network, inherited from the past, suffers a slower transformation, despite the increasing demand for mobility coming from both passengers and freights. The spatial analysis of new residential areas occurred due to the continuous process of urban extension indicate an additional pressure on the existing road infrastructure and which intensifies especially during peak hours on the access routes to the city and city center. As many studies focus generally on passengers' mobility as the key solution for transport sustainability, this study considers also freights movement as part of the functionality and connectivity of the Craiova metropolitan area. Starting from the analysis of the spatial structure and distribution of the pre-existent rural structure the present study tries to emphasize the need for an innovative and integrated infrastructure that should connect at its best space, services and people in terms of speed, capacity and cost efficiency. First, using the GIS mapping methods, the authors present the spatial distribution of the transport infrastructure and mobility patterns linked to specific urban activities and their land use, analyzing the elements of the urban landscape that may generate attractivity. Also, a special attention is paid to urban form, street pattern, spatial accumulation of certain activities and types of urban transportation existing in Craiova city. All these factors are important in order to establish the present capacity of the urban transportation system during peak hours, and what are the main deficiency of the transport system: traffic jams, insufficient parking places, need of new connections in public transportation. The second part of the study consists in analyzing the relationship between the types of movements (obligatory or voluntary) and the type of transport used in general for these types of actions. For this part, the authors took into consideration the most common types of urban movement like commuting and professional movements and personal or tourists' movements. The first two types are linked to work-based activities and are generally obligatory movements with a daily occurrence dominantly taking place during work hours and in a radius of 1-3 km to the city center. The second types of movements are voluntary and generally linked to commercial and leisure centers or tend to be seasonal in nature or occurring at specific moments, in case of tourists. There is also a third type of movements concerned with the distribution of freight to generally satisfy consumption.

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The results of the research may be used to improve the transport of people inside the city of Craiova and also offers new solutions which mitigate for the introduction of new concepts like car sharing, electric public transportation, hybrid vehicles or new alternatives for peoples' movement.

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Valentina D'Alonzo[1] in behalf of GRETA project Consortium

THE GRETA PROJECT: HOW TO INTEGRATE THE NEAR-SURFACE GEOTHERMAL ENERGY IN THE ENERGY PLANS OF ALPINE REGIONS

Tags: geothermal source; geothermal heat pump; renewable energy; energy planning; low-carbon strategies

Abstract: The Alpine regions are deeply involved in the challenge set by climate change, which is a threat for their environment and for important economic activities such as tourism. The heating and cooling of buildings account for a major share of the total primary energy consumption in Europe, and hence the policies for the reduction of greenhouse gas emissions should focus on this sector to accomplish its targets. Geothermal heat pump (GHP) is one of the least carbon-intensive technologies for the heating and cooling of buildings. It exploits a local renewable energy source which is widely available across the Alpine territory. Nevertheless, it has been little considered by European policies and cooperation projects.

GRETA (near-surface Geothermal REsources in the Territory of the Alpine space) is a cooperation project funded by the EU INTERREG-Alpine Space program, aiming at demonstrating the potential of shallow geothermal energy and to foster its integration into energy planning instruments. The project is built on three specific objectives: (i) increase the knowledge of the spatial distribution of Near-Surface Geothermal Energy (NSGE) in the Alpine region; (ii) exchange knowledge and best practices for the utilization of NSGE transnationally; (iii) develop a knowledge base for the inclusion of NSGE in planning tools. The objectives will be accomplished by creating and providing geothermal potential maps to support the integration of NSGE information into policy instruments such as energy supply and demand plans and strategies, e.g. for the spatial planning of geothermal installations by public and private stakeholders. In addition, guidelines will be developed to encourage the harmonization of regulations, authorization procedures and operational criteria for NSGE utilization in the Alpine regions. Strategies for the inclusion of NSGE in policy instruments will also be formulated, thus contributing to a growth of NSGE utilization. It started in December 2015 and will last three years, involving 12 partners from Italy, France, Switzerland, Germany, Austria, and Slovenia. In this poster, the project is presented.

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Renata Dagiliūtė[1], Vesta Čiteikytė[2]

LOW CARBON TRANSPORT: READY TO PAY A CAR TAX? LITHUANIAN CASE

Tags: low carbon economy, transport, car tax, tax incentives, survey

Abstract: The European Union aims to reduce greenhouse gas emissions and the transport sector could be the main sector where these emissions can be reduced in cities based on human understanding and using low-carbon technologies for transport sector. Transport sector of Lithuania accounts to around 20% of the total carbon dioxide emissions. Road transport is the main contributor and is projected to increase as the number of passenger cars per one thousand inhabitant increases 1-2% annually in Lithuania. Therefore analysis of transport sector contribution to the climate change was supplemented by survey, indicating possibilities of the main alternatives and economic measures to contribute to the renewal of car fleet and in general shift to more environmentally friendly means of mobility.

Transport sector analysis and contribution to the climate change was based on the data from Statistical office of Lithuanian and Eurostat. Population survey was conducted to determine the public opinion about climate change, its importance and awareness of low-carbon economy, its application and measures for its implementation. The survey was carried out in 2015, in March-April. The questionnaire was placed in the web page www.apklausa.lt. The questionnaire was filled by 207 respondents.

Most of the respondents (79%) agreed that climate change is global problem, however not very important on European and national level. Respondents most often (85%) indicated that people's perfunctory approach to environmental problems is one of the major factors resulting in climate change. However, 22% of the respondents identified climate change as spontaneous process, independent of humans. 46% respondents do not know and have not heard of the EU objectives and measures on climate change mitigation. Regarding low carbon economy, about 16% of the respondents did not know at all what it could be. Hence, information provision and awareness rising remain one of the policy implementation tools.

44% of respondents would choose hybrid and electric car, if it is cheaper to run it; 42% if there is a proliferation of special electricity stations for hybrid and electric cars. 29% of respondents would choose such car if value added tax (VAT) is returned. 23% of respondents would like to switch to hybrid and electric car without any additional conditions.

In-between measures for transport pollution mitigations, respondents agreed on car taxes, sharing initiatives, information provision. 49% of respondents said that less than 10 euros annual vehicle tax would be optimal. Higher tax (11-20 euros) would agree to pay about 27% of the respondents. Only some 6% of the respondents would be ready to pay more than 71 euros. 85% of respondents who agreed only on less than 10 euros annual car tax, receive a low income, oppositely to ones stating that

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intended 70-100 euros annual vehicle tax would be acceptable for them (χ^2=1,115, p<0,05). However, in total 58% of respondents opposed a total annual vehicle tax introduction. The main reason for postpone of car tax is grounded by relatively low incomes in Lithuania; thought car dependence is very high. In general people are against any new taxation and strong political will is needed to introduce measures like that.

Respondents indicate the main measures for low-carbon economy realization in transport sector in Lithuania could be: increasing length and quality of bike roads (53%); tax incentives (return of value added tax) for hybrid and electric car purchase (69%), increasing the attractiveness of public transport (62%). On the personal level, 58% of respondents (mostly woman (χ^2=12.67, p<0.05) and younger (χ^2=6.62, p<0.05) respondents) said that there are trying to walk more, 48% cooperate while going by a car, 27% are more likely to use a bicycle, 39% - public transport.

Hence, public awareness and political measures still are the main factors that can lead to low-carbon economy feasibility in Lithuania's transport sector.

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Mark Deakin[1]

CRITICAL SYNTHESIS OF SMART CITY STUDIES: DEMONSTRATING HOW URBAN MORPHOLOGY MATTERS IN "UNDER-GRIDDING" THE SUSTAINABILITY OF ENERGY EFFICIENT-LOW CARBON ZONES

Tags: smart cities, metrics, mass-retrofit proposals, energy efficiency, low carbon, urban morphology

Abstract: This paper reviews the literature on smart cities. Offering a critical synthesis of the material, it advances a Triple Helix inspired account of smart cities as future internet-based developments. In particular, as future internet-based developments covering the digital infrastructures, data management systems, renewable energies and cloud computing of a regional innovation in the Internet of Things (IoT). More specifically, as a regional innovation in the IoT that covers the morphology of urban extensions, infill and mass retrofits, which smart cities call for the development of. Focusing on the metrics of mass retrofit proposals, the paper also serves to demonstrate how the urban morphology of such regional innovations matter in the sense they tell us that being aware of the considerable energy savings and CO2 reductions, which IoTs offer cities to be smart, is not enough. Not enough, because without knowing whether the costs and benefits under-gridding the sustainability of city-districts are shared equally, it is impossible to say if the 65% energy saving and 78% reduction in CO_2, attributed to the data collection, information processing and smart (micro) grids of mass retrofits is socially just. The paper suggests that in order to verify this, it is necessary for smart cities to first baseline the social-demographic structure of retrofit proposals. Then draw upon the environmental profile this evaluation generates to assess whether the regional innovation creates that wealth which is needed to under-grid the sustainability of city-districts.

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PUBLIC SPACE AND VIBRANT GROUND-FLOOR ZONES IN SUSTAINABLE CITY QUARTER DEVELOPMENT. INNOVATIONS IN AND LEARNINGS FROM SMART CITY GRAZ

Tags: sustainable city development, indicators, city of short distances, public space, ground-floor zone

Abstract: The proposed paper briefly introduces the project Smart City Graz *(Smart Future Graz Team: Smart City Project Graz Mitte. Projektbeschreibung Einreichung Smart Energy Demo - FIT for SET 2. Graz, 2014*) with a focus on the planning process and the newly developed Smart City Graz Criteria and Indicators. It is pointing out relevant quality criteria, achieved innovations and further potential for improvements, concentrating on the cross-sectional topic of public space and the ground-floor zone and contextualizes them with current research and best-practice.

Smart City Graz aims to consequently put the people in the centre of development and research projects and to generate a surplus in quality of life applying the interdisciplinary expertise of the 13 partners.

Regarding the lifetime-cycles of the three levels technology, functional assignment and built environment it is obvious that the spatial structure of a city is the most constant basis determining space and society for decades and centuries. If the built structure is smart, several changes of function are possible during its life span. The technological level finally is the most short-termed. Therefor a both comprehensive and flexible planning of spaces is crucial for the success of every sustainable development.

In the development process of Smart City Graz informal instruments completing the traditional planning instruments *Flächenwidmungsplan* (land-use plan) and *Bebauungsplan* (master plan) were introduced to meet these challenges: a framework plan, private-law contracts, architectural and public space competitions and the development of an evaluation and monitoring system. One deliverable are the Smart City Graz Criteria and Indicators which offer a basis for the evaluation of the current development of the new city quarter Smart City Graz - Waagner Biro and are intended to be applied in early stages (e.g. as requirements in framework plans and competitions) in subsequent development projects.

The criteria and indicators cover the thematic fields spatial structure, society, economy, ecology, mobility, energy and supply.

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Within the criteria's development aspects not thoroughly considered (both in design and assessment) in previous research were identified. Consequently in contrast to other assessment systems the Smart City Graz Criteria and Indicators put special emphasis on the spatial and functional aspects of a city of short distances.

Fundamental conditions for a compact city (or city district) are the functional and social mixture and attractive urban spaces. One important, but rarely researched topic are the ground-floor zones and their relationship to public space. Their manifold functional and spatial intertwining is a crucial factor for the success of a sustainable city district or quarter.

In current innovative development projects framework plans are incrementally preceding master plans, defining the fundamental spatial relations for competitions and planning.

Moreover in a few cases functional guidelines on a more specific level than in land-use plans are defined, yet taking in account mainly economic aspects. However, same as for the spatial structure also the basic functional framework of a city district should be defined not only according to private economic interests but decisively by the municipality which is representing the public interest. The functional concept of a sustainable district has to be developed hand in hand with the spatial concept and be part of the legally binding basis for property owners and investors.

The project Smart City Graz as a forerunner implements numerous innovations in these long-term objectives and, within the projects self-assessment, develops instruments to formalize this process in the future.

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Massimo De Marchi[1], Alberto Diantini[2], Daniele Codato[3], Federico Gianoli[4], Marika Bonato[5], Salvatore Eugenio Pappalardo[6]

OPPORTUNITIES AND NEW CHALLENGES IN LEARNING ENVIRONMENT FOR GISSCIENCE IN THE ERA OF "DRONES FOR GOOD"

Tags: GIScience, drones, GIS, interdisciplinary approach, applied geography.

Abstract: The increasing production and availability of geographic data and the rapid development of new technologies for the management of spatial data (from drones, to WebGIS, to Mobile-GIS) require the updating, the reorganization and the development of decision-making processes in many sectors of the economy, public administration and the non-profit. An increasing attention to geospatial technologies is, at present, fuelled by the development and the use for civil purposes of UAV platforms which embody a technological and theoretical paradigm of acquiring, processing and modelling geographical data. This trend is also highlighted by the "RPAS Lianility & Insurance" of the European Commission which documented the number of certified operators in 2014: 431 in France, 216 in Sweden, and 212 in United Kingdom. By the new regulation the Italian authority ENAC in 2015 registered 177 operators for experimental activities and 102 operators for non-critical operations, authorizing 1,200 drones in the Italian spatial area. According to our survey the most professional frequent use of UAV is in the field of research (15%), followed by commerce (14%) and security (11%).

At the same time Universities are challenged in providing suitable "learning environment" for updating and building appropriated skills. With the academic year 2015/2016 the University of Padua has launched the first edition of an academic Master di secondo livello on "GIScience and Unmanned System for the integrated management of the territory and the natural resources - with majors" (Professional Master). The master sees the collaboration of five departments, firms operating on GISciences and drones. The master offers 4 academic paths: 1) Production and management of geo-information; 2) GIScience for environmental conflict management and participation on public decision making; 3) Cartography and GIS for green infrastructures; 4) Geoinformation and new technologies for sustainable agriculture.

The Geographic Information Science has been considered, in continuity with the international research (Hanson, 2007; Gould, 1999; Longley et al., 2015), able to build bridges to facilitate dialogue between persons and disciplines, what it is called the "common struggle for the interdisciplinary research (Onsrud, Kuhn, 2015; Gensel et al., 2012; Blaschke et al., 2012; Kelley, 2002). The GIScience, therefore, could represent a "learning words long and not exceeding 4,000 characters - including spaces in

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length. It must be without bibliography). (The abstract text March 22-24, 2017 Bolzano/Bozen (Italy) environment" in the perspective of integrating geography with cartography in the era of the participatory and digital mapping (Casti, 2015). Moreover, the didactic approach is based on combining education with cooperative learning, guarantying the coordination between the different phases, the tutorship and the individual professional development. Moreover, the participant observation approach has been used both to calibrate the activities and to collect information for monitoring and evaluating the course in a sort of ethnographic immersion in the educational context. By a group of 25 participants the Master started in March 2016 the first edition and it will conclude in December with a final individual project work about GIS-based application in different research fields. Participant at professional Master have the opportunity to live a multidisciplinary and interdisciplinary environment reconnecting the continuity of geographical knowledge with the innovation of Information and Communication Technology (ICT) and their appropriate use as a conceptual framework to read the complex territorial issues and to frame appropriate decisions. At the same time, this active community allows a cooperative building of the ability to develop and implement high intellectual added value professional interventions suitable for different institutional contexts, responding to the needs of the different local actors and based on the appropriate use of GIScience.

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Lucia Della Spina[1], Angela Viglianisi[2]

THE EX-POST EVALUATION AS DRIVING TOOL FOR CULTURAL HERITAGE VALORIZATION STRATEGIES: THE CASE STUDY OF CROTONE

Tags: (ex-post evaluation) (cultural heritage and identity) (innovative governance approach) (valorization of endogenous potentials) (mutual interdependency)

Abstract: Evaluating the impact of public investment is one of the main strategies that the European Union proposes for comprehensive and effective management of the 2020 funded interventions. The evaluative approach's central idea is to analyze how the programs fit the contexts over time, integrating various measures of intervention and involve many institutional actors and social groups.

The assessment helps explaining "why, for whom and in what circumstances" complex programs, such as those funded by the European Structural Funds, work or not in order to be replicated in different contexts and adapted to the needs evolving over time.

The current European debate aimed at improving the assessment of the public investment's effects in inner areas, seems of particularly interest. It brings to consider not only the financial aspects, but especially the territorial dimension, with attention to places. A place-based approach combining both the planning and evaluation phase, intended to define a long-term strategy designed to address the critical issues related to under-utilization of resources and to reduce social exclusion in specific areas. A policy conceived in this perspective allows both to promote the supply of goods and integrated public services, adapted to different contexts, and to trigger changes at different levels.

According to this path, the paper focuses on public interventions, and in particular on public interventions related to the promotion of cultural heritage, in order to overcome the limitations due to the lack of efficiency in the use of funds and to deficiencies in the results assessing's system.

Specifically, the paper focuses on the interventions realized and planned in Calabria, a Southern Italian Region falling under the Convergence objective, aiming to identify evaluative approaches able to understand the significance of the EC policies' effects, and verify the critical issues in the concrete pursuit of the goal. In this sense, the paper stresses the role of the ex-post evaluation - generally defined as tool to verify the impact actually achieved in relation to the general and specific objectives - according to the proposed approach is rather to focus on the critical issues and / or success related to the implementation of integrated projects and related actions, in order to maximize the effects of the past experiences' implementation, even those perceived as negative.

The proposed approach tends to structure the principle of integration, not simply in its canonical vision of complementing resources with knowledge and skills, but also in terms of integration relative to the 'completion of the programming' associated to the previous cycle, using the evaluation to understand how to network what has already been achieved, and to analyze what has not been

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achieved, with the purpose of understanding the reason for the failure and to optimize the funds already expended on the territories.

Pointing out the case study of the province of Crotone, the paper highlights the importance of deepening the processes, approaches and techniques for the identification of priorities at local scale, to improve the governance of territorial policies, as well as for the analysis of results and definition of new possible intervention strategies.

According the numerous conflicts and uncertainty related to the complexity of the decision- making process, and the transformative potential that would lead, it requires a particularly complex planning commitment, where the role of evaluation is essential for the rationalization of the choices' construction, for the comparison between alternative opportunities, and for the impacts' evaluation on the short and long term.

The ultimate scope of the paper is to contribute to the scientific debate on the role of evaluation in the process of territorial-scale identity resources' valorization, placing as the management as central moment within the intervention projects on the cultural heritage, pursuing the concept of cultural heritage as driver of sustainable development for disadvantaged regions. The management issue becomes key for the systematization of both actions already implemented and not completed intervention on cultural heritage - according to the approach proposed in this study – in order to coordinate and organize the whole complex system.

Combining the economic evaluation's point of view with that of planning and designing is a challenge and, at the same time, a necessity bringing to observe and interpret the transformations in an integrated and interdisciplinary approach. The common background is the contemporary territory, crossed by the transformation bringing urban, rural, social and economic complexity.

The originality of this method is represented by conceiving the management as an umbrella activity propaedeutic to intervention, in a process perspective, related to the territorial transformations, the theme of sustainable development and to the revitalization of the genius- loci of places.

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Alice Dénarié[1], Marco Calderoni[2]

MULTICRITERIA APPROACH FOR A MULTISOURCE DISTRICT HEATING

Tags: District Heating, multicriteria, renewable energies, sustainable planning

Abstract: The EU project SmartReflex -smart and flexible 100% renewable district heating and cooling systems for European cities, has an ambitious goal, namely to promote the massive use of renewable sources for heating and cooling in our cities through district heating networks. Among the project activities, there's the analysis of real case studies in the partner regions to show the potential of renewables integrated in district heating. AIRU, Italian Association of District Heating, and the Department of Energy of Politecnico di Milano are supporting the promotion of local initiatives of renewable networks in Emilia Romagna region. Among them, in this paper, the feasibility of a multisource DHC system in Mirandola is assessed. In this network natural gas is only one among several energy sources: biomass, biogas, solar thermal and an absorption chiller. The analysis deals with the extension of the network and with the choice of the best new energy source to feed the new demand. The expected extension implies doubling the heat demand and repowering of the generation systems with integration of local renewable sources, in particular solar and biomass. Mirandola is a town in the province of Modena that, after the earthquake that ruinously stroke it in 2012, is undergoing a renovation phase especially in its historic center. This process is an example of integrated planning in which the local authority together with the utility has developed an organic urban project that not only deals with building and Urban Development, but also with renewable energy supply. District heating is thus seen as an energy infrastructure for renovation of the city center.

While facing the question of increasing the environmental sustainability of district network, a broad set of alternative solutions comes out: DH systems can have access to a wide range of energy sources that have to be evaluated from economic, technical, environmental and social point of view, often with conflicting objectives. The importance of these factors may be different for various stakeholders involved, utility, local authority and citizens, sometimes with very different opinions. The need to consider different aspects and viewpoints motivated the use of multicriteria decision analyses techniques in the choice of different sizes and types of sustainable energy sources.

The use of MCDA has been applied in order to perform a holistic analysis of possible energyrelated choices and because of the conflicts between some objectives, such as the benefits and costs of renewables, the land use, space availability. In particular, the use of biomass is quite controversial: biomass is a renewable, local, and CO_2 neutral source, able to reduce GHG emissions but despite these advantages, biomass burning can have negative impacts on air quality by producing primary sources of air pollution, such as PM10 and BaP, and secondary ones, such as SOx and NOx.

The paper presents the multicriteria process applied to this plant design, the different alternatives and the used criteria, and the final results: a combination of natural gas, biogas, solar thermal energy and biomass has been defined which correspond to the willing of both utility and municipality.

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Kejt Dhrami[1]

KEY ISSUES FOR THE FUTURE OF SUSTAINABLE LAND MANAGEMENT AND DEVELOPMENT AT THE LEVEL OF STRUCTURAL UNITS IN EASTERN EUROPEAN COUNTRIES, IN THE CONTEXT OF THE EUROPEANISATION OF PLANNING SYSTEMS

Tags: sustainable land management; Europeanisation; structural units; comprehensive - integrated planning

Abstract: This paper addresses the issue of the shift of urban planning traditions in Eastern European countries, due to the change of governmental structures in the past 20 years, as well as the indirect influence of the EU legislation on Spatial Planning. This research focuses on the impact of these tendencies to land management practices in the level of structural units in Albania.

The planning system in Albania has recently changed from an *urbanist* tradition, to a *comprehensive, integrated* approach. This is followed by a paradigmatic shift from *urban* focus in planning, to management of territories as whole entities. The land management instrument that is used, following this concept, is the division of territories into recognizable *structural units*. Nevertheless, the Albanian legislation states that the division of these units should follow a series of criteria and should be subject to a set of proposed indicators for planning and development purposes. These indicators vary from FAR, coverage, public space coefficients, density, to land use instruments aiming at regulating property relations. These make for enhanced normativity parameters, never used before in the Albanian and Eastern European planning context. The challenge of achieving both, a fair division of the territory into structural units, while setting the right and sustainable development parameters, in a context of constant change, is a real struggle for local governments nowadays. While there is no reliable indicator into the success or failure of this shift in planning systems in Albania, it sure brings into question the validity of zoning concepts in today's growing cities and the ever-existing gap between bottom-up structured planning practices, and top down flexible approaches in land development.

This research aims at addressing the issue of shift of planning systems in the Eastern European countries towards comprehensive approaches in spatial planning, as practiced in Western Europe. In this dynamic context, the paper analyses how this shift has affected Albanian land management practices, in terms of territorial units, and normativity. The paper focuses on 3 main objectives:

- Exemplifying the rapid shift towards Comprehensive Planning, in the context of Europeanization, in European countries (both EU and non-EU members), with a focus on Albanian legislative changes
- Developing a set of criteria to measure the positive/negative outcomes of the development indicators used in Albania nowadays, as opposed to the previous tradition, regarding sustainability in land management

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- Drafting a realistic framework model of land subdivision in today's context in Albania.

The proposed research is of an exploratory, comparative nature, while also being an applied research, aiming to contribute to the realistic designation of standards and regulations in the level of structural units in Albania. The first part of the research focuses on literature and legislative review of 7 countries of Europe, analyzing their spatial planning systems in terms of land management, and the influence of EU policies in these tendencies. The second part is focused on the Albanian case, and relies on interviews and case studies of General Local Plans that were drafted before and after the change of legislation, which are evaluated through a series of indicators. The third part is both based on literature review, as well as case studies, and gives a framework into the criteria needed to divide the territory into manageable units, referring to the dynamic context of EE countries.

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Elizabet Plamen Dimitrova[1]

THE ROLE AND FUNCTIONS OF SMALL TOWNS WITHIN A REGION: TOWARDS A PLANNING AND DEVELOPMENT FRAMEWORK FOR PIKETBERG, WESTERN CAPE, SOUTH AFRICA

Tags: small towns; sustainable livelihoods; form and function.

Abstract: High levels of urbanisation lead to growth and development focused mainly in large cities and decline in small towns and rural areas. As the concept of Local Economic Development has become a mandate of Local Governments in South Africa, the focus has been diverged to large urban centres, leaving small towns out of the picture and failing to see the dependency of small towns on government support. Resulting of that, in the National Spatial Development Perspective of South Africa, many of the small towns are classified as areas of limited economic potential. In turn they are left with very little interventions or investments and no small town development policies. It is no longer acceptable to deal with urban and rural areas separately but rather as interlinked and interdependent entities of a well-functioning region. If policies are developed within a context of a region, it is safe to assume that the small towns will have a function and the region will become more sustainable. It is however quite a challenge to determine what a region effectively is. Municipal boundaries are often not a useful tool in determining a region in terms of spatial planning. Regions are places which function together and yet we can see that in many cases, such places are separated by a political boundary and deemed a different region, falling under different planning and development goals and long term objectives.

South African small towns vary considerably in context and incorporate a broad spectrum of urban form characteristics. This study will focus on the small town of Piketberg in the Western Cape Province. Piketberg is the administrative capital of the Bergriver Municipal Region and has a population of about 10 000 people. The context of the study is typical for this province and the town chosen has considerable economic and social activity at first glance. Piketberg being located along a mountain range as well as on an important transport route intersection, has an important role and function and has high development potential which is not yet realised. However, digging deeper, the town reveals an inherited Apartheid style planning and spatial inequality dominating even the current spatial form and developments. Various methods have been used to conduct in-depth research at grassroots levels and to gain understanding of the social dynamics within the context of Piketberg as well as the spatial form of the town. The typical issues as related to the town's urban form are studied in detail and the research questions the location of the town and what its function is within the broader region. At a later stage the study will compare regional and local planning theory to the existing policy of the town and municipal region with the aim to reveal the effectiveness of the policy in solving the typical problems discovered.

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The findings of the research will conclude whether or not any interventions are needed within the specific town or rather the entire region. Means of achieving sustainable livelihoods through improved urban form will be discussed and retro fitted within the context of Piketberg. The development framework will provide for a stepping stone towards mounting a policy for the sustainable development and the addressing of small town livelihoods in South Africa. The paper will also provide a more clear understanding of spatial regions and how to effectively manage them into well-functioning whole entities befitting one another and working as one.

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Ekaterina Domorenok[1]

CLIMATE CHANGE GOVERNANCE AND POLICY LEARNING. THE ROLE OF CITY NETWORKS

Tags: Climate change, city networks, policy learning, governance, multi-level

Abstract: In contrast with the past, the current EU strategy for climate policy mainstreaming promotes a number of flexible policy instruments underpinned by the logic of self-regulation and coordination, overcoming thereby the mechanism of steering and compliance which has prevailed in earlier energy and climate policies. The operational pattern of this new policy agenda is characterized by a complex cross-sectoral policy mix and multi-level institutional settings, which are expected to encourage a pro-active bottom-up approach, coordination between public authorities across different territorial levels and the creation of stable public-private partnerships.

This paper analyses the governance and implementation of one of these instruments - the Covenant of Mayors (CoM), which was launched by the EU in 2008 in order to enhance the local efforts in the implementation of the EU climate package objectives. The CoM involves local governments and their associations who voluntary commit to the objective of reducing the CO2 emissions by at least 20 percent by 2020 through their Sustainable Energy Action Plans (SEAPs), while at the same time improving energy efficiency. Moreover, the participation in the network aims at increasing local awareness about the relevance of cross-sectoral policy measures for the reduction of CO2 emissions, offering a better visibility at EU level and mutual monitoring of the progress through an interactive web platform. In operational terms, this instrument relies on the process of knowledge exchange, learning, mutual trust and coordination as a means of encouraging participants to develop and align their low-carbon strategies with shared objectives.

After a short overview of the governance architecture and functioning of the CoM, this paper analyses its implementation in Italy, reflecting on the impact of this programme in terms of policy learning, that is from the point of view of opportunities it has provided for acquiring new expert knowledge on sustainable energy policies and planning, developing shared objectives and procedures, and strengthening cooperation and trust among the participating local authorities..

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DIGITALLY UNITED? CONDITIONS FOR JOINT MEDIA START-UPS ACROSS THE DIVIDE IN CYPRUS: AN ENTREPRENEURIAL AND ECONOMIC OVERVIEW

Tags: Impact of technologies on people, Internet of Things, Cyprus, Media Entrepreneurship, Economics of Innovation

Abstract: This paper focuses on Cyprus and its two main communities, Greek Cypriots and Turkish Cypriots. Income differences between the two communities prior to the division of the island still continues, so does the re-unification process. Despite European aid and goods trade across the divide, the emergence of joint ventures are limited as a result of the infrastructural conditions on the market: Two different taxation systems, two different insurance systems and two different GSM zones that are not compatible with each other make it difficult for a cooperation in form of joint ventures very hard. However, internet remains out of this division. A combination of the emergence of internet-of-things and the ongoing political reconciliation process in Cyprus mean for the Cypriot media that their new focus as a sustainable business model will be in form of joint ventures across the divide. To the author's knowledge, this topic has not been considered by the academic community, which hitherto focused on general-conceptual scenarios of the Cypriot reunification as well as the challenges for tourism and beekeepers. The approach in this paper is innovative, because it combines a global concept of technological change with local specifics to give an economic and entrepreneurial overview of the past and ongoing entrepreneurial cooperations and the future possibilities of the market. After focusing on technological change and the internet economics from a theoretical perspective, the paper offers an interpretative framework of an entrepreneurially driven economy based on evolutionary economics, which analyzes changes from within the system. Next, the focus shifts to Cyprus as a case study. With the distinction between the supply side and the demand side, current and previous joint media ventures on the one hand and the financing possibilities on the other hand are analyzed. Basic ideas for the future are driven in an Internet of Things framework with the focus on new sources of value, new competitive landscapes, new distinctive competencies and new business models.

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Emanuele Facchinetti[1], Sabine Sulzer[2]

ON THE DEVELOPMENT OF A COMMUNITY PLATFORM TO FOSTER THE ENERGY TRANSITION OF A SWISS SUB-URBAN MUNICIPALITY

Tags: Smart urban energy planning, Business models, Urban responsibility and sustainability, Participatory Governance, public engagement

Abstract: The transition towards a more sustainable global energy system, significantly relying on renewable energies and decentralized energy systems, requires a deep reorganization of the energy sector. In particular, considering that at European level the building sector accounts for more than 40% of the total energy consumption, fostering the energy transition of the built environment is key to achieve the challenging energy saving and CO2 emission reduction targets fixed by policy makers. Within the Swiss Energy Strategy 2050, the Swiss government aims to reduce by 2050 up to 60% of the total energy consumption and CO2 emission in the building sector. In order to achieve this target a number of measures have been deployed including subsidies, feed-in tariff and tax exemption schemes, and funding for R&D and implementation projects. Partly relying in such funding, the present work describes the outcome of a research project addressing the challenge of developing the energy transition strategy of a Swiss municipality located in the sub-urban area of Bern. The project involved three parties: the municipality, representing the community of citizens and its objective of achieving the 2000W society targets; the local utility company, representing the private sector and providing energy demand and supply data; and the Swiss Competence Center for Energy Research in Future Energy Efficient Buildings and Districts, providing scientific guidance. The selected village, Uettligen, represents a typical example of a Swiss sub-urban community.

In order to define the most suitable energy transition strategy for Uettligen, a novel approach integrating technical and commercial assessments has been applied. The objective has been to identify the most appropriated solutions considering not only the techno-economic perspectives, but including also marketability and commercial aspects. In parallel to the technical analysis - dealing with the buildings assessments, the evaluation of demand profiles and potential for implementation of renewable energy -, several business model options potentially applicable have been identified and the involved stakeholders have been required to judge different commercial options and pathways to achieve the overall targets.

As a result of such integrated approach, the most convenient technical and business model solutions have been selected to define the most suitable techno-commercial energy transition strategy for the municipality. In particular three bundles of technical solutions have been identified and allocated to different districts within the village. In order to coordinate and promote the diffusion of the identified solution bundles, the commercial assessment highlighted the opportunity of implementing a platform connecting the citizens, the municipality and local energy services distributors and financial

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institutions. A detailed concept for this platform has been developed. The platform is meant on the one hand to motivate and support local actors and public authorities to develop fair, sustainable and viable public-private partnerships. On the other hand, it should propose a coherent and structured guidance to motivate the citizens to engage into the energy transition of the village.

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Magda Fontana[1], Martina Iori[2], Consuelo Nava[3]

BARRIERS TO SWITCHING IN RETAIL ELECTRICITY MARKETS: A REGIONAL ANALYSIS OF THE ITALIAN MARKET

Tags: Consumers empowerment and action, Switching rates and Consumer Inertia, Informational Problems, Retail strategies, Energy Policy

Abstract: Switching rate is a good indicator for both consumer information-based empowerment and market competitiveness. More informed consumers are more prone to ripe better offers and, in turn, more reactive consumers foster competition among retailers. In the EU countries, the process of liberalization has generated upward trending switching rates although their values remain well below the expected ones. Indeed, the market for electricity exhibits distinctive features:

i) On the consumer side, electricity is a necessary good but its cost has little impact on a typical household's income and the perspective of limited savings hampers active behaviour. Additionally, inactive behaviour has no consequence on the provision: the household will receive electricity through the default obligatory electricity supplier scheme;

ii) On the supply side, established monopolies have induced consumers' loyalty through long-term relationships generating further switching inertia. After liberalization, competitors faced other critical issues: first, price competition has little scope since about 75% of energy price consist of taxes and transmission costs. Second, electricity is an undifferentiated good and competition among retailers takes place mainly through innovation in services that are added to the provision of electricity. This might result in an increased difficulty for consumers in comparing offers and therefore might further depress switching.

The paper identifies the barriers that hamper consumers' active behavior thereby providing insight for policy implementation at the national and regional level. The study adds to the extant literature by providing a thorough study of switching barriers in the Italian market (see Figure 1). In spite of its importance in terms of volumes - it stands fourth in the European ranking after Germany, France and United Kingdom - the Italian electricity market remains largely underexplored. The analysis also contributes to the knowledge of consumer behaviour by applying advanced econometric techniques that can be replicated in different institutional settings.

We observe 43679 individuals in 18322 households (AVQ 2014). We use demographic, attitudinal and social information (see Table 1, 2, and 3) to estimate the determinants of switching inertia (see Table 4). In particular, we run an exploratory Logit model in which the effect of several theoretical non-switching reasons are taken singularly. Logit models provide an effective way to model individual choices accordingly to the traditional utility maximization and independence from irrelevant alternatives (IIA) assumptions.

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In a second model, we account for the higher complexity of consumer's decision-making. Inertia is, in fact, the outcome of multiple determinants. The study of their joint effect poses a methodological challenge. Traditional methods, such as the classical Multinomial Logit model cannot be applied. We therefore apply the Marginal Logit model and its extensions to account for non-exclusive multinomial choices.

We interpret results according to the "Three-Pillar Strategy To Deliver A New Deal For Energy Consumers" suggested by the EU (SWD(2015) 141). While easily accessible and comparable information are seen as key positive elements by the EU, we find that better information introduce more inertia. In addition, inertia seems to be related to satisfaction and savings from other markets (e.g. gas).

Differentiation of behaviour across Italian regions (see Figure 1) also suggests that different local market structures have an impact on active behaviour. The paper discusses the subsequent policy implications.

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Silvia Gaggi[1], Laurie Pickup[2]

MIND-SETS - A NEW PERSPECTIVE TO UNDERSTAND MOBILITY

Tags: mobility mind-sets, future trends, decision making strategy, change behaviour

Abstract: The H2020 project MIND-SETS stems from the acknowledgment that over the last 40 years, much has been learned about the travel behaviour of different groups of society. We know, for example the social distribution of the types of journeys made, their mode, timing, length and duration. We have knowledge of the impacts that greater mobility and accessibility have had on the volume of mobility in recent decades, and the nature of that growth.

However, we still understand little of the underlying processes that drive mobility decisions; what factors affect people's propensity to change behaviour.

The project aim is to assess how we can better understand mobility as part of the overall changing lifestyles of Europeans, set against social/economic/technological trends: in short - what are people's mobility MIND-SETS across Europe? This involves a new approach that brings mainstream sociologists, environmental psychologists and economists together with sustainable mobility and travel behaviour specialists as well as experts in technological and ICT trends: a full multidisciplinary, new type of team to assess mobility issues.

MIND-SETS has collected existing knowledge on the various factors influencing user mobility behavior from the perspective of these different disciplines and conceived a new approach based on four *'building blocks'*, which combined can provide a more comprehensive understanding of how people see and use mobility.

Fig 1 - The MIND-SETS logic

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- The X-axis represents the supply side: mobility projects, products and services range from purely physical (left-box) to totally virtual (right-box) including smarter transport infrastructure (e.g. improved modal interchangers, faster and safer transport terminals), innovative services (e.g. collaborative, on-demand), or information provision (e.g. information flows from users to service providers, new surveying techniques).
- The Y-axis represents the demand side: mobility needs are motivated by human wishes, values and desires (top-box), and are influenced by users' location (bottom). This axis confronts people's choices driven by their personal mind-sets, influenced by their generational profile, with existing constraints or opportunities from the place they are.
- The legal framework rules the bottom hemisphere of the compass, while policies and initiatives aiming to behavioral change dominate the upper hemisphere.

This MIND-SETS logic has undergone a participatory evaluation with 50 transport experts and remotely through a Delphi survey with 141 stakeholder from 104 institutions across the continent. This process aimed at providing grounds for this new conceptual approach to mobility analysis and assessment, planning and service development all along four key future mobility challenges:

- Mobility automation
- Seamless mobility
- Smart and virtual mobility
- Sustainable and inclusive mobility

The project is now tailoring the approach to meet the needs of the target groups (policy makers and planners; research; products and services providers), to design a decision support instrument providing insights of the relative importance of different drivers and barriers that influence users' mobility choices in their lifestyles (social, economic, psychological spatial, etc.). The MIND-SETS guidelines and MIND-SETS Knowledge Centre, an interactive tool providing a simple logic for stakeholders to follow while making mobility decisions, will be available for the conference.

MIND-SETS produced public reports: A multi-disciplinary review of the roots of mobility behavior (D2.1); A review of mobility behaviour in current transport policy and planning (D2.2); A new approach to understanding mobility behaviour (D3.1); The views of European experts on the new approach, in relation to key mobility trends (D3.2); A way forward for transport policy makers and professionals in the new mobility environment; such as the new sharing economy (D3.3).

www.mind-sets.eu

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Tjark Gall[1]

AN URBAN FRAMEWORK AS AN ADAPTIVE SPATIAL PLANNING TOOL FOR SUB-SAHARAN CITIES - AN EXAMPLE OF LILONGWE, MALAWI

Tags: Geographic Information System (GIS), key performance indicator, living labs, modelling tools, spatial decision support tool

Synopsis

This paper examines the scientific background and practical possibilities of a spatial planning tool, which provides an adaptive urban framework for the fast growth of sub-Saharan cities. It builds upon an indicator-based sustainability assessment of the area to provide a numeric basis for the generated planning suggestions. The proposed tool acts as a framework, in which the city can develop and grow, while it can be used by planning facilities and developers to determine particular challenges, counteract by suggesting various patterns, and continuously improve itself by extending the data-basis as well as adopting new planning regulations.

Abstract

Fifty percent of the world population is already living in cities, until 2050, it is expected, that more than two-thirds will live in urban settlements. The growth will mostly occur in African countries. With today about one billion people residing in Africa, until the end of the century, more than four billion people are expected and thus make up more than one-third of the world's population. The United Nations expect 28 African countries to double their population by 2100 and ten countries including Malawi are expected to quintuple (United Nations 2015).

These growth rates in combination with the increasing complexity of the planning processes and insufficient capacities in the planning bodies of many countries result in high demand for a new planning approach. When the preparation and approval of masterplans take long enough to find a completely changed situation and occurrence of new challenges, the concept of masterplans can just not fulfill the requirements of the future cities anymore. It is crucial to extend the process through automated calculations based on increasing and changing data to ensure and steer the development of well-performing and sustainable cities.

The paper focuses on three aspects. It starts with the indicator-based assessment, which acts as the foundation of the following planning process. These indicator systems evaluate the sustainability of the urban development and generate spatial and temporal comparisons. To date, most models have been created to describe existing city patterns and fabrics. The approach in this case is used to evaluate urban planning concepts prior to its implementation-and make data-based changes accordingly.

The second part is the development of the urban framework, which aims to find ways of dealing with the upcoming and already existing challenges. My experiences staying one year in Malawi, detailed

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analysis of former plans, recent research papers and reference projects, concluded in the diagnosis, that due to too fast changing circumstances an adaptive system is needed, which even works if the development varies enormously from the expectations. The proposed tool can be programmed by urban planners and provides several development opportunities, easier formalization tools and a simple way of ongoing digitalization of the existing situation for the responsible planners. However, one of the most crucial parts of an effective application is a set of planning principles to guarantee a sustainable and inclusive growth.

The last part is a broad analysis of the existing technical solutions and possibilities of integrating the developed process in the actual planning infrastructure. In my project, it is realized through Grasshopper in combination with Rhinoceros. With the help of this application it is possible to define specific or ranges of values like the number of floors, percentage of public space, grid sizes etc... It is based on spatial networks, which are defined by existing water and green structures in the periphery of the city, as well as other geographic features. Further, there is a big focus on the integration of passive concept to improve the urban climate and decrease the energy consumption. Therefore, the different grids are orientated for an optimal shading and ventilation according to the local climate.

The paper concludes with an analysis of the main advantages of the tool, as well as its technical and ideological challenges and how they might can solved. Even if urban development decisions always need to be adapted to the country and site-specific conditions, the challenge of social housing and fast urbanization is comparable in many locations around the world and mostly in sub-Saharan Africa. Therefore, the methods and results of this paper can function similar at other places and are generally applicable, even more through the ease of adapting and re-selecting indicators, climate environment, and site-specific planning principles.

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Chiara Garau[1], Paola Zamperlin[2], Margherita Azzari[3], Paolo Nesi[4], Ginevra Balletto[5], Michela Paolucci[6]

THE ROLE OF KM4CITY DASHBOARD IN URBAN POLICIES: GOVERNANCE STRATEGIES FOR DYNAMIC URBAN SYSTEMS

Tags: smart urban governance; urban dashboards, urban policies, open data, dynamic city

Abstract: The purpose of this paper is to identify possible relationships between the dashboards used to monitor cities, by acquiring dynamic/real-time data, and the urban policies, aimed at adapting strategies and actions for city users (for instance: policy statements, economic and financial agreements, etc.), relatively to the case studies of Cagliari and Florence (Italy). Urban dashboards are a valid support for public administrations, by giving solutions to city users not only for quality of urban life and, more generally, for a renovated urban wellbeing, but also for providing summary information to urban policy-makers. The innovative contribution proposed by the authors intends to expand current uses of the big data platform "Km4city", created and developed by the DISIT lab

(http://www.km4city.org/), in a direction that includes management and monitoring of institutional documents with impacts on urban policy, currently not covered. In other words, the management and monitoring of public initiatives (in the form of political agreements, regulations, recommendations, etc.) are evaluated starting from their coming into force and are correlated with other sources of information about the city. This data are acquired through sensors, Wi-Fi, mobile application, in order to allow feedback actions or reshaping of the same actions, as a result of in progress and *ex post* valuation processes.

Based on these premises, the article is divided into three main sections. The first section analyses the most used urban dashboards, through a theoretical approach. These dashboards, selected by similarity with km4city, are evaluated for technical and effectiveness aspects in the representation of the variables and trends. The second evaluates the main strategic political agreements, involving the two urban contexts under study (Cagliari and Florence). The third part assesses and tests the main indicators present in the big data platform, able to represent and measure the goodness of the agreement over time. In other words, the authors intend to combine the governance agreements of urban systems with a procedure of evaluation, both internal (within public administrations) and external (with reading and understanding forms easier because addressed to citizenship).

The final section summarizes the outcomes, not only with a value related to the goodness of the agreements, but also with a more extensive significance, due to the broader congruence of urban policies oriented towards sustainable and competitive development of cities under study.

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MAPPING CITY INDICATORS METHODOLOGIES

Tags: smart city, city assessment, city performance, smartness indicators

Abstract:

INTRODUCTION

In the current international context, cities are taking on a new role and leadership as they have become nodes that organize and articulate the global economy. The world is undergoing the largest wave of urban growth in history. New multidimensional challenges are emerging, associated with the urbanization trends: sustainability, resilience, climate change, environment, inequality, migration, urban sprawl, urban services and governance.

Current and future cities are shown as a system of systems, in which cultural, economic, social and geographical conditions are unique for each one. So, new holistic and analytical approach is needed to understand a city. Nowadays, the Smart City concept appears as an opportunity for urban management and planning to face these challenges. Innovative visions are needed for improving cities' performance.

OBJECTIVES AND METHODOLOGY

In the Smart City context, city indicators and purpose oriented metrics emerge as a tool to assess, measure and perform how ICT technologies and its use affects the management of cities and the citizens' quality of life. They are revealing as a good approach to this new socio-technological model of the city as they help to analyze and understand their relationships and functioning. Metrics have begun to attract a growing interest among policy makers, resulting in the proliferation of projects and international working groups on this subject. Meanwhile, there are numerous international multidimensional city assessment methodologies that serve to measure the track and final impact of their smart strategies and to compare their solutions based on principles of sustainability, efficiency of services and citizens' participation in several fields such as ICT, mobility, environment and energy efficiency.

These methodologies analyze the "smartness" of a city but differ in their objectives, metrics, scopes and therefore its results. In many cases they are conditioned by the availability of information and the dataset homogeneity and reliability. In general, the methodologies are not standardized, grouping different indicators to simplify each urban reality. Somehow, they are biased, subjective or they follow other criteria than the common interest. In addition, it is impossible to guarantee that these

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comparisons are able to assess subjective characteristics that depend on the context of each urban environment and morphology.

Nevertheless, these urban indicator systems are an important step towards homogenization and characterization, for measuring and comparing cities. In order to identify their limitations and to highlight the need for an international standard, it is necessary to clarify which parameters must be measured to achieve maximum efficiency in resource management of cities and to confirm whether the objectives are being met.

With this purpose, an analysis of more than 80 different metrics based on systems of indicators, indices, benchmarks and rankings with international and holistic vision scope was developed. The assessment method consists of several phases. Taking into account the cross-cutting issue of the smart city concept, the first step aims to gather a wide set of international methods from academic papers, international organizations and private companies. After that, a quantitative and qualitative review is applied to focus a selection representing the most accepted ones. Finally, a detailed analysis is developed identifying relevant aspects as sustainability, cross-cutting nature, update, city applicability, database reliability and indicator calculations.

EXPECTED RESULTS

The challenge for cities is to recognize which metrics fits best their needs, resources and goals. The results of this research are aimed to contribute to the development of a reference methodology adaptable to each city context, to improve the strategies optimizing city resources, and to identify problems and future opportunities raising the general awareness. It is yet to come the implementation and contextualization of this 'smartness' to each urban reality and, certainly, it is a challenge we must face for future cities.

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Francesco Geri[1], Sandro Sacchelli[2], Iacopo Bernetti[3], Marco Ciolli[4]

URBAN-RURAL BIOENERGY PLANNING AS A STRATEGY FOR SUSTAINABLE DEVELOPMENT OF INNER AREAS: A GIS-BASED METHOD TO ENHANCE FOREST CHAIN

Tags: spatial planning, wood energy, supply/demand ratio, suitability model, multicriteria analysis

Abstract: The use of forest biomass residues to produce renewable energy is beginning to be considered an extremely interesting option, especially in those European mountains where, due to socio-economic issues, forest is expanding at the expense of open areas and in general forest biomass is growing. Nevertheless, the evaluation of the real feasibility is conditioned by several factors, first of all the conservation of Ecosystem services and ecological sustainability but also the energy balance offer/demand at basin or administrative level.

With this work we describe the application of the spatial-based *r.green.biomassfor* model to calculate the energy available from forest biomass residues in a case study. The tool allows to compute bioenergy availability from ecological and economic point of view taking into account several environmental, technical, normative and financial variables. The area *Municipalities Union of Appennino Pistoiese* (Tuscany region - Italy) was selected as a case study. This territory represents an interesting example because it is paradigmatic of the situation of an inner area of the mountain Apennines and because the area definitely needs strategies to contrast demographic abandonment as well as to improve socio-economic conditions. The work takes into account the real appropriateness of present urban buildings to be served by biomass energy plants as well as the offer/demand balance at basin level. In particular, the suitability of district heating plant (DHP) implementation was computed by means of a multicriteria analysis (MCA) model able to combine different parameters: i) yearly energy need at building level, ii) building density, iii) distance from gas network, and iv) accessibility of buildings/urban context. The MCA technique involved different experts and stakeholders to choose the parameters and to assess the weight to be assigned at each one; in this phase a participative approach based on Analytic Hierarchy Process (AHP) was carried out. Once DHP suitability and potential energy demand have been calculated, the basin energy density was computed. It represent the ratio between ecological (potential) bioenergy offer and demand. Optimal localization of DHP were then depicted at geographic level in order to analyse technical as well as economic availability of bioenergy supply. The implementation of new DHP was defined for basin with both high supply/demand ratio and high buildings suitability.

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Results can be reported at multiscale level from pixel to Municipalities Union context. In our examples the output highlighted - for each municipalities - the following data: i) yearly economic energy availability from forest residues, ii) total yearly amount of traditional forest assortments (roundwood, wood pole, timber for wood packaging, fire wood) and iii) financial performance of the whole forest chain (expressed as total net revenues). A series of scenario have been performed through a sensitivity analysis. In particular, the absence/presence of bioenergy production as well as the variation of woodchip price stressed the high importance of wood residues valorization for the improvement of forest chain. The activation of bioenergy production can increase traditional timber extraction from 19% to 40%, according to woodchip price also maintaining the sustainability of production process. In addition, an improvement of financial parameters is represented by augmented added value of forest-wood chain (increased from 35% to 68% in respect to base scenario). Implemented tool allows to compute real availability of supply/demand ratio. As matter of fact, unless an high value of forested area index for the studied context, a cover of only 19% of high suitability demand is shown. Therefore, final remarks of the work have been concentrated on potential integration of bioenergy with other renewables as well as strengths and weaknesses of spatial model.

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Luca Giovannini[1], Claudia Carani[2]

PROJECT SU.MO: UNLOCK THE POTENTIAL OF EXISTING DATA FOR THE GOVERNANCE OF SUSTAINABLE MOBILITY

Tags: connected citizens, Geographic Information System (GIS), spatial decision support tool, place-based policy-making, behaviors and trust relationships

Abstract: Project SU.MO (http://www.climatekicemiliaromagna.it/en/sumo) is a Climate-KiC pathfinder project. The aim is to evaluate the technical feasibility and the marketability to cities administrations of a service that integrates existing data coming from current sustainable mobility initiatives and then processes them providing standardized analytics in support of decision making on mobility plans.

The integration and the analysis of available data on sustainable mobility is essential to cities to be able to establish an accurate monitoring of the current conditions and to take decisions or plan interventions based on quantitative data. Without having a clear and reliable picture from data it is also impossible to evaluate and valorize the results of incentives and investments on sustainable mobility. However, even if cities and regions are currently adopting a large number of ICT-based sustainable mobility initiatives (apps, sensors), the data collected are mostly not being used by cities for analysis because of the costs related to the effort.

The demand and needs of the cities on the theme were investigated with a survey of the current initiatives in Europe (data gathering solutions adopted, mobility data types involved, what mobility planners do with them) and via the involvement of pilot cities at Italian and EU level in a survey to map the initiatives and projects active in their territories (available analysis tools, barriers affecting the use of the data, willingness to pay for an analysis service).

The technical feasibility of the project was verified by developing a prototype demonstrator to test and evaluate the potentiality of the analytics service with real data from the involved cities. The piloting was focused on 2 pilot cities (Bologna and Modena, both in Italy) and on a limited input dataset:

- The full road network (including bike and pedestrian lanes) taken from OpenStreetMap
- A set of bike GPS trips collected by citizens via 2 specific apps:
    - Cycling365 App, providing the data of the participants to the 2015 European Cycling Challenge in Bologna, covering the whole month of May 2015.
    - WeCity App, providing the data for the bike trips of the citizens using the app within the city of Modena, covering the month of January 2016.

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The service prototype consists of a data elaboration module and a web client to access to the analytics and query the processed data. The activities on the data elaboration module focused on the definition of the minimal requirements in terms of format and content of the input data (road network, GPS trips, etc.) and on the implementation of a data processing algorithm to map-match the cloud of GPS points of the input GPS trips to the underlying road network.

The map-matching of points opens up the possibility to make query analytics about mobility data directly at the level of the road network (arcs and nodes). In the current implementation, depending on the parameter settings, the map-matching algorithm was capable of reconstructing the full trip on the network for up to 85% of original GPS point trips.

Three types of useful analytics of increasing complexity were identified in the project:

- Critical hotspot analysis (origin and destination point clusters, critical crossings, out-of-network trips, etc.)
- Traffic flow analysis on road network (average speed, density and flux per driving direction)
- Origin-destination analysis with user input (isochrones, best path on network with different loads, traffic flow repartition between two nodes)

In order to demonstrate the technical feasibility of the above analytics, the tool for traffic flow repartition analysis was developed in the web client prototype, together with a simplified version of trip density analysis on the road network.

The prototype tool was positively tested by the pilot municipalities and consequently received a second tranche of funding to be further improved and put to the test of the market in real business cases.

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Luca Giovannini[1], Piergiorgio Cipriano[2], Sara Picone[3], Solenne Tesseron[4]

ACCOMPANY CITIES IN ENERGY STRATEGY: THE ACCENT SMART CITY VIEW

Tags: energy planning, climate change, buildings, Geographic Information System (GIS)

Abstract: **Accompany cities in energy strategy** (ACCENT) is an Innovation project developed within the Climate KIC (http://www.climate-kic.org/), Europe's largest public-private innovation partnership, working to address the challenge of climate change.

ACCENT is an innovative tool conceived to support urban energy planning for buildings which provides maps and data to design actions reducing the carbon intensity of the city: https://www.accentproject.com/

Cities consume 78% of the world's energy and produce 60% of its emissions. As urban population is increasing worldwide, cities are crucial to emission reductions efforts. In Europe, buildings are responsible for more than 40% of the total energy consumption, thus the building sector can drive the energy transition we need.

The project started in 2014 with a proof of concept phase, intended to identify the needs of key stakeholders with respect to energy planning. After having validated the feasibility and added value of its offer, ACCENT has entered a demonstration phase in 2015. In order to support the energy transition of European cities, ACCENT will provide city stakeholders (local administrations, but also businesses and citizens) data and tools to map and diagnose existing energetic situation, and design energy strategies which maximize energy efficiency. ACCENT is being developed and tested in 4 pilot cities in Europe (Paris, Valencia, Reggio Emilia and Ferrara) and will be available for every city at the onset of 2017.

The energy calculation implemented is based on the European standard EN 13790 and uses also some hypothesis and simplification proposed in the European project TABULA: for every building, an estimation of the consumption for heating, cooling, domestic hot water and specific electricity are calculated as presented below:

- **Heating and cooling**: Energy losses by transmission and by air change are calculated considering the characteristics of the building (surfaces, thermal resistance of walls, building type). Monthly heat gains are calculated considering internal heat gains and solar heat gains (calculated on every surfaces of the buildings in function of its orientation and inclination). These results are used, as well as climate data, temperature setpoint in the building, losses coefficients and occupancy ratio to determine the monthly energy need for heating and cooling.

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The type of heating system, the energy used and the year of installation define a global efficiency of the heating installation and enable to calculate the heating consumption ratio. The same method is used to determine cooling consumption ratio.

- **Domestic hot water**: an annual ratio per square meter is used to characterize the domestic hot water consumption. This ratio depends on the type of building use and the occupancy data (for residential buildings). The type of domestic hot water system, the type of energy used and the year of installation define a global efficiency of the domestic hot water installation that enable to calculate the energy consumption associated.
- **Specific electricity**: an annual ratio per square meter is used to characterize the specific electricity consumption of the building. The ratio depends on the building type.

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Anna Graber [1]

CAFÉ DES VISIONS: HOW TO ANTICIPATE AND CONSOLIDATE URBAN NEGOTIATION THROUGH ART; A PRACTICE-BASED ARTISTIC RESEARCH

Tags: Social and spatial justice, unlocking development potential, citizen's priority first, place based policy making

Abstract: Public spheres reflect the value systems of an urban society. Today as well as in the future, the greatest challenge to urban societies is to integrate interests and needs of different players and to tackle the related negotiation process so that social resources are freed. This leads to the research question: *What kind of city life should be designed to trigger a civic and sustainable development? How can art contribute to urban negotiation?*

The Art in Public Spheres project *Café des Visions* establishes forums at unconventional locations in the public sphere to test new ways of discussing and working out together how public spaces shall be designed and used.

The goal is to link ideas and spaces by gathering implicit knowledge from people on the street by using their everyday experience in public spaces as expertise and to make this knowledge artistically visible in a way that allows it to be put at the disposal of creators and users of public spaces while at the same time challenging and blurring their traditional roles. Or with the words of the French sociologist Henry Lefebvre: 'City consumers shall become city producers.'

The artistic intervention *Café des Visions* serves as a nomadic research station transforming urban non-places into mobile village squares. Wishes for the restructuring of a specific public space are gathered there by interviewing guests at the café. The guests are invited to draw their wishes on the ground with white water-soluble paint. This gesture of inscribing the site with requests directly connects idea and space.

The artistic approach consists of treating the constructed and the lived cities as if they were white spots on maps of ancient explorers. Data is gathered from drawings and logbooks, by semistructured interviews, participant observation and photographic investigation as well as by documenting the collected wishes. So the methodology combines artistic strategies like appropriation and production of spaces with methods borrowed from sociology or urban geography and adapted to the artistic process.

After the Café's intervention, the data is qualitatively analysed. The results are drawn typographically and published as city mappings on which wishes superimpose the grid of houses and streets.

The outcomes show everyday knowledge closely linked to the actual discourse in urban sociology or public space/public life studies. From the social demands of users, demands on the design of public spaces can be derived. People want to be invited to linger. The most frequently mentioned wishes at the Café are easily met and not expensive: green that gives the place its atmosphere, shade and

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comfortable seating. Places that beckon also promote communication. This requires movable seating that allows eye contact during a conversation and a flexible group size to speak at a pleasant distance.

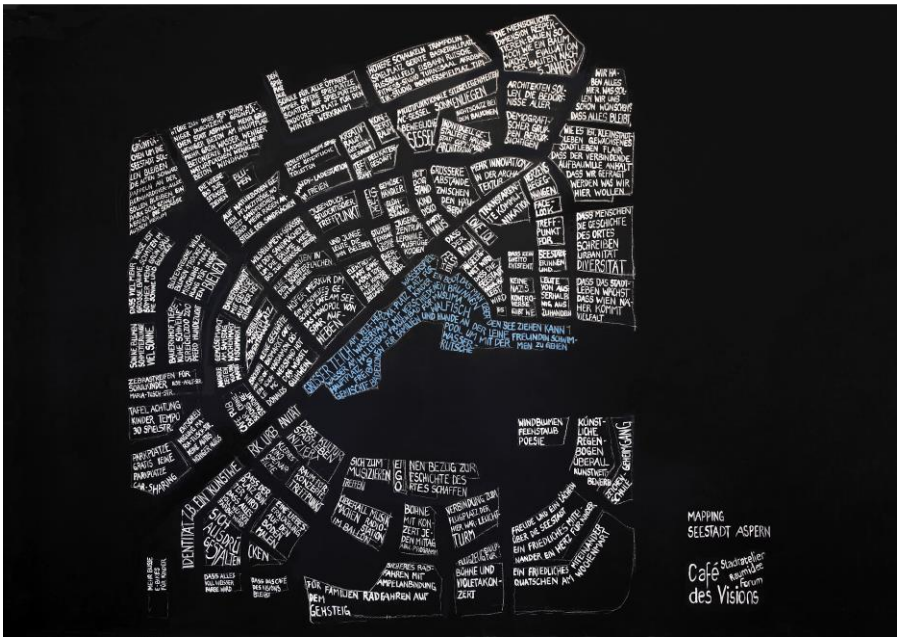
A music garden is an example of an unconventional idea that has the potential to give a place a unique atmosphere. It would become unique and different from others and give passers-by a real choice as to where they wish to spend their time.

The moribund public described by Habermas needs new meeting points that are suitable and not commercially oriented. If there is no gap between customers and service providers, humans meet at eye-level. The responsibility for the place is then shared by everyone.

Therefore, *Café des Visions* recommends that every neighbourhood should have a village square that is planned and constructed by the inhabitants.

An artistic collection of wishes involves people, that wouldn't take part at conventional participatory meetings. With the artistic method of open thinking an important step of a planning process can be made accessible to many people, it can build a bridge between professional planners and users in advance and provide a base for an ongoing collaboration. It brings back the imaginary to planning and to public spaces and it makes the creation of city live to an *oeuvre*.

Foto: Anna Graber: Café des Visions. Mapping Seestadt Aspern, Vienna 2015



Wallpainting. 5mx2.5m, work in progress for urbanize! Festival für Stadterkundungen, Vienna 2015

2nd International Conference

Smart and Sustainable Planning for Cities and Regions 2017

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Gianluca Grilli[1], Silvia Tomasi[2], Adriano Bisello[3]

ASSESSING PREFERENCES FOR ATTRIBUTES OF CITY INFORMATION POINTS: RESULTS FROM A CHOICE EXPERIMENT

Tags: choice experiment, WTP space, planning, smart totems, smart city, ICT

Abstract: The diffusion and integration of the information and communication technologies (ICT) in urban environments is a pillar of the current smart city development approach. Sensors, monitors, and portable devices allow the acquisition, exchanging and querying of data (or even big data) in real time. Within this context, information points, informally called "totems", are becoming important infrastructure for modern cities, because they allow both tourists and inhabitants to be updated about events, parking, public services and much more. Services that can be included are many and variegated, thus when planning their construction, public decision-makers should assess which of the manifold options should be included. Preferences may be case specific, because different cities have different attractions, services and activities to offer. For this reason, what is important in the planning phase is to identify an efficient and cost-effective set of services that will likely be helpful for future users. In order to better address individual needs, surveys investigating preferences may be helpful in order to collect data about preferred solutions.

Starting from these consideration, this paper reports on a Choice Experiment (CE) carried out in the municipality of Bolzano (Italy), aiming at identifying the best composition of attributes of informative points that can be constructed around the city. CE is a non-market valuation techniques, in which it is assumed that utility individuals derive from goods and services is given by the sum of utility derived from single attributes of such goods and services. The good to be evaluated is decomposed in its relevant attributes, each attribute is associated with a certain number of levels. The combination of attributes and levels allows the creation of different alternatives, each representing a hypothetical solution for the final good. Two or more alternatives are included in choice cards that are presented iteratively to respondents, which are asked to indicate their preferred alternative in each choice task. When a monetary attribute (representing the cost associated with the alternative) is included, it is possible to estimate the Willingness to Pay (WTP) of the sample for each single attribute. Results of the CE allows identifying the solution for which people shows positive WTP, meaning that the alternative provides higher utility compared to the present situation.

In order to apply the CE to Bolzano, six non-monetary attributes where chosen, indicating possible characteristics of the totems: the presence of SOS calls, wifi, drinkable water, information about the city, information about mobility and availability of electricity for devices, cars and bikes. A seventh attribute was the cost associated to each alternative, included as a monthly ticket to access the totems. A questionnaire survey has been created and administrated face-to-face all around the city to potential users of the totem. Data were analyzed with the aid of a Multinomial Logit Model (MNL) and

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a Mixed logit Model (MXL), the latter being more suitable to account for preference heterogeneity of respondents. In order to facilitate interpretation of the results, models were estimated in WTP space, in which regression coefficients represent the WTP for the attribute. Results indicate that wifi and information about traffic and mobility are the preferred attributes, as well as some levels of information. Such attributes should therefore included in the final design of the totems to accomplish preferences of the potential users.

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Katharina Gugerell[1], Robin Neef, Stefan Verweij, Christian Zuidema

'YOU CAN FEEL THE HOT BREATH!' - EXPLORING TENSIONS BETWEEN SPECIFIC PROBLEMSOLVING AND INSTIGATING EXPLORATIVE INNOVATION IN DUTCH LIVING LABS

Tags: Living Labs; Co-Creation; Self-Governance; Innovation; Spatial Planning

Abstract: Contemporary spatial planners are confronted with wicked problems, which require multilevel, multi-actor, and multi-disciplinary approaches that transcend conventional administrative boundaries and fragmented responsibilities in spatial planning.

Just recently, living labs were introduced as a novel environment and approach to meet those wicked and complex problems (Dell'Era & Landoni, 2014). Living labs are publicprivate-people-partnerships (Leminen, 2015), aiming to foster experimentation, pioneering, and learning through co-creation to instigate innovation processes in planning, policymaking, and multi-actor governance (e.g. Bulkeley & Castan Broto, 2013; Luederitz et al., 2016;). Despite their wide popularity, it is unclear if living labs meet the high expectations on creating innovative results and institutional designs they set. Analyzing these expectations requires not only (1) evaluation of living lab practices, but also evidence-based research on the (2) constitution and (3) functioning of living lab practices. Evidence-based research on these matters is lagging behind the more conceptual discussions currently surfacing in the literature (e.g. Van Bueren, Karré, and Vanhommerig, 2015). Consequently, the dynamics of the living labs are not thoroughly understood.

In this paper, we report our research on Dutch living labs. We will focus on the actual dynamics and if the practices are actually meeting the expectations of the leaderships towards the living labs. Exploring the tensions between specific problem-solving processes geared towards predefined solutions and more explorative processes creating innovations. Based on a comprehensive literature review, we developed a conceptual framework and applied it in a qualitative comparative analysis of six Dutch living labs. Cases concern innovations in climate change adaptation, ICT, and mobility and infrastructure, in order to ensure contextual variety and legislative adoptability.

While the literature shows a broad variety regarding the constitution of living labs, our research illustrates that in their daily practice, living labs actually follow a 'container' and free-form concept, where actors and methodologies are informally assembled in a 'whatever goes' strategy (Schuurman, 2015) to fill the 'container' and produce suitable outcomes. Our cases illustrate that living labs as self-governing facilitators are wedged between profound expectations from political or business leadership to develop ready-made solutions for specific problems, whilst at the same time to create spatial, institutional, and business innovations. As a consequence, tensions can easily emerge between political expectations, wishes of facilitators or initiators of the living labs and the actual participants, including companies, NGOs and governments, civic initiatives and the wider civic arena.

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Despite the expectation to 'do things differently' and to instigate innovation, "(…) you can feel the hot breath" of the leadership, funneling the labs for success that showcases the organizations' capacities and readiness for a competitive global environment. The superordinate urge for success and wish for innovative showcase solutions results in a narrowed action space, abating pioneering, trying-out, learning and failing (Cumming et al., 2012; Loorbach and Rotmans, 2010). This potentially impedes long-term spatial and institutional innovation and organizational learning (Nevens et al., 2013). We argue that tensions between open (exploration, innovation, double/triple loop learning) and closed/focused (concrete problem solving, single loop learning) approaches occur as a result of exaggerated expectations and innovation-showcasing (Van Bueren, Karré, and Vanhommerig, 2015).

Acknowledgements:

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Katharina Gugerell[1], Mario Platzer[2], Martina Jauschneg[3]

GAME OVER OR JUMPING TO THE NEXT LEVEL? EXPERIENCES FROM TESTING THE COLOCATEDSERIOUS LEARNING GAME MOBILITY SAFARI IN VIENNA

Tags: Serious Games; Urban Governance; Mobility; Learning; JPI Urban Europe

Abstract: Complex urban matters require the involvement of a broad variety of stakeholder and actors that transgress the traditional boundaries in spatial, mobility and urban planning. Civic engagement, participation and democratisation of decision-making processes are core components and requirements in current policy making. However, communicative approaches are often experienced as unsatisfactory for the involved parties, either because so called showcase participation dominates and actors are confined in 'pre-formatted spaces' (Muller, 2009) of participation or the lack of knowledge and capacities to embark a meaningful dialog between governmental actors, administration and citizens (Ekman and Amnå, 2012; Milam and Howell-Moroney, 2010).

Serious games are expected to be entertaining and engaging. As serious learning technologies they should appropriate knowledge, educate target audiences, support capacity building and serve as imminent feedback loops to decisions taken in the game. Civic learning happens when the learning process covers public and societal matters and 'civic actions are transferred to learning experiences' are called civic learning (Gordon and Baldwin-Philippi, 2014) and demands more complex learning approaches such as inquisitive or triple loop learning (Lozano, 2014).

SMART technologies and the emerging debate on SMART cities have pushed the agenda, and digital tools, games and gamified environments gained increased attention and popularity in urban planning and mobility (i.e. Poplin, 2014; Tan, 2014). However, it is important to remain critical, if those games produce durable (long-term, structural) effects. Like participation the proliferation and rise of games and digital tools is contested and profoundly questioned, pointing at the fragmentary implementation of game elements, lack of story telling and player experience and mainly producing so called 'clicktivism' (Bogost, 2016).

In our article we are reporting our initial results from co-designing and play-testing the colocated serious game 'Mobility Safari'. Mobility Safari is a co-located, analogue learning game. Its goal is to raise awareness, increase literacy on smart and sustainable urban mobility, Vienna's mobility policies and introduces the broad variety of mobility options to scrutinize current mobility practises. The board of the game illustrates the city of Vienna and translates mobility and urban policies into the game board, referencing the real-world context, and creating links to internal and external conditions and externalities, such as climate change, peak-oil, urban growth, change in political office.

Play testing the game confirms the activating and learning potential of the game that allows an easy and low threshold entry point in civic processes and participatory approaches. While single loop

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learning is facilitated via quiz questions, inquisitive and experiential learning mainly takes place during the debriefing. While the game play itself is entertaining, activating and engaging, the debriefing facilitates reflection on collective and individual behaviour, strategies, practices and values is taking place. Game experience and real world are linked and contextualised during the process of debriefing. Thus, our research confirms (i.e. Crookall, 2010) that for facilitating serious games, debriefing is a core activity within the gameplay. We conclude that the debriefing is a crucial moment to facility more complex learning processes.

Evaluation and testing of the game is following a mixed approach combining a standardized questionnaire (n= min.70) and qualitative comparative analysis based on participatory observation and a debriefing/focus group.

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Milad HeidariSoureshjani

CHALLENGES OF SOCIAL SUSTAINABILITY OF IRANIAN NATIONAL MEHR AFFORDABLE HOUSING DEVELOPMENTS, RETHINKING FUTURE STRATEGIES FOR LOCAL GOVERNANCE

Tags: affordable housing, community sustainability, urban design, local governance, Iran

Abstract: Housing has always been defined as a place in which human resides, relax and establishes attachments with its context, aside from its fundamental function as a shelter. Various countries have had faced an accelerated necessity to provide housing for their people in some periods as national wide policies, while Iran is not an exception.

In Iran, Mehr housing project (MHP) as a national housing policy, aims at removing the price of land from housing expenditures and provide people raising demand for affordable settlement while promoting quality and quantity of housing.

One of the major challenges of MHP was that they were built outside the mother cities in segregated lands and in lack of urban designers and managers they didn't consider several urban governane variables and did not contributed to social inclusion formation. Manzarieh, a 180 hectares project with 6800 housing units in Shahr-e Kord, is a case study of the project. The result has revealed in abandonment, housing modification and in some cases immigration.

Along with compulsory settling in the area, it is noted that Bakhtiary people have remained their traditional life style and trying to adopt with the new unaccountable built environment. Children and women are another lost fragment in the design of public realm in this project. The concept of housing especially is in close relationship with home patch and a nature associated design for Bakhtiary residents, while the concept is not shaping due to lack of socio-cultural studies for all Mehr housing projects around the country. These ideas could form a base for an action plan to promote and revive Mehr housing projects.

This proposal is going to suggest some requisite design & governance qualities needed for accountable housing by utilizing some practical experiences and suggest future strategies for better governance. Aside from that, the effects of government policies in governance of the whole process from commencing the project to managing its environment would be briefly criticized.

The research was undertaken by analyzing 2 selected public spaces of Manzarieh and the use of qualitative research methods. The main data collection is conducted using the 'unobtrusive observational method', which tracks human behaviors in space through 'disguised field analysis. Numerous repetitions of similar observations are undertaken at different times of the day and night in order to increase the validity of the results and given suggestions. The repeated behavioral tracking of the 2 selected public spaces of Manzarieh with different uses and activities are analysed based on 'evaluative observational variables' to ensure valid conclusions based on collected observations. Observation of pedestrian behavior together with historical records of Bakhtiary community are carried out to complement what do the inhabitants preconception about Manzarieh housing

environment. We'll look at some outstanding practical experiences from various countries around the world and have a comparison to Iran's local and central government case.

The presentation would be accompanied with many MHPs cases and some challenging samples, mostly from Manzarieh case along with some interesting and simple inquiries to grasp full attention of audiences.

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Milad HeidariSoureshjani

FROM SOCIOPETAL TO SOCIOFUGAL, A REVERSE PROCEDURE OF TEHRAN URBAN SPACES, CASE STUDY RETHINKING FUTURE DEVELOPMENTS OF SHEMIRANAT

Tags: Sociopetal, sociofugal, Tehran, space syntax, urban spaces, design method

Abstract: Socialization plays significant role in people physical/mental health whilst urban spaces contextualize it by means of spatial provisions. Tehran urban spaces have recently influenced by some construction market tendencies and false government policies as well and resulted in social activities alteration. This paper aims at bringing to light sociopetal attributes of urban spaces and investigate socialization status of Tajrish (Shemiranat) as the case study through space syntax analysis along with "unobtrusive observational method" as complementary. The results suggest some contradiction between observed people behavioral pattern and space syntax forecast in terms of illustrated sociopetal ideal framework. The paper relies on developing a new urban design methodology to describe sociopetal attributes of urban spaces and superposition of both observational and space syntax analysis in order to make a more comprehensive survey and reduce inconsistency between noted methods. The paper concludes by utilizing these findings to recommend optimized scenarios that planners, designers, and policy-makers can employ for future developments of Shemiranat area.

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Harald Hoeckner[1], Elen-Maarja Trell[2], Christian Zuidema[3]

SMART CAMPUS ZERNIKE GRONINGEN: A LIVING LAB FOR SMART(ER) CITIES?

Tags: smart city, smart campus, living-labs, integral vision

Abstract: This research proposes a progressive, 'user-based' definition of a 'smart city' and introduces preliminary results from a project where the authors developed a vision for a 'miniature smart city' - the Zernike campus of the University of Groningen. The campus, with its own city-like, dynamics, constitutes an excellent opportunity for experimenting with 'smart' solutions and challenging our understanding of what constitutes a 'smart' place. The concept of a 'smart city' has quickly become a buzzword in recent research and city-branding alike. Contested definitions of what constitutes a smart city exist as well as controversial examples of success and failure when trying to implement the smart city ideas in practice. Starting with the assumption that characteristics defining a smart campus are equally diverse as and transferrable to the ones necessary for a smart city, the authors began with a humbler goal to create an understanding of what constitutes a successful smart space in their own 'backyard'. First, based on a systematic literature review as well as a document analysis and interviews with experts involved in smart city initiatives, an understanding of characteristics relevant and applicable for the project was created. In a best practice analysis, elements of Smart City Vienna, London and Amsterdam were investigated and integrated. Subsequently, in consultation with stakeholders, four main thematical priorities were identified: energy, mobility, health, and fun and function. The domain fun and function provides a realm summarizing creative implementations on site which not only diversify the space, but also consider the specific characteristics of the users of campus space. Within these domains the project aims to connect innovative, future oriented solutions and the latest technology with the wishes and ideas of the users of the space. Third, in combination with an urban design bachelor course taking place on campus from November (2016) to February (2017) authors and students reached out to the users of the campus with an invitation to together create a vision for their dream campus. As a result of three design workshops the students compete for the best design for a user-inspired smart campus. Fourth, a Maptionnaire questionnaire, an innovative survey tool combined with GIS solutions, was used to access a broad group of campus users and give them the opportunity to express their wishes, ideas but also discontent with specific locations on the campus. Next to the research university and university of applied sciences, the Zernike campus also hosts a variety of different businesses. Such a mix provides room for synergies, collaboration and learning opportunities. In order to equally involve the businesses, semi-structured interviews were conducted with their representatives in order to explore their potential involvement and wishes on developing the campus. Finally, as a result of these interviews, a business-partner and campus management 'matching event' will be organized in March 2017. The opinions, feedback and input of

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all these diverse groups of users of the campus feed in to the development of the vision for the smart campus. In its current phase, the smart campus is envisioned to be composed of: Solutions that include the latest technology, projects in compliance with high ecological standards considering the strengths and identity of the campus as well as a socially responsible development of the space with the greatest possible involvement of all its users. Eventually, a truly 'smart' campus is expected to become a more competitive, efficient, sustainable and livable space for all its users. This presentation will discuss the preliminary results across the different phases of the research: from the campus design workshop, the maptionnaire survey to the business-interviews and best practice case analysis. The presentation will conclude with a proposition for a user-based definition of a 'smart' campus / city.

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Christian Hoffman[1], Elisa Ravazzoli[2]

SMART TERRITORIAL RELATIONSHIPS TO COPE WITH THE RURAL URBAN DIVIDE IN MOUNTAINS REGIONS

Tags: Smart territorial relationships; Rural-Urban divide; Organisational Proximity; Spatial proximity; Rural Mountain Areas.

Abstract: Rural areas are important for food production and represent a reservoir of natural resources and highly valued landscapes, which provide long-term benefits for society in Europe. Not all rural areas have the pre-conditions and development capacity to become "rural areas in transition", i.e.: from a low-productive agriculture and rural-based economy towards a high-value agriculture and a growth oriented non-farm economy. Rural areas in transition are economically diversified: besides benefitting from processing and refining their natural resources for the global markets they also profit from creating local attractions and services for visitors and tourists (van Rheenen, 2009; and Start 2001).

Rural areas affected by demographic, economic and social problems like urbanization, depopulation, ageing, business relocation or job-loss are considered to be "in transition". They face the common challenge of creating high-quality jobs which consequently leads to generally lower incomes compared to urban areas. This threatens the transition process of innovative and sustainable development.

Recent studies indicate that well-functioning rural-urban relations (e.g. high quality food, handicraft products, water or energy supply or recreation and the tourist industry, etc.) can stimulate growth rates of urban and rural areas as their interrelatedness induces a more sustainable and inclusive form of material and non-material exchange. In the twenty-first century, Europe's rural-urban relations less likely involve contiguous "hinterlands", however they increasingly occur between non-bordering areas or actors.

In today's societies the role played by smart technology in the various sectors needs to be considered: interactions among people and across spaces do not only depend on "spatial physical proximity" but they are also based on "organizational proximity networks" (Copus 2012) without spatial interlinkage at all. Moreover, business relations are less and less constrained by physical distance.

Advanced web-technologies, automation processes or control techniques in industry 4.0 provide opportunities to enhance "organizational proximity networks" where different types of spaces, actors and objects can be connected virtually, in real time. Web infrastructures installed in public transport enable a multifunctional use of time while physically bridging spatial distances. Moreover, intelligent logistic solutions like the modal split from road to rail or autonomous driving solutions for cars and

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lorries enhance the efficiency of transporting goods and make the production spatially independent. This enables comparative advantages for rural locations and enhances rural-urban interconnectedness.

The paper discusses the potential of advanced technologies to create new a-spatial urban-rural relationships able to reduce the urban-rural divide and to create a territory that is an integrated functional urban-rural continuum. Precisely, it emphasises the discourse how technologies (web-technology, industry 4.0, etc.) can boost rural growth potentials in economic and territorial terms and how they foster the capacity of the local human capital to exploit new value added opportunities in transition areas.

Particularly for prosperous mountain regions these technologies can bridge physical distances, enable balanced living conditions and prevent further economic shrinkage and depopulation. They can support diversification and modernization strategies to capitalize local assets by including human, natural and cultural capital and improving virtual linkages.

According to the “proximity” discussion focusing on potential new and advanced “technologies”, the paper seeks to introduce an innovative concept of “smart territorial relationships” that readdresses rural-urban relations under an innovative perspective.

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Mattias Höjer[1], Tina Ringenson[2]

DIGITALISATION FOR ENVIRONMENTAL SUSTAINABILITY IN A REGIONAL CONTEXT - A FOUR STEP PRINCIPLE

Tags: Regional planning, digitalisation, environment, sustainable development

Abstract: During the last 100 years, the car has been a strong force in changing society. This has created cities with unsustainable car traffic volumes as is most obvious in countries such as the US, but is the case even in Stockholm, a city with relatively high public transport share. The development towards unsustainable car societies has been supported by planning through e.g. building ring roads and external shopping centres.

A rationale for this paper is to start discussing how we can avoid the same mistake again - planning for unsustainability, when digitalisation is changing society. Can we see how digitalisation can be used to shape a sustainable society? In answering this question, we need to look at transport, urban structure, and the often-neglected issue of how much building space is needed. We intend to focus the two latter points.

We aim to explore if and how digital aspects can be included in spatial regional planning, in a way that supports environmentally sustainable regional development.

Digitalisation and regional planning can be looked upon either from the perspective of how digitalisation is changing preconditions for planning (e.g. new distribution systems and activity patterns), or from the perspective of how digitalisation can be used to support an environmentally more sustainable urban region. We are here more interested in this latter perspective, where digitalisation is more a tool than an external development. The difference between the two perspectives can be formulated as the difference between explorative (or even predictive) scenarios as compared to transformative normative scenarios (as according to Börjeson et al, 2006). In this presentation we place ourselves in a futures studies tradition, but start out from what Stockholm and some other regions are currently doing in terms of digitalisation and regional planning. We then look into how those "activities" could support the work with achieving an environmentally sustainable region, and how their work could be expanded.

When exploring how to use digitalisation to reduce environmental effects, we use inspiration from the Swedish four-step principle for analysing the need for road transport investments.

That principle says that potential improvements of the transport system should be tried in a prioritized order of steps:

1. reducing transport demand and change of transport mode - e.g. pricing and planning

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2. more efficient use of current infrastructure and vehicles, e.g. traffic regulations and information
3. minor rebuilding of infrastructure
4. new investments and larger rebuildings of infrastructure.

Digitalisation makes it reasonable to create a corresponding four-step principle for spatial regional planning. We propose that when considering need for further floor space, consider the following alternatives, in this order:

1. reduce the need for space
2. make more efficient use of space
3. rebuild current buildings
4. invest in new buildings

This new principle makes sense with potential changes through digitalisation. The option to reduce the need for space comes from the potential to have access to more services through digitalisation, without having to own and store a physical copy. Space can be used more efficiently through better booking systems - e.g. short-term rental of apartments can lead towards increasing the overall efficiency in using space.

Rebuilding might not be as directly related to digitalisation, but the opportunities for rebuilding in a better way increase when digitalisation supports more varied use of spaces.

There is still a lot to explore in the relation between more flexible building and digitalisation, but already today we see this with e.g. cafés being used as workplaces off-rush hours.

Using the four-step principle when exploring how digitalisation can support an environmentally sustainable regional planning can be a step towards supporting a regional planning in an information society leading to environmentally sustainable regions.

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Seyed Mohsen Hosseini Farhangi[1], Sara Alsadat Hosseini Farhangi[2]

POLICY TO PRACTICE IN TRANSITION FROM CONVENTIONAL AGRICULTURE TO HI-TECH URBAN FOOD PRODUCTION SYSTEM. A CASE STUDY OF SHANGHAI

Tags: (Urban Agro-Food Production) (Hi-Tech Food production system) (Urban food system) (urban food production policies)

Abstract: Over the past few years, researchers, policy makers and planners turned their attention to sustainability transition of agro food systems. Much effort has been made to place food production in the urban agendas. Changing the spatial dimension of food production and its adaptation to urban lifestyle requires novel agricultural technologies and therefore transitions in socio-technical systems. Hi-Tech Urban Agro-Food Production Systems (HTUFPS) through vertical farming and hydroponic cultivation methods is one of the strategies for sustainability transitions of agro food systems that has been under examination in different countries. China with its large population and increasing level of urbanization is among the leading countries in development of HTUFPS. The Hi-Tech urban food production system has the potential to increase the local production of vegetable inside urban areas with minimum use of land; close the gap between urban and rural life style; connect urban residence with the food they consume; and increase knowledge about food and alternative food production methods. But current approach in Shanghai for development of HTUFPS can cause several issues such as negative impact on small scale vegetable producers, pressure on urban infrastructures and resources (i.e. water and energy systems), the change in appearance of city (i.e. facades), the conflict between human and plant ecologies, instable vegetable market as result of uncontrolled production of diverse foods, damaging the rural economy through a surplus supply by HTUFPS and uncertain regulations about the occupied interior or exterior spaces by HTUFPS. This paper studies the political, social and technological regimes that have an influential role in the rise of HTUFPS in Chinese mega cities, particularly in Shanghai. The multi-level perspective (MLP) and Actor-network theory (ANT) were employed to study sustainability transition of agro food production system in Shanghai. MLP was employed to study the external pressures at the landscape level and internal pressures that come from niche level of transition. The ANT explored the relations of human and non-human entities in the process of stabilizing this sustainability transition's actor-network. The data were collected by a mixed qualitative and quantitative approach through documentary research, in depth interview and survey. The collected data were used to define and track the influential actors and actants in the translation process from conventional agriculture to HTUFPS in Shanghai. This paper studies the role of various actants that are involved in transition from conventional agriculture to HTUFP including state government, Communist Party of China (CPC), local government, sub organizations of China Academy of Agricultural Science (CAAS) such as IEDA, State-Owned Companies (i.e. COFCO), Sino-foreign collaborations and private sectors. Although in China, State government has control over all transitions processes and reformations in socio-technical regimes, this research proposes that CAAS is the key component of transition to HTUFPS. The high rank of CAAS in Chinese political structure and its connection with both CPC and state government has put it in the position to define itself as the focal

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actor and consequently the Obligatory Passage Point (OPP) for other entities to enroll in actor-network of transition. And the agricultural reform policies announced through China's N.1 document and Five-year guidelines function as the intermediaries between actors to stabilize the actor-network and moderate the transition to HTUFPS.

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eurac research

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THE ROLE OF WATER SCARCITY IN MIGRATION OF FARM OWNERS AND WORKERS. A CASE STUDY OF RAFSANJAN, IRAN

Tags: (climate change) (water scarcity) (urban and rural development) (migration) (agricultural development plans and policies)

Abstract: As the vital resource for life, water has been a central theme on the international agenda for several decades. The impacts of climate change and drought have been highly problematic in developing countries. Agriculture and water scarcity have double-barrel effect on each other. Agriculture is the most important reason of water shortages in cities with agricultural based economy like Rafsanjan. The main agricultural product of Rafsanjan is pistachio. About 70 percent of total population of the city and its suburban areas are occupied in agriculture. Pistachio has an important contribution in economic situation of Rafsanjan's residents and the country. In the last decades the city has faced with an extreme drought, the risk of major crop losses and water restrictions for its population. Water scarcity and the decline of agriculture in Rafsanjan has influenced the social life and the economy of the city. The fall of agricultural industry and decreasing income of farm owners and relatively the amount of available job has had serious local, national and global consequences. Because of the available job opportunities in agricultural industry of Rafsanjan it has been a popular destinations for refugees from neighboring countries. But the decline of agricultural industry has result in migration of refugees from Rafsanjan to other countries especially in Europe. In a global level, this movement of refugees can affect refugee crises in European counties. The Local Agenda 21 for the city of Rafsanjan in one of global efforts that was made to save the city of Rafsanjan and its agricultural industry. The Local Agenda 21 for Rafsanjan is an UN-HABITAT Program. The Local Agenda for Sustainable Development has been seeking a strategy aimed at managing the living space and urban development. The program tried to find the required resources, evaluates and uses them for the development purposes. Despite the national and international efforts to solve these issues, increasing immigration rate has faced city with the risk of becoming a ghost town in the near future. This research has studied the impact of water scarcity and unsustainable agricultural practices in Rafsanjan on immigration of farm owners and workers and the impact of local, national and global development plans on adaptation of agricultural practices in Rafsanjan to climate change. The research has used a quantitative data collection method through a questionnaire consisting of 13 questions, which its content validity was confirmed by experts in the field and its reliability was calculated by the Cronbach's alpha. The target group of the survey were 200 farmers who have sold their lands and 180 people who were working for them and lost their jobs in past seven years. The result has shown that water scarcity was the most important reason for farmers to sell their lands. It also suggests that those who have abandoned agriculture were using unsustainable irrigation methods, were not familiar with any climate change resistance agricultural practices and no global or national program was supporting their activities. A large number of foreign agricultural workers who lost their jobs were living the in

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suburban areas, inside farms or refugee camps. Most of them are still unoccupied, living illegally with the risk of deportation and have the intention to migrate to a third country. The research concludes that the impacts of climate change on agriculture and is already alarming. The changes in precipitation and temperature which has led to water shortages in Rafsanjan has damaged the agricultural industry and consequently farmers and agricultural workers life. The study suggests that adapting agriculture to climate change through climate resistance and efficient irrigation system as a short term solutions and mitigation of climate change through adoption of sustainable agricultural practices as a long term solution are essential for future of cities like Rafsanjan.

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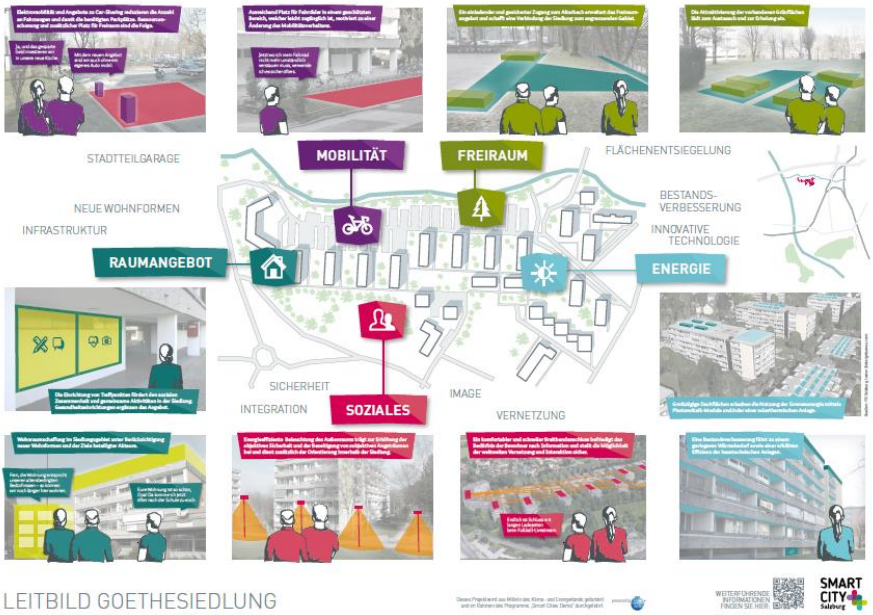
Smart and Sustainable Planning for Cities and Regions 2017

Bolzano/Bozen (Italy), 22-24 March 2017

Markus Karnutsch[1], Stefan Netsch[2], Thomas Reiter[3]

NEIGHBORHOOD DEVELOPMENT STRATEGY



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Markus Karnutsch[1], Stefan Netsch[2], Thomas Reiter[3]

POSTWAR STRATEGY ITZLING - A METHODOLOGICAL APPROACH

Tags: stakeholder inclusion, post war refurbishment, adaptation building stock

Abstract: Post war neighborhoods all over Europe are facing different kind of challenges in order to adapt them for the use in the future. The predominant factor in many concepts of neighborhood refurbishments is the energy demand of the buildings, which sums up to 40 % of the global energy demand [1]. In connection, many research projects focus on the reduction of CO_2-emissions omitting the fact that this specific value does not have any immediate benefit on the residents themselves, neither on a psychological nor on an economical level. Benefits are solely on a macro-economic level, which rarely is calculated and most likely cannot be communicated as a benefit to the residents in a comprehensible fashion.

This paper deals with the methodology of a participatory neighborhood development strategy (NDS) for an urban area with mostly social housing, erected in the 1970s. The reference neighborhood is situated in the town of Salzburg/Austria. It consists of 26 buildings, housing approximately 2.500 inhabitants in 1.257 apartments on a gross floor area of almost 100.000 m².

Figure 1: aerial view of the neighborhood from the north (Source: Google Earth, 2016)

The developed concept is multipliable and transferrable to comparable urban areas, which share a set of similarities. They are products of a time when modernism as a method of urbanism was at its heyday. Mobility by car was the central feature of a city and the welfare state established numerous collective structures. Nowadays migrant communities and an aged population have replaced the original target group. [2]

In Austria 11 % [3] and in Europe 18 % [4] of the building stock are multi-family homes erected between 1971 and 1981.

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In order to be able to formulate a NDS, a detailed inventory of the building stock and an urbanistic analysis followed by a SWOT-analysis was realised, regarding the political frame conditions on county [5] and city [6] level. The methodological core of the NDS is an iterative development process shown schematically in Figure 2. It includes the owners of the buildings, the local energy provider, policy makers, representation of the residents and research experts.

Figure 2: schematic representation of the iterative development process (Source: own figure)

The NDS represents a collective identification and action basis for all stakeholders. Singular priorities were harmonized in the form of a questionnaire. Three workshops with policy makers and one workshop with the representation of the residents gave valuable input and allowed for a refinement of the NDS. In an iterative process, all information was structured and combined, leading finally to a common vision of the neighborhood.

Based on this process, five key areas of action (energy, living space, open space, social and mobility) have been identified. Figure 3 serves as an overview.

Figure 3: five key areas of action (Source: own figure; 2|4 Designbureau)

The NDS consists of three parts. A detailed catalogue of measures for each key area of action, including keywords, a visionary statement and background information relevant to the examined neighborhood forms the backbone. It is the basis for future decisions and gives orientation to the building owners, the energy provider and policy makers.

A folder and a poster with a unique concept serve as the visual representation of the NDS. A set of characters, icons and photos including easily comprehensible comics were developed.

Figure 4: exemplary photos including comics of measures (Source: own figure; 2|4 Designbureau)

Those tools are important in order to create a recognition value and to stimulate acceptance among the inhabitants of the neighborhood. Moreover, the low-threshold approach of the design facilitates future communication with the concerned public.

The methodology of the NDS guarantees the inclusion of all stakeholders and supports a prioritization in order to decide on future measures that can lead to a more energy-efficient and livable development of neighborhoods in need of adaptation. It can provide assistance to meet the present and future comfort demands of its inhabitants, reach climate goals and react to demographic and social phenomena.

Acknowledgements: The research leading to these results is part of the research project “Smarte Stadtteilsanierung

Itzling-Goethesiedlung in Salzburg”[4] which was commissioned and funded by the “Klima- und Energiefonds”[5] under the authority of the Austrian Federal Ministry for Transport, Innovation and Technology (BMVIT).

NDS Layout & Design: University of Applied Sciences Salzburg in cooperation with 2|4 Designbureau

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Jan Klasinc[1]

A NEW MODEL OF URBAN-RURAL COOPERATION BASED ON THE INTELLECTUAL CAPITAL OF SMART CITIES

Tags: smart cities, urban-rural governance, added value chains, innovative governance

Abstract: Smart or cognitive cities represent a new form of territorial organization. It has been proposed that intellectual capital takes a specific form in such an organization, so that traditional IC framework should be extended to include expected outcomes, among which sustainability, resilience, quality of life, which can be encompassed by a proposed SC-IC model. In this paper we try to find arguments supporting the hypothesis that smart cities could lead to economic development and rejuvenation of Europe by innovative urban-rural relationships based on added value chains and innovative governance approach. One problem with the European integrations is the loss of inter-state competitiveness that was the driver of economic development in the past, whereas the role of Bruxelles has progressively expanded to enhance also the role of regions, to the detriment of nation-states. We propose that a new type of social dynamic is created within cognitive cities, that is governed by different types of organization and communication enabled by new ICTs, that allows for new forms of governance that does not rely on traditional hierarchical structures. This in turn creates stable environment for the development type of innovation structure based on quadruple and quintuple helix models, that strengthen the homeostasis of a smart cities by 'socio-economic negentropy, similar to living beings in biosphere. However, there is also a possibility of a negative development in nations where the dichotomy between urban and rural (or former industrial) zones has become so pronounced due to effects of globalization and integration on one hand and loss of jobs in industry and importance of nation states on the other hand, that population not living in large cities can seek retaliatory action on elections in order to restore the power of nation states and neutralize the effects of globalization and technological development leading to progressive automatization and hence loss of manual jobs. In the proposed model in this paper based on SC-IC, we seek theoretical confirmation of an economic symbiosis of smart cities with their rural environment, in which smart cities lead the innovation, whereby the excessive socio-economic 'entropy' is 'exported' from the cities. Thus cities should become the hubs of creation, enabling greater competitiveness among cities and regions in Europe, rather than countries (nation-states). In our model we pay attention to the importance of socio-economic differences arising from the better access to education, health and other services that lead to better quality of life in different places in sovereign nation-states, and how these could be eliminated by better governance leading at the same time to more competitiveness and better quality of life, not just for the population living in cities, but also for the rural population. In this model we take into account the aging of the population and the fact that such population living in cities may find it desirable to move to rural areas, or retire, whereas younger rural population with access to education may become better qualified and move to cities, thus enabling better circulation of skilled and unskilled labor in the urban-rural system within the nation-state. In order to test the model, the standard methodology for defining predominantly rural, urban and intermediate areas is used and applied to Croatia using available data on intellectual capital, value added, physical capital

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and migratory trends in each area, which is then used to assess the possibility of development of urban-rural cooperation on the basis of SC-IC model for smart cities, innovative governance and added value chains.

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Lukas Kranzl[1], Sara Fritz[2]

HOTMAPS - HEATING AND COOLING: OPEN SOURCE TOOL FOR MAPPING AND PLANNING OF ENERGY SYSTEMS

Tags: Energy Efficiency, Renewable Heating and Cooling, Open Source, Mapping, Planning

Abstract: HotMaps will develop, demonstrate and disseminate a toolbox to support public authorities, energy agencies and planners in strategic heating and cooling planning on local, regional and national levels, and in-line with EU policies. The toolbox will facilitate the following tasks on a spatially disaggregated level: (1) Mapping heating and cooling energy situation including renewable and waste heat potentials in GIS layers; (2) Model the energy system, considering hourly matching of supply and demand, demand response etc.; (3) Supporting the comprehensive assessment of efficient heating and cooling according to the Energy Efficiency Directive; (4) Comparative assessment of supply and demand options and of given scenarios until 2050 regarding e. g. CO_2-emissions, costs, share of renewables. An open data set for EU-28 will be created to perform those tasks in virtually any EU region up to a 250x250m level, which will reduce barriers for authorities to heating and cooling planning. HotMaps will allow for updating locally available data and links to existing models. The software will be developed in close cooperation with the target group, within the consortium and beyond. Moreover, the toolbox will be validated and demonstrated in 7 pilot areas to provide a tested and user friendly software entirely based on user needs. We defined a strategy how to ensure the wide usability, adjustability and application of the toolbox within and beyond the project duration: (1) The consortium is fully committed to the open source idea: All EU-28 data and the source code will be open and we will link with open source energy modelling communities; (2) Training activities will be carried out, including a strategy how to continue after the project; (3) Academic partners will train students on HotMaps in their teaching activities. Our consortium includes leading experts on energy planning in Europe, modelling and tool development, dissemination and various public authorities.

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Holger Kuhle[1]

URBAN SUSTAINABILITY AS THE NEW NORMAL - SETTING THE AGENDA THROUGH THE GLOBAL CITIES SUSTAINABLE DEVELOPMENT GOALS & THE NEW URBAN AGENDA AS PRINCIPLE FOR ACTION

Tags: Pathways for Evidence Based Sustainable Urban Governance

Abstract: The OECD countries' record of urban planning strategies and actions for good urban has been a major reference to the 2030 Agenda for Sustainable Development and its urban development related goal adopted in 2015 by the United Nations. This is also the case for the New Urban Agenda (*NUA*) recently agreed at Habitat III in Quito. With the 2030 Agenda's Sustainable Development Goal 11 (*SDG* 11), dedicated to the objective to *'make cities and human settlements inclusive, safe, resilient and sustainable',* urbanization and territorial development is put at the heart of sustainable development. Both the SDG 11 and the NUA are action-oriented documents which set global standards of achievement in sustainable urban development, they are an invitation to review the way cities are built, managed and how we lived in cities.

In order to operationalize and monitor the SDG 11 city leaders and other local experts and stakeholders need to be put in the driving seat. At the same time, despite this key role of local authorities, there is very little guidance that focuses on the local adaptation of global development agendas. Thus, illustrating key processes with practical tools and good practice examples, as suggested within the SDG's Cities Guide of the Sustainable Development Solutions Network is expected to fill a growing knowledge-gap faced by local practitioners and policy makers in adapting and aligning global goals to on-the-ground planning and implementation.

The purpose of my contribution at the 2nd international conference on Smart and Sustainable Planning for Cities and Regions - SSPCE 2017 (Bolzano, Italy) is to present the SDG's Cities guide principles to achieve an in-depth perspective of the SDG localization processes at the very cities level, through an assessment of the enabling local conditions to identify and decide consensus based priorities for early action, and to develop technical strategies for implementation and monitoring in order to ensure long-term governance capacity for sustainable development at the city level. It is essential that this builds on existing city development strategies/urban development plans. In SDSN's existing projects, the SDG framework has been highly tailored to the local context - building upon local, community input and existing plans and frameworks.

The notable difference in this effort will be a significant focus on building stable and supportive long-term relationships between local and regional government and local universities, think tanks and knowledge institutions, able to assist in planning, design and monitoring of SDG implementation, as well as to integrate key priorities emerging from the NUA. The SDG 11 implementation principles I do suggest to present do all build upon experiences in cities, especially within Europa, in the US and in Brazil; the respective cities are Paris, Berlin, New York City, Baltimore and Rio de Janeiro. Examples

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clearly demonstrate the process of localizing the SDGs, aligning the monitoring and review framework to local structures, as well as systematizing local findings in a comparative framework.

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Pierre Laconte[1]

SMART AND SUSTAINABLE CITIES: WHAT IS SMART? - WHAT IS SUSTAINABLE?

Tags: smart, Big Data, energy, transnational, assessment, global, local, sustainable

Abstract: Smart cities are a buzzword supported by a variety of interests including, among others, the new market for knowledge-based consulting making use of Big Data, the market for new urban technologies including human engineering, the potential for integrated urban planning and transportation, the potential for saving resources and fossil energy, and optimising the use of energy and telecommunication networks. Smart cities services can either enhance citizen participation or ignore it. Transnational service suppliers to cities directly involved include, among others, IBM, Siemens, Microsoft, Cisco, Deutsche Telecom, Hitachi and Panasonic.

The large customers of smart cities services include several pioneers combining several interests such as Smart City Wien, New Urban Mechanics Boston and Ciudad Inteligente Medellin, plus several smaller cities. They enjoy access to international funding.

Sustainable cities are, according to the Bruntland report, those that meet the needs of their present citizens without compromising the ability of future generations to meet their own needs. This requires the reconciliation of the environmental, social and economic 'pillars' of sustainability, and the political will to finance investments required by voters not yet born. Sustainability applies at the level of the individual buildings, the neighbourhoods, the entire city, its periphery and its region. Benchmarking allows systematic comparisons at each of these levels, focusing on assessment criteria selected per political orientations. Assessment of best practice requires a clear view of each of the levels of observation, considering the policy conflicts between global and local concerns. Global concerns focus on global warming and threats at planetary level, while local concerns focus on the needs and aspirations of citizens "here and now".

The challenge of the Conference will be to combine these different levels of analysis and of action, in favour of cities that are both smart and sustainable.

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François Levarlet[1], Elodie Lorgeoux[2], Gaia Galassi[3]

SEA FOR SUSTAINABLE CITIES: HOW THE STRATEGIC ENVIRONMENTAL ASSESSMENT HAS DRIVEN THE ESI PROGRAMME TOWARDS URBAN SUSTAINABILITY

Abstract: European strategies and goals, including those related to urban sustainability, are also implemented by the European Structural and Investment (ESI) funds. Between the different ESI funds, the ERDF (European Regional Development Fund), in its key priority areas includes several issues related with the sustainability of cities. Nevertheless, the definition of ERDF Operational Programs at National or even regional level, coherently with key priority areas, is up to national and local authorities. The Strategic Environmental Assessment procedure is an important tool for driving the ERDF Operational programmes toward sustainability. In this work, we examine 20 ERDF Italian programmes 2014-2020 and a selected number of related SEA Environmental Reports, to understand in which measures the theme of Sustainable cities is included in the programming and how much the SEA procedures have incremented the effort on urban sustainability planning inside the ERDF Programmes. This analysis has allowed to provide an overview of how ESIF funds are addressing the sustainable urban development issue and identify some recommendations to improve the integration of the theme into the current programming period and the next one.

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Giampiero Lombardini[1]

MODELLING FUTURE SETTLEMENT PATTERNS IN LIGURIAN INTERNAL REGIONS USING GEOSIMULATION

Tags: Regional Development, Geosimulation, Scenario Modelling, Spatial Econometric Modelling

Abstract: The abandonment / resettlement dynamics of inland areas in Liguria is a process that has gone on for more than five decades. The polarization of the population, economic activities and income along the coast (trough the formation of the regional coastal conurbation) is surely one of the characteristic elements of the territorial dynamics and settlement patter of the region. However, in the last twenty years, despite the continuation of this general trend, the regional inland areas have gradually differentiating. In some cases (sub-regions, small and medium centres), in fact, we are witnessing a demographic and economic rebalancing and economic stabilization, which is leading to a different configuration of the mountainous and hilly regions. The factors of this diversification can be identified in accessibility, in the natural and morphological conditions, in patterns of land use and in the process of polarization and concentration of public services. These same variables can be used to explain, in parallel, the abandonment of further processes which instead occur in the other internal areas. In the model proposed we use on one side some geosimulation techniques (cellular automata, multi-agent systems) and on the other a spatial econometric model, that can provide results that explain which variables are the basis of the change taking place and on the other can provide the basis for the construction of scenarios to represent the possible evolutionary stages of the regional system of inland areas and thus form the basis for a decision support system on which to test the weight and relevance of the key variables and identify which driving forces operate in future spatial planning policies. The geosimulation techniques allow, in addition, in the moment in which they are taken into account different temporal stages (referred to the past) to calibrate the model to define the reliability and robustness of future scenarios. The model can also identify which policies and actions in the past have had a bigger impact in the dynamics of neglect or rehabilitation of inland areas.

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eurac research

Iñigo Lorente[1], Javier Ruiz Sánchez[2]

SPATIAL FOOTPRINTS OF CONTEXT-AWARE DIGITAL SERVICES. EVENTUAL SELF-REGULATED URBAN SHAPE ALIGNMENTS ON DATING APPS

Tags: Connected citizens, Data mining, Geographic Information Systems (GIS), Mapping informalities, Storytelling with data

Abstract: Cities can be conceived as socio-physical complex systems which development lies upon the potential interactions between their spaces and citizens. The key role that digital networks play in this area is rapidly establishing a service-based economy, which is focused on getting people in touch to make nearby peer-to-peer exchanges rather than promoting the preexisting facilities to do that. As this service-based economy lies upon the growing 'smart' infrastructure (cellular networks, generalized sensoring, big-data management…) ICT companies are being pushed forward as fundamental agents to be considered in which urban development concerns.

It is a fact that in every major city any individual can access to a wide range of 'hyperlocal' service cellular applications, also known as 'context-aware services'. From mobility and product selling solutions, to social networks and dating apps. This service networks are progressively subverting some urban parameters (such as public/private, intimate/exposed, closer/farther, dense/scattered…) at the time they introduce new accessibility parameters depending on their 'user-side' API restrictions (absolute distance, number of results, etc…). The apparent randomness of this kind of cellular networks is producing a superimposed urban system which complexity needs to be addressed.

Given that context-aware services are superimposing scale-free cellular networks in a local physical scale, we argue that their implementation implies a significant breakthrough from preceding spatial network planning approaches. Insofar the supply for a service isn't supposedly fixed to a specific space and time, the urban network topology is not crucial in order to determine the service discoverability. In addition, the accessibility parameters for a cellular service are barely related to the soil property schema. That provides an apparently self-regulated framework for people to access nearby facilities that remained unobservable due to the spatial and regulatory conditions of the city. However, cities are the physical platforms from where data is provided to the 'cloud' in order to make a cellular service operate. Therefore, their social, spatial, and network configuration in a given time determines the possibilities for a user to access to a cellular service. That raises the question of which socio-physical temporary scenarios modify the context-aware service functionality, and how its network turns to be self-regulated by the users and their urban context.

This double-sided implications between urban shape and context-aware services are the main goal of this research. The method, consisted on representing with data an urban event of enough scale to be considered 'disruptive' for both urban and digital systems. Using Python programming and GIS

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techniques to mine, anonymize, and represent live data from connections to the most popular dating apps during the Gay Pride party in Madrid city center in July 2016. Our collected time series includes the days before the event in order to be compared with it. As a result, some video maps have been produced to understand how the cellular network changes its form, aligning itself with urban places where social activity took place. That allowed us to represent the differences between everyday use and eventual use of the network precisely enough.

The days before the event, the vast majority of the users used to get connected at home, with short-time connections on public transportation facilities and squares. Therefore, the resulting network seems to be randomly spread through the urban fabric, revealing a residential-centric mobility patterns. Whereas during the parade, a significant part of the users got connected on the main streets and squares where the party was going on, such as Pedro Zerolo and Chueca or Rey's squares, or crucial axis like Paseo del Prado-Recoletos and Gran Vía. This eventual interactions inside the cellular service enabled the users to discover new people beyond their neighborhoods, broadening their usual peer-to-peer connections which is limited by the density of users within their surroundings. As a consequence, the cellular contact network evolved to a greater spatial complexity after the event.

This leads us to conclude that the use of data-mining techniques in emerging context-aware services can be useful to depict sociospatial processes from classical mobility to form and use of public spaces. Furthermore, it remarks the relevance of new 'hyperlocal' spaces, networks, and economies to be considered by urban planners and ICT experts as decision makers towards the implementation of new urban planning tools to face the many uncertainties that smart infrastructures introduce.

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Bernhard Lozowski[1], Michael Heidenreich[2]

INNOVATIVE TECHNICAL SOLUTIONS WITHIN EU-GUGLE, A SUSTAINABLE RENOVATION PILOT PROJECT FOR SMART CITIES

Tags: deep energy retrofit, building integrated renewable energy, nearly zero-energy

Abstract: EU-GUGLE stands for "European cities serving as Green Urban Gate towards Leadership in sustainable Energy". EU-GUGLE is a smart city project in keeping with the European Smart City initiative and consists of several partner cities across Europe: Aachen, Bratislava, Milan, Sestao, Tampere and Vienna (incl. 3 associated cities). 226,000 m² of residential and public buildings are being refurbished. The aims of the project are to reduce the primary energy consumption of a range of buildings by 40% - 80% and to increase renewable energy use by 25% through nearly-zero energy building renovations and the integration of renewable energy technologies where possible. All of the experience gained in the pilot projects will be used to provide large scale Europe wide replication strategies and solutions. All of the renovations include thermal insulation of the building envelope and the installation of double or triple glazing. In most cases LED lighting has been installed in communal areas. Some of the renovations also include the removal of balconies to reduce thermal bridges and the installation of mechanical ventilation with heat recovery.

The project has now passed its half way point and this paper highlights some of the more innovative technical solutions within the diverse range of social housing renovation projects. Included are examples that have been realized and some that are still to be completed before the end of the project. Potential barriers such as local acceptance, as well as the learning curves involved with technical solutions are also looked into.

For example the partner city of Aachen has already implemented an innovative localized heating network that utilizes heat from a nearby public sewage channel via heat exchangers placed on the base of the channel connected to two heat pumps in a centralized control room from which warm water is distributed to three of the adjacent pilot buildings. Heat is also recovered from the exhaust air of the heating systems in two of those three pilots.

Another example is a planned renovation in Vienna which is to utilize a prefabricated façade with integrated photovoltaic (PV) cells. The façade system is based on cardboard honeycomb structure insulation with timber framing and a float glass external pain. The PVcells are positioned in front of the cardboard insulation but behind the glass pain. In winter the honeycomb structure absorbs more solar radiation due to the angle of the sun and heats up the walls of the building hence reducing transmission heat loses of the building. In summer the absorbance of solar radiation is limited due to the higher position of the sun.

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In Sestao high efficiency 100% biomass central heating and DHW systems are to be installed in all of the pilot buildings which are innovative for the Spanish market even if these technologies are more established in other nations showing that improvements in energy efficiency are possible with technologies that are already established but not yet commonly available in all nations.

As well as the above examples a variety of other systems have also been applied in Bratislave, Milan and Tampere.

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Lucia Lupi[1], Alessio Antonini[2], Guido Boella[3]

URBAN COMMONING IN A CIVIC SOCIAL NETWORK: THE CASE STUDY OF FIRSTLIFE

Tags: (urban commoning) (We-government) (co-design) (civic social network) (participatory design)

Abstract: The integration of ICTs in the urban management is increasing at all levels of public administrations in order to improve efficiency and effectiveness of public services, but their role is still instrumental rather than drive a change toward a more collaborative local governance. On the other hand, there is a raising expectation of the civil society to participate in decision making processes and contribute in defining local policies about sensitive topics. These purposes are often addressed by using or creating community digital tools designed for a specific contextual scope, resulting in a deep fragmentation of information about civic initiatives and social innovation projects and a lack of continuous communication among urban stakeholders even working in the same area. The challenge is to design an ICT solution to refactor the current practices of cooperation between private and public sector and support a real change in the city management processes from the local to the territorial level. In this contribution, we present the development of FirstLife, a map-based civic social network, designed to represent the complex environment of the city through geo-referenced time framed crowdsourced data about urban entities as events, places, groups, initiatives, projects, stories, news, etc. The main goals of the platform are to support the action of multiple stakeholders in alternative processes of co-management of common or shared resources, as for instance public spaces, green areas and buildings hosting collective institutions, to enable the co-production of services based on a reform of local administrative protocols toward the We-government model, and to empower mixed local networks. The development of FirstLife followed a participatory action design research methodology involving several stakeholders among associations, local authorities and institutions, businesses and the University in the city of Turin in the last two years. The participatory process started from the requirement elicitation, and continued with the collection of applicative scenarios based on the context analysis of internal/external relations of groups of stakeholders and the balancing of their goals in a common platform. Then, the co-design of features has been undertaken in the stakeholders' working environments to model the platform functionalities on the real processes and practices defining social acceptable technological solutions, ready to be adopted by institutional and civic organizations. The platform has been tested-in-use in multiple living labs and pilot projects, experimenting a number of use patterns representing the common actions in the city carried out by public or private actors. These activities have been integrated in an iterative development cycle that brought so far at four progressively improved versions of FirstLife, from a map-based tool to share georeferenced information to a common workbench for multiple stakeholders acting in the same area (from the neighbourhood to the city level) where open groups can self-organize initiatives and cooperate with others. The result of this process is a digital space for urban commoning practices,

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reflecting the organization of society in individuals and structured public and private entities, the spatial framework of their actions and the temporal development of city transformations and initiatives.

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Federica Maino[1], Andrea Omizzolo[2], Thomas Streifeneder[3]

MARGINAL MOUNTAIN AREAS: STARTING OVER FROM THE SMART COMMUNITIES. THE CASE STUDY OF SEREN DEL GRAPPA

Tags: Mountain Marginal Areas, Smart Communities, Sustainable Development, Unlocking Development Potential, Participatory Strategic Planning

Abstract: The socio-economic changes during the past fifty years have favoured settlement dynamics and development models without considering sustainability in most areas of the Alpine mountains. This is, for example, the case with the intensive touristic exploitation of the most popular destinations or with the urbanisation and industrialisation of valleys. Consequently, the most marginal areas have suffered from strong depopulation and from processes of abandonment. Traditional planning tools, together with the change of life style and the scarcity of economic resources, among other factors, have not been able to counter these dynamics.

Marginal mountain territories, which are particularly vulnerable and sometimes inhospitable, are often rich in natural and cultural values. The survival chances of vital communities in these specific regions depend on a development approach, which considers how to arrange economic growth, environmental conservation, identity and cultural issues. This is combined with the capacity to maximize the endogenous potential, to create relationships within the surrounding territories and to be attractive on a global level, by improving the local community knowledge and by leveraging a technological qualitative leap. It is especially from these mountainous communities that we can derive best practices and reap useful methodological guidelines for the implementation of innovative, harmonious and well balanced processes of sustainable development, since they have developed a sustainable management of scarce resources and strategies to adapt in a territory with significant harshness over time.

This contribution presents the results of an innovative and exemplary strategic plan for the community of Seren del Grappa, a marginal mountain area in the north east of Italy, between the UNESCO Dolomites and the Po valley. This valley is negatively affected by the administrative fragmentation and by the different economic and legislative opportunities of the Italian alpine space. Thanks to a bottom up initiative launched in 2013, the population, the economic operators and the local administrators defined a shared vision and strategic guidelines for the future of the valley for the middle and long term in a participatory process. Researchers and local stakeholders had the opportunity to test and to implement innovative actions and projects for a local and regional socio-economic sustainable development, as well as concrete initiatives: e.g. the renovation of an historical building that became

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the meeting point of the community; the implementation of an experimental vineyard of resistant hybrids, with the purpose of developing the area for agrotourism; a web marketing course to develop innovative communication tools to promote the territory; and the organization of a successful festival on the topic ”The mountain of the future”.

In this contribution, the authors will describe and discuss the identified essential prerequisites that made it possible to reach the project´s aims, to fulfil the innovative methodological approach and to adopt the interaction techniques as planned. Furthermore, the successes and failures of the process, the mountain community´s peculiarities, its early involvement and empowerment, the management of conflicts, the importance of encouraging cooperation and peer-to-peer learning processes, will be highlighted in order to foster the academic discussion about an innovative and self-sustainable development of smart communities, and its potential replication in other international contexts.

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Katiuscia Mannaro[1], Gavina Baralla, Ginevra Balletto, Chiara Garau

A GOAL-ORIENTED FRAMEWORK FOR ANALYSING AND MODELING CITY DASHBOARDS IN SUSTAINABLE CITIES

Tags: city dashboard, urban governance, taxonomy, sustainable cities, smart city.

Abstract: For several years, many cities around the world are moving through a number of initiatives to implement the so-called "city dashboards", as an opportunity for a new quality of urban life in terms of knowing and governing cities. In other worlds, the city dashboard is an IT tool in the field of the urban systems development and it has had different uses depending on the scope analyzed and based on the category of stakeholders involved.

Basically, the development of various types of city dashboards has passed through innovative processes of technological and societal perspectives and it have to be activated in response to users' needs of the city in term of sustainability and of residents' wellbeing. Therefore, the same concept of city dashboard has assumed different definitions, not only on the basis of the displayed and offered services, but also in response to social challenges that cities of the future require to solve. Generally speaking, a city dashboard is an interactive portal designed on the one hand to allow city's users to get up-to-date information about a city and, on the other hand, to give access to a wide range of datasets about the city helping decision-makers. This tool consists of several modules, each of which contains a number of apps that show various data of the city, such as temperature, humidity, air quality, number of car rental locations, traffic cameras, and so on. The proliferation in recent years of different city dashboard led the authors to clarify about this tool, making use of a potentially effective framework, which will attempt to summarize the main features. The design of a city dashboard needs a clear vision of the direction that public administrations intend to undertake, alongside an ability to build scenarios and analyze the results of experiments in the context of the changing urban variables.

The main contribution of this paper is to examine how city dashboards are performing on different metrics and compared them in order to seek what they do. Starting from this perspective, to the best of our knowledge and by examining dashboard examples, there are many differences in the products that go by the name "city dashboards". Moreover there are several methodological and technical issues that are not dealt and solved still in terms also of data, indicators and benchmarking.

Given the gaps in academic literature for city dashboards, we developed a goal-oriented framework through taxonomy for conducting an analysis that enables to examine the characteristics of different city dashboards. Our framework enables a more systematic elicitation to develop an effective city dashboard and provides useful insights to decision makers. The results suggest that some features emerge and our findings highlight specific clusters. The paper is organized as follows. Section 1 provides an introduction, and the motivations for the paper. Section 2 discusses relevant literature on city dashboards and presents different types of city dashboard and their roles. Section 3 analyses their salient features of functions and it describes the framework in order to support dashboard requirements elicitation. Finally Section 4 presents the conclusions and future works.

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Chiara Marin[1]

THE ROLE OF UNIVERSITY MUSEUMS IN A NEW CULTURAL WELFARE: THE CASE STUDY OF MUVERE, VENETIAN SCIENCE MUSEUMS NETWORK

Tags: (university museum) (partecipatory museum) (museums network)

Abstract: The university museums were born as custodians of the knowledge produced within the academic classrooms for the training of future scientists and researchers, to whom they addressed in an unidirectional way. Converserly nowaday even the university museums have to play a new feature, opening to the general public and involving him in the reevaluation of our common past: no longer they have to impose their knowledge to a "spectator", but they must invite the visitor to participate, contributing with his diversified skills to actualize knowledge. Investing on a new participatory dimension, university museums can therefore be put forward as an active laboratories for a new cultural welfare with a dialogic and shared patrimony. This is the experience that my research group intend with MuVeRe project, the new network of the University of Padua's museum and the Veneto scientific ones: through the creation of multimedia and cross paths and the strategic planning of communication processes, we foster the approach to university museums from an expand audience, diverse by age and education, and promote the development of new knowledge and skills in an synergestic way, which combines the discovery and the excitement, the delight and the science. For museums really to love, and to live.

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ANALYSING CITIES WITH REMOTE SENSING: A METHODOLOGY TO COMPARE URBAN GROWTH WITH THE GLOBAL HUMAN SETTLEMENT LAYER

Tags: urbanisation, remote sensing data, megacities, GHSL

Abstract: Data are a key resource to analyse and compare cities and to track urbanization processes and changes in cities. Innovative procedures for acquiring and processing remote imagery provide analysts and policy makers today with globally consistent multitemporal data on human settlements, which promise unprecedented advances in urban analysis. The Global Human Settlement Layer (GHSL) has been produced by the European Commission Joint Research Centre. It contains fine scale global and multitemporal geospatial data of population and built-up areas. The GHSL opens the possibility to study cities around the globe in a globally consistent and comparative way. This study proposes a new methodology to work on the GHSL at city level, to monitor the process of urban expansion both in terms of spatial footprint and population dynamics. The methodology introduces seven indicators: area [in square kilometres] population, built-up [square kilometres], built-up to area ratio, population density [inhabitants per square kilometre], built-up and area per capita [in square metres]. The changes across reference points in the years 1975-1990-2000-2015 are used to monitor and benchmark urban growth and expansion. This research paper illustrates the methodological procedure for data preparation and it explains the GHSL-derived indicators for monitoring urban analysis. The second part of the research applies the methodology to the cities of Beijing and Guangzhou (China) to analyse in a comparative perspective the two cases. The paper contains data analysis capturing the dynamics of growth of urban area, population and builtup surfaces between 1975 and 2015. In addition, the study analyses the changes in the seven selected indicators with two reference time frames (1975-2015 and 1990-2015), and in additional intervals (1990-2000 and 2000-2015). Guangzhou and Beijing are representative examples of rapid urbanisation: Beijing grew faster than Guangzhou in the period 1990-2015 in terms of population, while built-up growth over the same years has been faster in Guangzhou. The comparison of the two cities surfaces interesting phenomena such as the different speeds of population and built-up growth in the period 1990-2015. Based on this analysis in both cities population increased by more than 60% between 2000 and 2015 (just 15 years). Area expansion of Guangzhou (in percent) has been double the one of Beijing between 2000 and 2015 and it currently exceeds 3.500 hectares in total. The proposed indicator set shows a decline in built-up per capita (-32% in Beijing between 2000 and 2015, continuously decreasing since 1990) and area per capita (- 15% in Guangzhou in 25 years between 1990 and 2015). A disparity also exists in built-up per capita, while in Beijing this indicator has declined by 32% in the last 15 years and by 50% between 1990 and 2015, in Guangzhou it has decreased less in the last 15 years (by 8%). Differences exists especially in the absolute built-up per capita: in 2015 Beijing inhabitants are endowed with around 110sqm of built-up area per capita, while in Guangzhou around 80sqm.

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The possibility to analyse cities in a comparative way with quantitative and globally consistent data still needs to be translated into policy making, but are very promising in allowing countries and cities to track the implementation of Sustainable Development Goals. This methodology can be used to measure the SDG indicator 11.3 that reads as the *"Ratio of land consumption rate to population growth rate, at comparable scale".*

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Ezio Micelli[1], Alessia Mangialardo[2]

REGENERATING OBSOLETE *GRANDS ENSEMBLES*: EVIDENCE FROM SOME DEEP RETROFIT FRENCH EXPERIENCES

Tags: Urban renewal Construction industry Real estate market Retrofit

Abstract: In recent years, urban regeneration and land use containment represented priorities of the territorial policies, in Italy and in a wider international context. Existing city building stock renovation - alternative to sprawl - can be undertaken in two ways: through demolition and reconstruction or retrofitting the existing real-estate assets.

Many academics and professionals in the field assert that deep retrofit processes - reconverting buildings in an energetic and sustainable way - represent a sound alternative to actual demolition and construction works. Some positive retrofit experiences at international level demonstrate that in few weeks these operations are able to radically transform obsolete and energy consuming assets. The buildings renovation takes place by means of prefabricated elements that are able to guarantee economically efficient and technically effective interventions.

These technologies contribute at the same time to increase the value market of the redeveloped real estate asset. For this reason, the feasibility conditions of the regeneration processes for the existing city, especially in view of the current low market demand, in most cases seems to prefer retrofitting operations. On the contrary, the regeneration processes based on the demolition and reconstruction of the assets are destined to have a modest fortune in the absence of major public support.

The aim of the paper is to analyze the economic feasibility conditions of deep retrofit operations, identifying and measuring their value drivers. The increasing demand for these processes show that they are a great opportunity to develop the global energy efficiency also improving the construction industry - severely debilitate as a result of the economic crisis - , demonstrating these processes are able to create new economic and environmental value on obsolete buildings.

To investigate in detail how these retrofit operations take place, authors describes one of the most original and famous projects in Europe, which is not only a prototype but also it has been effectively carried out. The case study, located in Paris, for its peculiar features, can be considered representative of a large faction of the existing obsolete real-estate stock present in Italian and European cities. It follows a critical reflection of the strengths and weaknesses of similar operations.

The feasibility conditions are linked to the economic efficiency of processes. To achieve this purpose is necessary a competitive jump only possible thanks to the new 4.0 manufacturing.

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The advent of 4.0 technologies opened new perspectives for the construction industry. Offsite industrialization increases the energy efficiency of buildings, generating better returns in terms of economic and environmental sustainability, becoming also an enormous opportunity in the construction value chain. The construction sector changes into an industrial area, with many positive returns. First of all, the component systems are made with advanced technologies able to make the building energetically self-sustainable, converting the economic value of the energy bill into resources for the stock renovation.

These new systems and materials ensure at the same time a high quality of the intervention that is guaranteed at least 30 years. The new components are no longer manufactured in situ with a consequent drastic reduction of construction timelines, causing also the minimum disturbance to the occupants of the house. The time required for the refurbishment is reduced to a few days or weeks needed to put in place the pre-built elements. Furthermore, by providing a mass-production for the building elements, the costs necessary for the retrofitting operation are significantly reduced - compared to the traditional ways for the refurbishment. Finally, the final result of the retrofit operation determines also physical and aesthetic improvements, in order to make more likable and comfortable the refurbished dwellings.

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Bruno Monardo[1]

WHAT INTERPRETATIONS FOR SMART SPECIALIZATION STRATEGIES IN EUROPEAN URBAN REGIONS? LESSONS FROM THE BOSTON AREA

Tags: Smart Specialization Strategies, Innovation Districts, Place-based approach

Abstract: Since the beginning of the global economic crisis, Europe has been facing its major challenge of the last decades for pursuing a new season of prosperity and sustainable urban and territorial development. The ambitious Cohesion Policy has been conceived for tackling a persistent 'Research & Innovation gap' among EU Regions. The privileged strategy for pursuing the vision of Europe 2020 is the virtuous integration of three fundamental vectors: the 'Smart Specialisation' concept, the high tech issue and the 'place based' approach.

Within a EU Horizon 2020 Research Project MAPS---LED (Multidisciplinary Approach to Plan Smart Specialization Strategies for Local Economic Development), these reflections aim at highlighting the original interpretation and evolution of the 'Smart Specialization' concept in US and its on-going process in Europe 2020 Agenda. As it is physiologic for EU to look at the Smart Strategy 'American model', it has been investigated the successful case of the Boston Area arguing about the significant diversities that other cultural 'styles' might suggest within Europe.

The idea of comparing US and European context seems particularly appropriate as the origin of the 'Smart Specialisation' concept is embedded in the 'transatlantic productivity gap' issue (McCann & Ortega-Argilés 2015), due to the weak condition of the 'Old Continent' in the new technologies supporting the strategic economic sectors. The pivotal proposal of tackling this gap, identified as 'Research and Innovation Strategy for Smart Specialisation' (RIS3), was conceived by a high profile expert group (K4G 2009, coordinated by Dominique Foray) and adopted in the Europe 2020 Agenda within its privileged goals of 'Smart, Sustainable and Inclusive growth'.

The US evolutionary interpretation, according to the scientific literature, is related on at least three pillars. The first one is connected to the active support policy of the central public institutions: the role of Federal government in boosting the innovation, with R&D subsidies and other initiatives. Second, the privilege of 'Key Enabling Technologies' (KETs), providing the basis for innovation in many production sectors and helping to tackle societal challenges. Third, the widespread application of the 'Cluster theory' as it was re-conceived and innovated by Michael Porter in the early '90s, after the original Marshall's districts (1920) and the interesting experience of the Italian industrial districts of the '70s.

The recent best practices in North America have highlighted the evolution of cluster benefits in terms of economies of scale for urban agglomerations, stakeholder networks, increase of local exchange knowledge. Across US the most intriguing interpretation of 'Smart Strategies' recreating an innovative urban ecosystem, is well represented by the concept of 'Innovation District', a 'geographic area where leading-edge anchor institutions and companies cluster and connect with start-ups, business

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incubators, and accelerators' (Katz & Wagner 2014). The city of Boston represents a paradigmatic case of successful integration between innovation and city growth, thanks to the alignment between urban development initiatives and exploitation of the potential of innovation---related redevelopment.

The Boston case clarifies that the main challenge for the European policies is to pursue a specific model of RIS3 not just emphasizing industrial clusters supported by KETs, but 'territorialising' the redevelopment vision. As originally the 'Smart Strategy' idea has been mostly developed in a non-spatial dimension, the centrality of territories represents the core issue. In order to overcome this limit, it is necessary to apply the principles of the 'place-based' approach (Barca 2009) for identifying, recovering and increasing the values of local cultural specificities and build virtuous regeneration projects including the potential of territorial 'dna' related to the local communities.

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Cosimo Monterosso[1], Paola Panuccio[2], Corrado Rindone[3]

SUSTAINABLE URBAN MOBILITY PLANS IN EUROPE. OBJECTIVES AND ACTIONS FOR BICYCLE AND PEDESTRIAN MOBILITY

Tags: walkable cities, integrated urban planning, innovative and integrated infrastructures

Abstract: In the last years, (economic, environmental and social) sustainability challenges have a strong urban dimension. In this context, problems connected to urban freight and people mobility are relevant. Considering that the global urban population is expected to grow, these problems, if no action is taken, will be even more severe. Europe has implemented various policies to address urban mobility. Sustainable Urban Mobility Plans (SUMPs) are one of the main European planning tools focused on mobility needs of people and businesses in urban areas. The primary objectives are to increase urban sustainability and the quality of life. To promote the development of SUMP for cities and metropolitan areas and to stimulate the production of such plans, the SUMP guidelines were prepared as the main European reference. This planning tool is also promoted by the European guidelines for the implementation of the smart city, promoting *integrated planning in order to coordinate diverse policy areas and* to *achieve defined goals.* The SUMP planning approach is based on integration, participation and evaluation principles. The challenge is to integrate long-term planning perspectives and short-term actions. SUMPs require a long-term vision and an approach aimed at the economic, environmental and social and quality of life.

SUMP and its applications in European cities are the object of this work. In particular, the aim of this paper is to identify common elements of SUMPs adopted in the European cities in terms of objectives and actions. A focus on bicycle and pedestrian mobility is presented. In relation to this aim, a web survey was carried out selecting some European cities that adopted the SUMP included in a sample. Each selected SUMP is analyzed and classified, in order to identify the *vision*, the sustainable *objectives*, material, immaterial and governance planned *actions*, qualitative and quantitative *indicators* measuring objectives and actions. Prototypal results of the survey will be presented. Cities adopting quantitative indicators measure the achievement of European targets verifying if the proposed actions are coherent with European policies.

The obtained results from the survey show how the cities follow the European policies relative to urban mobility, in terms of objectives and actions. This work is useful to verify the implementation of sustainable urban planning process. The analyses show that all selected cities have focused strongly on improving accessibility and habitability from social point of view, to protect the environment and reduce pollution. In particular, as regards sustainable mobility, all cities are aimed at reducing car trips through the development of public transport and incentives to bicycle and pedestrian mobility. All cities in the sample aim to improve safety for pedestrians and cyclists through the modernization and adaptation of the existing bicycle paths and pedestrian walkways, on the construction of new long-

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distance cycle paths, construction new pedestrian walkways and public areas that are comfortable for pedestrians. Pedestrian networks linking functional urban areas and development of bike sharing services are promoted. The proposed classifications support comparisons among cities in order to individuate the most advanced cities that are a benchmark for other cities.

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SMART CITY DEVELOPMENT PATHS: INSIGHTS FROM THE FIRST TWO DECADES OF RESEARCH

Tags: smart cities, urban innovation, bibliometric analysis, co-citation analysis, content analysis, development paths

Abstract: More than twenty years have now passed since the concept of smart city first appeared in a scholarly publication, marking the beginning of a new era in urban innovation. Since then, the literature discussing this new concept and the ICT-oriented urban innovation approach it stands for has been growing steadily, along with the number of initiatives cities all over the world have launched to pursue their ambition of becoming smart. However, current research still falls short of providing a clear understanding of smart cities and scientific knowledge policy makers and practitioners both need to deal with their progressive development. In response to this short fall, the paper offers a bibliometric study of the first two decades of smart city research, whereby citation link-based clustering and text-based analysis are combined to: (1) build and visualize the network of publications in which the term smart city is used; (2) identify the clusters of thematically related publications; (3) reveal and compare the emerging development paths of smart city research and the strategic perspectives each of them embodies. This study uncovers five main development paths: Experimental Path; Ubiquitous Path; Corporate Path; European Path and Holistic Path. Overall, this analysis offers the first comprehensive and systematic view of how a smart city can be understood theoretically and as a scientific object of knowledge able to inform policy-making processes.

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Stefano Moroni[1], Valentina Alberti[2], Valentina Antoniucci[3], Adriano Bisello[4]

THE MEANING AND ROLE OF ENERGY COMMUNITIES IN A DISTRIBUTED ENERGY SCENARIO

Tags: (unlocking development potential; place-based policy-making; bottom-up approach; participatory governance; multilevel governance)

Abstract: Distributed energy generation grants a closer link between energy production and energy consumption, but it does not necessarily entail in itself any (new) particular role or organisation for groups of people. Nevertheless, as a consequence of the distributed energy spread, the phenomenon of so called energy communities is growing: different forms of organised groups are flourishing all over the world in order to produce and consume energy. In this regard, the term "energy community" is used in a generic way to point at heterogeneous phenomena. Further confusion is created by the term community itself - a term that is often used in an ideological way.

This work offers a contribution to the study of energy communities, highlighting main fallacies and identifying elements that may help to understand what energy communities are. Since literature seems to offer only partial points of views and definitions shaped by research pretexts, it definitely intends to contribute to build a shared taxonomy of energy communities, by which understand nature and possible effects of the phenomenon.

In general, energy communities can be considered as a particular kind of "contractual communities"; that is a situation in which a group of individuals shares certain aims, and accepts an integrative system of norms that regulates the group' activities. Interests that join people are sometimes exclusively energy related (energy-only communities); in other cases, energy is merely one of the many interests that aggregate a certain community (energy-also communities). Another element that distinguishes energy communities is the existence (or lack) of a connection with a specific territory. Members of the community can share the same place (place-based energy communities); this place can be small, as in the case of some individuals that live in a condominium, or wider, as in the case of citizens living in the same neighbourhood. In other cases, communities are mainly "virtual" since people share only interests and values but they have no geographical identity (non-place-based energy communities).

Various kinds of communities imply different economic perspectives. Whether just energy is involved, the sustainability of investments is mostly related to energy prices (supply and its macro-economic implication) and the technological research and development (R&D) on tools and devices. On the other hand, place-based energy communities deliver essential effects on the real-estate market, in any

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segment of the market. Specifically, the influence on real-estate is both on the supply side and on market values, in terms of individual preferences. The development of place-based energy communities affects the building production costs and, as a result of innovative developments with higher energy efficiency, also facility and management costs need to be reconsidered (i.e. life cycle cost approach). Finally, market values are affected by higher construction costs at an early stage of the development but also can grasp price/rent premium or higher occupancy rate due to emerging preferences of households and firms.

These two dichotomies (energy-only communities vs. energy-also communities; place-based communities vs. non-place-based communities) create a four cell matrix with four main cases. This matrix offers a new methodology to study energy communities and to discuss differences between them. It helps to clarify meanings and features, and to identify models for energy communities to better understand and manage them. For this purposes, assuming community as a neutral concept (neither good nor bad), some concrete examples and practices are taken into account to identify advantages and disadvantages of each model of energy community.

This analysis reveals that each model develops a specific vision of energy transition, in which energy production has different levels of integration with territories; energy production can be completely detached from the territory of consumption places (as in centralised systems); it can involve only some local elements (for example some buildings); or it can create a new, totally integrated, local energy system.

Different models of energy communities can coexist or can evolve under specific conditions (or thanks to particular needs); anyway, the paper does not aim at identifying “the best” example of energy community. The purpose is rather to highlight the peculiarities of each model in order to acquire awareness about possible choices that people have to re-think energy systems. At the same time, this new taxonomy of energy communities could assume a strategic role in orienting policies, not only energy related, since it allows to understand that these models of communities can involve policies at different levels and fields.

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Giorgia Nesti[1]

THE CITY AS A COMMONS. REFLECTIONS ON EXPERIENCES OF SUBSIDIARITY AND CO-PRODUCTION IN ITALY

Tags: commons, co-production, local innovation, active citizenship, subsidiarity

Abstract: Recent developments in local governance in Italy reveal an interesting 'turn' toward a more collaborative approach in designing and producing services. This approach aims at involving citizens in taking care of urban commons, such as public spaces, green spaces, and buildings, and in regenerating them. Remarkably, it tries to enhance a new form of governance that combines subsidiarity, active citizenship and creativity with economic sustainability and responsibility. Currently, there are several experiences in Italy collaboration agreements on urban commons that ranges from more or less structured forms of regulation. How do they practically work? Which strengths and weaknesses characterize them? Can we define these practices as truly form of co-production? Can we also consider them as a good practice of local innovation? The aim of the paper is to analyze these newly policy tools and to assess their value against the background of more recent literature in the field of public administration, namely public innovation and public value management.

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Bolzano/Bozen (Italy), 22-24 March 2017

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PUBLIC AND PRIVATE BENEFITS IN URBAN DEVELOPMENT PROJECTS.

Tags: Integrated Planning Procedures; Economic and Financial Feasibility; Decision Making Processes; Negotiation; Public-Private Partnership

Abstract

The paper is aimed at evaluating the advantages both of the private developer and of the local authorities within the context of negotiating Public Private Partnership.

In the last years many European cities have developed complex urban interventions through innovative forms of cooperation between the public and private sector. Given the limitations in public funds to cover investments and the need to increase the quality and efficiency of public services, these kind of Public Private Partnership (PPP) allow public and private sectors to define an agreement with respect to future urban development interventions, while sharing resources, advantages and risks.

According to regional urban planning laws and regulation, the Italian municipalities are used to base their negotiation processes with private actors on the primary and secondary urbanization costs and on permits fees, underestimating the amount of public benefit embodied in the total capital gain generated by urban projects.

Starting from the analysis of the urban developments under PPP carried out in Lombardy Region over the last 15 years, the paper provides an overview of the surplus values as it results from change of land use or from land use intensification with aim of pointing out its allocation between public and private parties. Furthermore, this analysis has encouraged to reconsider the outcomes of the urban developments under investigation over the global crisis, to verify whether planning decisions correspond to a real improvement of urban quality (infrastructures and public goods) and to understand the basis of negotiation among public and private with respect to the final allocation of surplus values. Despite the difficulty of performing an ex-post evaluation of the surplus values and their allocation, mainly for the limited and incomplete information about costs, market value of buildings and land, profits, some preliminary insights have been drawn. First of all, the scarce transparency of negotiation processes, due to the lack of methodologies able to evaluate the sustainability of the proposed interventions under a public perspective. Too often is not clear what is the public benefit with respect to a strategic vision defined by town plans and programs. Secondly, the

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need of a clear conceptual framework and of a decision support system for addressing the negotiations processes in urban development interventions towards a sustainable and fair allocation of surplus values for a common interest.

Given these premises, the paper proposes a decision support system for supporting the definition of the agreement between municipalities and private developers. The methodology has been defined according to previous experiences of surplus evaluation and allocation within urban development projects under PPP. Risk and uncertainty within urban development have been considered too by the integrating deterministic approach (sensitivity analysis, scenario analysis) with a Quantitative Risk Analysis (QRA).

The decision support system proposed and tested by a pilot case study seems to be a promising evaluation framework for supporting the definition of a balanced agreement between public administrations and private developers within the context of urban development under PPP.

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Theodora Papamichail[1], Ana Peric[2]

INFORMAL PLANNING: TOWARDS PROMOTING RESILIENT GOVERNANCE IN GREECE

Tags: communicative rationality, resilient governance, informal planning procedures, Greece

Abstract: Due to a contradictory historical and political background, and the prolonged socio-economic crisis as well, the culture of collaboration and dialogue is not cultivated at any governance level in Greece. Spatial planning has been dramatically influenced by the fragmented decision-making process between the different planning levels and actors. More precisely, the conventional self-financed real estate development model is deeply rooted within the Greek society. In other words, the planning legislation is focused on 'new expansion land' for development, thus directly minimizing the possibilities of implementing the urban renewal or compact city policies, i.e. the complex policies that require an informed cooperation among various stakeholders. As a result, the Greek cities are affected by sprawl and, often, non-legitimate development tendencies. Hence, implementing a communicative rationality approach - as a tool for formulating inovative policies, in order to promote a resilient governance system - based on collaborative dialogue, networks and trustful relations among the relevant players, is a rather challenging task to be conducted in Greece.

Thus, a research question focused on informal procedures to be applied in a fuzzy governance context covers three main aspects: 1) How can tailor-made initiatives transcend the current socio-political obstacles in Greece? 2) How could an "authentic" dialogue or the features of an "ideal speech" contribute to resilient spatial development?, and 3) How could the country absorb a social, political and intellectual capital in practice produced by collaborative initiatives? The central part of the research is a case study about a successful implementation of the informal planning procedure (called the test-planning procedure) in the Greek city of Patras. In addition to elucidating the roles of local actors, the focus will be on the responsibilities and actions of local governance in various phases of this two-year procedure - initiation, preliminary assessment, discussing the solutions, and monitoring and feedback. In doing so, it is possible to observe the changes in the current mentality of local governance as a promoter of a broader social change.

The paper will present the main results grouped into several sections. After a breif critical overview of the Greek decision-making context (taking into account both the legal and administrative framework) observed through the lens of collaboration, the conceptual model, i.e. the components of resilient governance will be consisely provided. The central part elucidates the test-planning procedure in Patras, as a method based on the communicative rationality approach applied for the first time in the Greek planning context. In fact, the empirical case study illustrates the implementation of a given model into the real planning context. More specifically, it will be examined how collaboration in consecutive steps, based on expertise and impartial participation, may reverse irrational decisions and political clientelism thus promoting the gradual development of an integrated and resilient approach

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to spatial development. Finally, questioning the informal planning in a challenging environment will provide the room for grasping the topic of transforming the Greek planning culture.

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ASSESSING URBAN SYSTEM VULNERABILITIES TO FLOODING TO IMPROVE RESILIENCE AND ADAPTATION IN SPATIAL PLANNING

Tags: flood impact, urban systems, physical vulnerability, systemic vulnerability, spatial planning

Abstract: Fluvial, pluvial and coastal flooding are the most frequent and costly natural hazard and urban areas suffer the main impact. Damage to urban assets and infrastructure induce disruptions to urban functions and key daily services. These disruptions may be short or long with a variable spatial scale of impact. Urban systems are spatially distributed and the nature of this can have significant effects on flood impacts. Whereas the assessment of the direct damage is commonly addressed, new methodologies for assessing the physical and systemic vulnerability at the urban scale are required to develop more resilient cities. Land use and urban planning are widely recognised as key risk reduction measures, but their potential is usually not translated into effective risk prevention measures. Something have to change in risk assessment procedures to allow the achievement of results more embeddable in spatial planning practices. An approach based on local (urban) scales and on a deeper evaluation of vulnerability is suggested. Physical and systemic vulnerability should be measured in order to reflect the multifaceted fragility of cities in the face of external stress, both in terms of the natural/built environment and socio-economic sphere. Additionally, a systemic approach allows the consideration of vulnerability across different spatial scales, as impacts may spread outside flooded areas.

The proposed approach identifies the vulnerabilities of flooding within urban contexts, including both in terms of single elementary units (buildings) and systemic functioning (urban functions and key daily services).

Direct losses are not appraised with depth-damage functions (site-specific and scarce in Italy) but through a simplified classification of building types based on their physical vulnerability to flood (e.g. number of storeys, ground floor use and level, presence of basements). The aim is to both understand the spatial distribution of physical vulnerability and, secondly, to identify the most vulnerable building types and ways to improve the physical adaptation of our cities, working on building codes, design principles and other municipal regulation tools.

The subsequent systemic approach recognises the city as a collection of sub-systems or functional units (such as neighbourhoods and suburbs) providing key daily services for inhabitants (e.g. healthcare facilities, schools, food shops, leisure and cultural services) and which are interconnected through transport networks. Moreover, each city is part of broader systems - which may or may not follow administrative boundaries - and, as such, need to be connected to its wider surroundings, in a

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multi-scalar perspective. The systemic analysis, herein limited to residential households, evaluates the presence, the distribution among functional units and the redundancy of key daily services. As such, systemic interdependences between neighbourhoods/suburbs and municipalities emerge, highlighting how systemic vulnerability spreads beyond the flooded areas. The aim is to understand which planning patterns and existing mixed-use developments are more flood resilient (thereby informing future urban development/regeneration). Furthermore, the method could be used as a spatial decision support tool to assess and compare different alternative scenarios of urban development or services relocation.

The methodology has been developed through an extensive use of geospatial technologies (i.e. remote sensing, GIS, web mapping services), and applied to an Italian municipality (Noale, in the metropolitan area of Venice). First results, limited to the case study area, suggest that:

- building physical vulnerability is medium-high, commonly not decreasing in new buildings, thus highlighting the need for a revision of municipal building regulations;
- urban units' systemic vulnerability is generally higher for hamlets and central districts than for rural sprawling settlements and urban fringes.

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SOIL SEALING IN PADUA AND GREEN SCENARIOS: THE CASE OF SAN LAZZARO DISTRICT

Tags: soil sealing, mitigation, adaptation, urban resilience, ecosystem services

Abstract: The increase of soil sealing is presently affecting urban areas by concrete surfaces, asphalt, new buildings, and infrastructures. This phenomenon is eroding important urban ecosystem services provided by the soil system: carbon sequestration, micro-climate regulation, mitigation of hydrogeological risk, water and air purification, cultural and aesthetical services. According to ISPRA (2016) soil sealing in Italy is a crucial issue at national scale, so that 21,100 km2 (7%) are, at present, sealed. Veneto is one of the most affected region showing the highest values in the Province of Padua by 40,310 ha sealed from 2012 (18,8%). The city of Padua is one of the 20 municipalities most affected by this phenomenon, showing 4,558 ha sealed only in 2015. In such context the European Commission is addressing urban policies and strategies to implement adaptation and mitigation measures to compensate soil sealing and improve ecosystem services quality (2016). The general aim of this work is evaluating the evolution of the territory in complex macro-area of Padua (the San Lazzaro neighborhood), characterized by an industrial sector, a residential district, broad communication infrastructures, and green areas. The specific aims are i) quantifying soil sealing in 2015, ii) modelling a rooftop greening scenario in the industrial area, iii) simulating the change in soil sealing by the construction of the proposed project for the New University Hospital of Veneto. To quantify soil sealing and to model alternative scenarios at urban scale the Biotope Area Factor (BAF) index has been used. This index was introduced by the Municipality of Berlin in 1994 to promote, in a perspective of re-naturing the city, high quality urban development with respect to the ecosystem, protection of biotopes. It is frequently used to quantify soil sealing by estimating the degree of soil permeability in a range from 0 (completely sealed surfaces) to 1 (complete permeability); it also includes other permeability surfaces such as green rooftops (0.7).

Historical aerial images from 1955, 1981, 1987 have been georeferenced and orthorectified in GIS environment in order to perform the diachronic analysis of the area from 1955 to 2015. Moreover, multispectral orthophotos (visible and near infrared bands) of the year 2015, at very high resolution

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(0.2 m/pixel), have been used to map and classify, by visual analysis, land use and land cover of the San Lazzaro area. A second level classification has been performed ranking the landuse features according to the BAF index. Finally, to quantify and cartographically visualize soil sealing, a grid analysis has been performed for all the area, by normalizing values at 1,000 m2 cell. To perform the greening scenario it has been supposed that all the industrial building rooftops are potential green roofs and the value BAF index has been changed from 0 to 0.7 BAF index.

Spatial analysis about soil sealing in 2015 show that the 62.33% of surfaces in the San Lazzaro neighborhood is completely sealed (0 value), while the 31.75% is completely permeable (1 value); surfaces with 0 values are mainly located in the industrial sector, while most of surfaces with 1 value are clustered in two wide green areas of 30 and 20 hectares respectively. In the rooftop greening scenario results show a decrease to 41.20% of surfaces with 0 BAF value, a constant percentage of surfaces with 1 BAF value, while an increase of 19.4% in surfaces with 0.7 BAF value. Simulation of land use change by the proposed New University Hospital of Veneto show an increase of 69.38% in surfaces with 0 BAF value, and a reduction to 27.21% of surfaces with 1 BAF value.

This study shows that in 2015 sealed surfaces in the San Lazzaro area are quite dominant. On the contrary, the rooftop greening scenario highlight some mitigation measures which may be considered to compensate soil sealing by adapting the existing industrial buildings.

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Simon Pezzutto[1], Franziska Haas[2], Dagmar Exner[3]

EUROPE´S BUILDING STOCK AND ITS ENERGY DEMAND: A COMPARISON BETWEEN AUSTRIA AND ITALY

Tags: Building stock, Europe, Energy demand, Austria, Italy

Abstract: The building sector is responsible for approximately 40% of the European Union's total primary energy demand, which is mainly attributed to space heating, cooling and domestic hot water purposes. In 2010 its value reached 1,800 Mtoe/y, to which buildings contributed 720 Mtoe/y.

While the Austrian and Italian building stocks are well investigated (e.g. classified by different building typologies, existing floor area, construction materials utilized etc.), there still is a lack of information concerning energy demand values for space heating, cooling and domestic hot water according to the different construction periods.

In order to identify differences in energy demand, we first classified residential and service sector buildings in Austria and Italy and then attributed specific demand values in kWh/m² y. We further subdivided existing buildings per construction period with respect to different building features (u-values, construction material, construction methodology etc.):

i. Buildings constructed before 1945 are generally classified as historic buildings. The historic building stock is highly inhomogeneous, which makes it difficult to apply a standardized assessment. Nevertheless, certain characteristics may still be generalized, such as the massive construction for historic residential buildings.

ii. Buildings erected after World War II and before 1960 - the building industry boom - are generally characterized by bad insulation and inefficient energy systems (caused by the choice of cheap construction materials and short building times) and therefore result in a higher specific energy demand.

iii. Buildings built between 1960 and 1980 present the first insulation applications (as a consequence to the world energy crises of the 1970´s).

iv. Buildings built during 1980-1990 and 1990-2000 reflect the introduction of thermal protection ordinances (around 1990): space heating, cooling and domestic hot water demand ordinances can be retrieved both before and after thermal protection.

v. Buildings dating to 2000-2010 are considered to assess the impact of the European Performance of Buildings Directive (2002/91/EC and following recasts).

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Investigated buildings in the residential sector comprise: single family houses, multifamily houses and apartment blocks (> 8 floors); in the service sector: offices, trade, education, hospitals, and hotels and bars. We concentrated our service sector research on offices (distinguishing between office flats and office buildings) motivated by their highest space cooling demand ratio within the whole European building stock.

For each of the above mentioned building category (and construction period), we retrieved the heated/cooled floor area (Mm^2). By multiplying the latter mentioned data with the obtained information on space heating, domestic hot water and space cooling of the European Union building stock, the total energy demand (TWh/y) for the different researched energy types, sectors and construction periods has been retrieved.

The results show that Austria and Italy share a certain homogeneity among building typologies (in total percentage), features, construction materials and, consequently, specific energy demands per construction period.

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A *SMART PLANNING* APPROACH FOR SUSTAINABLE RENEWAL OF THE BUILDING HERITAGE OF HISTORIC CENTERS

Tags: Territorial Observatory, Historic Center Detailed Plan, heritage Building, energy efficiency

Abstract: This contribute discusses the results of an experiment about the smart planning approach which is conceived as a territorial observatory. The main target of the research work is the definition of a methodological approach for an Observatory for the sustainable regeneration of building heritage in the Historical Centres of Sardinia (HC). The Observatory aims to support Local Authorities (LA), mainly the smallest communities characterised by lack of resources, in designing, assessing and monitoring policies and actions, providing a tool the creation of a shared knowledge between stakeholders.

The general framework of the Observatory is consistent with the drawing process of the Detailed Plan of the Historic Centre -DPHC- (Piani Particolareggiati del Centro Storico -PPCS-). It is configured as a multi-customer Web-GIS portal, which encompasses a set of multi-disciplinary indicators based on Open GeoData and baseline DPHC knowledge, combined with the Voluntary Geographic Information (VGI) obtained by the feedback of the portal users.

Some extraordinary detailed studies on the historical building heritage are now available thanks to the recent funds provided for the DPHC. Such work is characterised by a certain uniformity and constitute an excellent baseline data that is useful to identify a shared set of indicators. The definition of a dynamic, multi-disciplinary and multi-scalar set of indicators is also an important issue for the research work, which should be consistent with the local development strategies and with the specific regulatory context.

The choice of such indicators is referred to recent works on environmental certification protocols (ITACA, LEED, ...) and seeks to integrate issues such as the safeguarding and enhancement of cultural heritage. The set of indicators outlines a “BASE Scenario” which could be adopted for the monitoring of the plan effectiveness and for the creation and assessment of different scenarios. The spatial structure of the indicators includes several levels of detail: aggregated indicators could be used for HC benchmarking and more detailed indicators could support the plan design and monitoring.

The adopted indicators put emphasis on the energy efficiency and adaptive reuse of buildings, which are factors that often are in conflict with conservation issues, but, at the same time, are the main driving forces for the revitalisation of the HCs. The adoption of a hybrid analytical model for the synthesis of some aggregated indicators for the energy performance of the heritage is an innovative aspect of the research work. The model is developed in GIS environment and can perform calculations in accordance with standards (UNI 11300: 2014) at the scale of the single building. The model results can be spatially aggregated at the HC level or at other levels in order to provide support during the

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design and assessment phases of retrofitting scenarios and to facilitate the communications with local stakeholders.

After a short presentation of the methodology framework and of the main theoretical approaches, the case study is presented focusing on the definition of energy efficiency indicators. The outlined methodology shows some critical issues and potentials about the energy efficiency indicators that have been adopted and that constitute the base for further developments.

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Loredana Ponticelli[1], Cesare Micheletti[2]

THE LAVAZÉ PROJECT (TRENTINO-SOUTH TYROL, I). A LANDSCAPE APPROACH FOR A HIGH ALTITUDE ALPINE RESORT

Tags: green infrastructure, holistic approach, mitigation and adaptation, urban resilience

Abstract: Lavazé pass (2,000 MASL is a mountain plateau of great landscape value: Natura 2000 sites, UNESCO sites, wetlands and the most southern pinewood of Pinus cembra L. in Europe. The Lavazé project is a landscape regeneration strategy of a high mountain resort according to sustainable planning principles (connectivity conservation; participatory and negotiating processes; green infrastructure and sustainable mobility, renewable energy and environmental engineering interventions; architectural renovation and landscape design).

plan concept

Linking landscape and local community, the project calls for a local strategy, elaborated by means of a participatory process which includes everyone involved in the area (commons, cross-country trail managers, farmers and animal breeders, tourist and cultural operators), who use the collective management principles traditionally developed by these alpine cultures: regulative and administrative autonomy, sharing, reciprocity and collectivism.

The plan is based on complementary functions: i.e. it examines in detail the relationship between natural habitat resources (hydrology, morphology and vegetation) and those of human habitat (soil use, types of settlements, public spaces and road networks) aiming to reduce environmental fragmentation and to develop energy chains and smart grids.

plan elements

The Project is based on the integration of administrative-type actions and infrastructure and settlement reorganisation. Landscape renewal is obtained through interventions in landscape, mobility, settlements and sports infrastructures.

landscape

- reconfiguration of the lakeshore and resulting spaces between car parks (the square in front of the hotels and the lakeside footpath);
- creation of a wildlife crossing between World Heritage areas and Natura 2000 areas;
- optimisation of the water cycle both in terms of quantity (renewal of the aqueduct system for drinking water and to guarantee a minimum vital influx of the lake), and of quality (collection around the lake and a water treatment plant to avoid eutrophism in the lake);

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- optimisation of the use of local natural resources for the production of thermal energy and electricity (biomass district heating and geothermic/photovoltaic plants).

mobility

- wholesale revision of the traffic system both regarding access and through traffic;
- bypass hypothesis for the main traffic flow to avoid passing traffic, commuters and tourists and to guarantee ecological and landscape continuity longitudinally on the plateau;
- reorganisation of parking areas, both public and for hospitality (hotels), relocation of car parks along the lake to integrate them into the landscape - ground level or below ground level;
- creation of equipped sites for camper vans;
- proposals for alternative systems of public transport for longitudinal east-west crossing of the plateau with people-mover connections, hybrid minibuses and fuel cell shuttles.

settlements

- urban incentives for environmental, landscape, energy and functional renewal;
- interventions on existing building structures with hypotheses of renewal, incorporation, extension, removal or reconstruction elsewhere;
- project for new buildings only if they respond to the criteria of ecological design and “passive” energy.

outdoor recreation

- reorganisation of track/installation systems which exploit the natural characteristics of the sites avoiding the present unsuccessful muddles;
- creation of guided itineraries, appropriate signposting and relocation of the recreation ground during the summer;
- adaptation of the existing forestry paths as equipped routes for mountain bikes, horses, snow-shoes, nordic walking, sleddog etc.;
- reorganisation and extension of the cross country skiing trails using a bypass;
- creation of a departure area in the shape of a “natural arena”, by modelling artificial mounds to be used as terraces and to hide the car park;
- creation of a new plant for programming artificial snow.

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Loredana Ponticelli[1], Cesare Micheletti[2]

FROM CARRYING CAPACITY TO CARRYING CAPABILITY: AN INTERPRETATIVE MODEL FOR MOUNTAIN AREAS WITH HIGH HUMAN SETTLEMENT. THE CASE OF THE DOLOMITES (FASSA VALLEY, I)

Tags: key performance indicator, modelling tools, spatial decision support tool, standard

Abstract: The Carrying Capability Interpretative Model (CCIM) is a LAC-based model built to assess the sustainable development of community-conserved areas in the UNESCO Dolomite World Heritage (Rhaeto-Romanic region of Alps), with the aim of understanding better how to balance levels between environmental conservation needs and local development.

It seeks to provide tools and concepts to monitoring and managing an intensely inhabited mountain region with a precise cultural unity, high level of socio-economic development and with potential to reach high quality standards and extensive capabilities to implement the measures, especially regarding ecological and landscape aspects.

concept

The concept is to understand the landscape-cultural diversity of the region not only as heritage to preserve but as a system of active elements, capable of intervening on the positioning of the bottom-line for defining effects.

From this perspective the focus shifts from the "capacity" to the "capability" of the territories, interpreting them as active subjects of transformation rather than passive.

project principles

The model takes into account the methodologies recommended by international organisms (WHC, IUCN/WCPA, WTO, UNEP) for protected natural areas and proposes a “formalised decisional procedure” adapted to natural areas where anthropic presence is intrinsic to the sites (Alpine cultural landscapes) and where local communities are the main resource for long-term conservation of natural areas.

In this way two principles are integrated: the carrying capability, that is the territory’s capacity to sustain transformations and the connectivity conservation, that is the implementation of connections between natural and inhabited areas in order to increase the functionality of the whole territorial system.

The objectives are two: the elaboration of an interpretative model of the Dolomite region and the development of an evaluation procedure of the management efficiency to support management and planning choices.

indicators and standards

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The indicators chosen are separated into quality indicators - concerning the description of the context before and after the programmed actions - and performance indicators, concerning the monitoring of management procedures.

The sets of indicators and standards refer to various sources (literature, experiences of management and professional bodies) and are operationally evaluated with the involvement of territorial stakeholders. The lists include wide-ranging indicators to environmental, landscape, socio-economic, cultural and planning themes.

The definition of standards is the result of mediation between the expectations and the objectives of the project and arises through an evaluation system of "weighing up" (with simplified scores) attributed by the stakeholders to the various transformation scenarios according to their level of acceptability (4 levels of adjustment). In the case of the Dolomites, the approach to the carrying capability introduces a positive level of classification in the evaluation scale, corresponding to scenarios in which transformation is not only acceptable but even preferable and desirable.

explanatory model

The explanatory model studied for the Dolomites Heritage Site is an analytical and operative instrument which helps to represent the transformation scenarios in order to assess the prognostic effects. The model represents the structure of the Dolomite region in relation to the existing connections and potential connectivities.

implementation

The application has considered all the stages of the procedure: classification into areas, definition of the management objectives and planning instruments, definition of some easily measurable indicators, definition of standards of quality and performance, definition of a periodic monitoring programme of the effects of activities and measures of management, evaluation and eventual reprogramming of management actions according to the results of monitoring.

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eurac research

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ENHANCING THE ENDOGENOUS POTENTIAL OF AGRICULTURAL LANDSCAPES: STRATEGIES AND PROJECT FOR AN INSIDE RURAL REGION OF SICILY

Tags: agricultural landscape, Rural Development Plans, endogenous potential, Sicily

Abstract: This contribution focuses on the potential of agricultural landscape of the largest island in the Mediterranean, Sicily, in relation to its inescapable need to cope with the depopulation of its smaller, hinterland towns by relying on the integrated enhancement of endogenous resources. The agricultural landscape plays a pivotal role in its many dimensions: ecological, productive, cultural and touristic. In this direction, Sustainable Development Goals of the UN, EU indications and the experience of the Italian Rural Development Plans (PSR) serve as guidelines, with the latter aiming to implement the long overdue multi-functionality of agriculture. This study is thus elaborated in a period of renewed awareness regarding the potential agricultural landscapes justified by fragility of territories, by crisis of traditional production systems and transformations connected to urbanization that have created irreversible consequences in rural landscapes linked to traditional agriculture, as well as in ecosystem services.

The Sicilian case study must be carried out with this in mind, as a type of "test bench". The "Agrigentina-Nissena-Ennese" region of central-south-east Sicily is a territory comprising sixteen municipalities that from an administrative point of view fall under three (former) regional provinces (Agrigento, Caltanissetta and Enna) which, from the African coast of Sicily - characterised by a culturally important core (UNESCO) -, reach the "heart" of the Sicilian hinterland by following a "gray thread" formed by State Highway n. 122. The agricultural landscape that we can find in the "Agrigentina-Nissena-Ennese" region is the result of a complex interaction process involving numerous natural and human factors that compete to define the landscape's identity and, simultaneously, characterize its dynamic and economic processes. The analysis of the area aimed at highlighting the peculiarities of the region being examined and at proposing a "territorial project" called NET-WALK. The tools to develop the project Net-walk, considered in this contribution, are different and each with precise goals:

- the opportunities resulting from the agreement allowing the sale of Italian State Property country houses, from the possible declassification of highway n. 122 (which could be configured as a slow territorial crossing capable of intercepting nodes and resources);
- the return to "Paths" (as promoted by the Italian MiBACT), to create a green net of slow paths, new features attributed to the architectural heritage currently in disuse, rural landscapes of great value (although considered "minor") and intangible assets that become tangible;
- the PSR involving a strategic shift in the role of agriculture, associated with the concept of "multi-functionality" expressed in various forms (from crops dedicated to energy production, to

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the protection of the agricultural landscape in terms of tourist services offered, up to social and educational services);

- the Quality Certification of many typical sicilian products;
- numerous artifacts providing material evidences of civilizations which are classified as “productive, military and religious” architecture in a state of neglect destined for degradation in the Regional Landscape Plan Guidelines (1999). This substantial and undervalued "minor" heritage substantiates not only Italian rural landscapes but also European ones, and it is our duty to take action for their reuse and recovery.

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Vincenzo Provenzano[1], Massimo Arnone[2], Maria Rosaria Seminara[3]

THE LINKS BETWEEN SMART SPECIALIZATION STRATEGY, QUINTUPLE HELIX MODEL AND LIVING LABS

Tags: smart specialization strategy, living labs, quintuple helix, urban-rural areas

Abstract: The official document of the European Union Regional Policy Contributing to Smart Growth in Europe (EC, 2010b), which introduces the Smart Specialisation Strategy, points out that the innovation process is increasingly understood as an open system where different actors collaborate and interact, to promote an open and inclusive governance system to support the participation of traditional and new innovators.

In our view, the necessary step is represented by the evolution of the spaceless innovation model of the Triple Helix developed by Etzkowitz (1997) based on the relationship among public system, universities and business, to the Quadruple and Quintuple Helix models.

The model of the Quadruple Helix adds the involvement of innovation users, ie civil society. The participation of users is considered an essential element to make innovation a change that speeds up and improves the way to conceive, develop, produce and access new products, processes, and industrial services in addition to improve the quality of life. A paradigm shift that involves the innovation users in the formulation of strategies, changing the role of the players in the innovation processes. A further step should be done towards the Quintuple Helix model proposed by Carayannis and Campbell (2010), with particular reference to innovative models directed both urban areas and rural areas. The additional helix to the model stresses the importance of the natural environment as assets for the production of knowledge and innovation. The innovation model of Quintuple Helix draws attention to the need for a socio-ecological transition of society and economy.

The realization of new innovative processes and green technologies that move in the direction of sustainable development become key factors for the realization of long-term innovative strategies, leading to interconnections between central and periphery regions. The environmental protection and the biodiversity promote a relationship between knowledge, innovation and a sustainable and social economy where all actors are involved and responsible in the formulation of local development strategies. The adoption of policies with a place-based approach (Barca, 2009), which focus on real problems of territories, such as the physical and productive depopulation of inland areas, waste disposal, the loss of local and traditional products, supports the implementation the relationship between the public system, companies and universities take into account the social and environmental mission statement.

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In this context the strengthening of the relationships networks assumes crucial importance through increasingly thick interaction between public institutions and private organizations, research institutions, local agencies and citizens.

The social networks in which resources are mobilized are relevant to understanding the dynamics of development of the territories. According to definition of living lab by European Network of Living Labs, it is "an open innovation environment in real-life settings in which user-driven innovation is the cocreation process for new services, products, and societal March 22-24, 2017 Bolzano/Bozen (Italy) infrastructures. Living Labs encompass societal and technological dimensions simultaneously in a business-citizensgovernment-academia partnership." Therefore the Living Lab, such as open innovation ecosystem (Bergavall-Kareborn, Stahlbrost, 2009), may make an added value to positively interpret the peculiar configuration of territorial clusters, social and relational structures in an area.

It becomes an instrument to interpret the unlocked potential of local resources, infrastructure and organization, according to shared responsibility view, improving the adaptability of the players, the attitude to collective learning and making local innovation processes easier.

This paper tries to analyze how the living labs can be designed as tools for more effective implementation of the smart specialization strategy.

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Elisa Ravazzoli[1], Cristina Dalla Torre[2]

SOCIAL INNOVATION IN MARGINALIZED RURAL AREAS (SIMRA)

Tags: Social Innovation, Marginalized Rural Areas, Governance

Abstract: SIMRA (social innovation in marginalized rural area) is a Horizon2020 project. The overarching objective is to fill the significant knowledge gap in understanding and enhancing social innovation in marginalised rural areas by advancing the state-of-the-art in social innovation and connected governance mechanisms in agriculture and forestry sectors and in rural development in general.

This objective will be achieved by blending diverse theoretical positions into a coherent explanation of spatial variability of social innovation, encompassing its empirical diversity (complexities and various dimensions), co-constructing a novel evaluative toolkit, and developing improved knowledge of determinants of success in order to answer the question of how to support enhanced governance and social innovations, addressing specificities and priorities of social needs and new social relationships and collaborations, especially in marginalised rural areas across the EU, Associated States and other countries, with a particular focus on the Mediterranean region, including non-EU Mediterranean countries.

The overall concept underpinning SIMRA is to better understand the role of social innovation in building territorial capital and enhancing sustainable development through application of a systematic theoretical and operational framework of social innovation and social innovation governance in rural areas across Europe and non-European Mediterranean regions. Furthermore, SIMRA will be active in the social media and in other interactive digital platforms in order to promote the exchange, discussion and information sharing, with external audiences, and in particular with the different types of stakeholders in different countries. These platforms will be used to transfer methodologies and good practice of social innovation to other marginalised rural areas.

In this territorial context, the specific objectives of SIMRA include:

1. A systematic theoretical framework and a systematic operational framework developed for categorising, understanding, and operationalising social innovation in different settings and across scales;
2. A categorisation/classification ('catalogue of diversity') of the social innovations observable in rural areas considering the varying specificities in terms of social needs, priorities and social relationships/collaboration types etc.;
3. An integrated set of methods developed for the evaluation of social innovation and its impacts in rural areas across the target region;

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4. A co-constructed evaluation will be carried out (by academic and practice community) of success factors for social innovations across selected case studies (CSs);
5. New/improved knowledge of social innovations and novel governance mechanisms coming from the analysis (primarily CSs);
6. Collaborative learning and networking opportunities created and innovative actions (IAs) launched by integrating.

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Federico Rizzardo[1], Pierantonio Belcaro[2]

URBAN VEGETABLE GARDENS AS LOCAL POLICIES: EXPERIENCES AND PROSPECTS

Tags: urban vegetable gardens, collective vegetable gardens, local policies for the environment, active citizenship, social gathering.

Abstract: In Italy, as in other European countries and elsewhere, the practice of urban vegetable gardens goes way back in time. Throughout history, it has been associated with a wide variety of meanings: from "labourers' gardens" to "war gardens" and from "didactic gardens" to "collective gardens," the records show a vast array of sociohistorical contingencies.

Just as vast and diverse are the meanings and possibilities associated with the practice today, for example: the opportunity to save money in the purchase of agricultural products, the assurance of eating biological food, the creation of social gatherings, the undertaking of events promoting good citizenship, social and environmental awareness, the comprehension of the environmental costs associated with massive, long-distance production, and the encouragement of environmental protection and of degrowth through local production.

Our analysis aims to identify the tendencies that are currently becoming predominant in the practice of urban vegetable gardens, and it will do so by focusing on a number of paradigmatic examples. We will look at the relationship between municipal administrations and spontaneous initiatives launched by citizens in order to investigate various interrelationships, sets of problems, possible systematizations of legal relationships and potential opportunities for further development. Furthermore, we will study, from various standpoints, a specific project established in the municipality of Venice and, starting from this case history, we will assess contextual difficulties, their possible solutions and exactly what kind of value and meaning this practice can concretely acquire in today's social and environmental landscape.

Finally, we will evaluate the present and potential consequences of the practice in relation to the safeguard of the environment, keeping in mind that the spreading of urban vegetable gardens is currently enjoying strong development and that municipal administrations have started to take conscious action against climate change, in accordance with the commitments undertaken at international level. We will argue that the principle of "global thinking, local acting" can find in the practice of urban vegetable gardens its concrete fulfillment and that it is, therefore, necessary to develop networks and guidelines in order to foster the practice and maximize the benefits for all the people involved and the community at large.

In fact, in Italy, this practice is not regulated by any national legislation. Urban vegetable gardens fall, therefore, under municipal regulation, which is, of course, different in every district. In cities like Bologna or Reggio Emilia, urban vegetable gardens have been legally regulated for years; in many

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other districts, though, this is not the case. This is why every city has its own peculiar relationship between practice and legislation. In Venice, for example, urban vegetable gardens are legally framed through the “adopt a flowerbed” project. This contingent legal framing determines, consequentially, a difference in the approach of municipal administrations to the activities set up by local citizens: in cases of top-down dynamics the presence of “social gardens” instituted by public administrations and assigned to the elderly or the underprivileged is widespread; in contrast, we will show that different is the attention granted to initiatives organized by citizens that follow bottom-up dynamics.

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ENERGY CONSUMPTION AND INDOOR COMFORT IN HISTORIC REFURBISHED AND NOT REFURBISHED BUILDINGS IN SOUTH TYROL: AN OPEN DATABASE

Tags: Historic building stock, energy consumptions, energy retrofit, comfort improving

Abstract: To achieve the EU energy saving targets, renovation of the existing building stock requires a particular attention. Among them, historic buildings amount to one fourth of Europe's building stock - 14% dates before 1919 and other 12% dates between 1919 and 1945. There are 120 million Europeans estimated to live there. Also in the Province of Bolzano (Northern Italy), 30% of the building stock was built before the end of World War II - in some municipalities even around 60%. Given that large proportion, energy refurbishment of this sector represents not only a potential to reduce CO2 emissions, but also the possibility to provide sustainable and comfortable living space (using existing resources) while at the same time preserving cultural and social values.

Nevertheless, to apply appropriate retrofitting actions and to estimate a reliable energy saving potential, detailed knowledge on the typical energy needs and the real energy performance of historic buildings is needed. It should include all aspects that affect energy consumption, such as the actual use, architectural features, the construction method, the building materials, the construction details and their behaviour from energetic and building physics point of view, as well as weak and critical points. At the same time high quality retrofits, that show the feasibility of deep renovations under respect of cultural and social values, can provide robust and transferable retrofit measures for different building typologies, since standard solutions are not suitable for historic buildings.

To calculate the baseline scenario for historic buildings in South Tyrol, we analysed many examples of non-retrofitted historic buildings proportionally to the number of the 5 representative main historic building categories of the region. These categories, defined by the local heritage authority, were rural house/farmerhouse, urban residential house, the freestanding (rural) dwelling house, schools and hotels. The further defined sub-typologies reflect their use, their location/climate and their architectural characteristics and construction method.

The examination is based on interviews and on-site visits collecting information about the use of the building, the building geometry and dimension, the construction of the thermal envelope (stratigraphy and thermal transmittance of the different components), the heating system type and control, the use of renewable energy sources, the energy consumptions from bills and the perceived comfort inside the building.

In parallel "success examples" have been selected in accordance with the local heritage authority, as they have to satisfy both energy and heritage conservation aspects. The documentation of the best practise is similar to the one of the nonretrofitted buildings, including additionally the description of

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typical technological solutions. These can be both transversal to all buildings typologies (e. g. the insulation of the wooden roof or restoration of the windows), or specific for each building typology (e. g. the interior insulation of the *Stube* in the case of rural isolated buildings).

Based on that two-pronged analysis of not-refurbished and best practise buildings, we developed a database with well-documented representative buildings of each building typology showing the typical energy performance and the typical construction method of the historic building stock as well as successful retrofit interventions.

The open database allows both building owners and planners to estimate the energy consumptions for different historic building typologies, to understand which are the most frequent retrofit solutions and to forecast the possible energy savings and the improvement of comfort if the building is refurbished. The database represents a knowledge source and an access to trustworthy information for all stakeholders, going beyond the state of the art in the respect to architecturally quality of deep renovations.

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Sandro Sacchelli[1], Sara Fabbrizzi[2], Francesco Geri[3], Marco Ciolli[4]

PLACE-BASED POLICY-MAKING AND COMMUNITY SECURITY: A DECISION SUPPORT SYSTEM FOR INTEGRATED PLANNING OF URBAN ECOSYSTEM SERVICES AND DISSERVICES

Tags: urban green management, landscape perception, trade-off evaluation, complex system analysis, economic planning

Abstract: Urban trees can potentially improve liveability of cities via a range of positive externalities. On the other hand, several risks and costs are related to the presence of vegetation in urban areas. These negative impacts can affect both management practices at administrative level and citizen's security and well-being. Literature review of scientific works demonstrates how the integrated evaluation of urban trees ecosystem services and disservices is a recent issue. In addition, a lack in specific models and Decision Support Systems (DSS) able to depict suitable actions for trade-off management among positive and negative impacts is highlighted.

Within these premises, the objective of the work has been to implement a model based on Geographic Information System (GIS) that allows to depict best management strategies for urban plants in order to maximise security of population and optimize the costs for intervention on trees (Visual Tree Assessment - VTA and pruning). The DSS uses a dynamic simulation able to take into account annual increment of single plants as well as annual budget and funds devoted to green urban care by local administration. Intervention priority on trees was based on a multicriteria analysis (MCA) model that evaluates two opposite lines of services/disservices: the first is the potential value of single trees for recreational aspects; the second is represented by the risk of falling trees and branches that can cause damage to people, vehicles, buildings as well as other facilities. Suitability score for recreation was based on three criteria: i) accessibility of the area due to density of main roads; ii) presence of Place of Interest (POI) such as monuments, cycle paths and recreation grounds; and iii) aesthetic perception. Criteria (i) and (ii) were computed through a GIS-based distance modeling and fuzzy logic. Aesthetic value must take into account the holistic framework of the system and the affective feature of public perception. In order to clearly explain emotional aspect regarding urban green perception, an innovative approach was applied that involves Google Street View-based interviews and Likert scale. Dimension and typology of trees as well as partitioning of annual increment among different parts of the plant, were considered to analyse the risk related to single tree.

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Optimal intervention was depicted by means of combination of spatial modeling and MCA-Overall Ranking technique. Strategic planning can be set for a defined period (e.g. in our case five years) and for specific context. The Cascine's Park in the city of Florence (Italy) was selected as study area. This green space is, in fact, the greater urban park of the area and it is representative of general characteristics and conditions of national metropolitan cities. A total number of about 7,600 trees on a surface of 130 hectares was analysed. The main strengths as well as weaknesses of the model have been discussed in the paper. In particular, economic and managerial benefits arisen in case of DSS' application were stressed.

The DSS can be considered as a starting point for integrated evaluation of additional ecosystem services/disservices. As matter of fact supplementary positive and negative functions of urban trees and urban green areas should be addressed in analysis. In order to optimize strategic planning, further impacts will be computed using both biophysical and monetary parameters. Eventually, useful skills for potential application in case of climate change occurrence and extreme events intensification can be suggested.

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Stefan Sattler[1], Irene Zluwa[2], Doris Österreicher[3]

PHOTOVOLTAIC ROOFTOP GARDEN - INNOVATIVE SYSTEMS FOR THE FUTURE

Tags: Photovoltaic, green roof, smart urban energy planning, urban heat island effect, holistic approach

Abstract: Due the climate change, the urban heat island effect becomes more and more of a problem in our cities. They get denser each day and therefore green space is often neglected. But this green spaces are an effective way the improve the microclimate in urban areas by cooling the air with the help of transpiration.

The research project "PV-Rooftop Garden - Innovative Systems for the Future" had the focus on the following fields and how those fields can be combined on a single rooftop:

- roof greening
- energy production by photovoltaic
- recreation room
- retention of storm water

Therefore green roof technology and translucent photovoltaic panels were combined to produce energy and give shadow to the users of the roof at the same time.

Different prototype-systems of the PV-pergola were developed and studied and their statics calculated. For designing the green rooftop garden a comprehensive analyses regarding the users needs, including the legally conditions, was done.

The PV rooftop garden provides a comfortable and enjoyable atmosphere, the PV-pergola with semi-transparent glass-glass modules offers shading and produces green electricity. It combines some qualities which are quite rare in our cities and it is suitable for existing and new buildings.

New regulations like the EU building directive 2018/20 establishes that the zero energy standard becomes the new requirement and so producing energy directly on each building becomes very important if these guidelines are to be met.

With one unit of the PV rooftop garden - approximately 56m2 of ground area - 5.500 kWh of green energy can be produced each year. That's enough for 1-2 households. In order to determine the quality of people's stay under the PV rooftop garden, meteorological data with and without the PV were collected for one year. With this data the Universal Thermal Climate Index (UTCI) was calculated. The UTCI is a complex mathematical model that calculates an equivalence temperature from the input variables of air temperature, humidity, wind speed and average radiation temperature, which shows in

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a scale the heat and / or cold stress which a person is exposed to (Jendritzky et al., 2009). The shading of the PV modules improves the perceived temperature by about 5-7°C during summer and also during winter. This is not only perceptible for the humans but also has an impact on the plants.

Because of the opportunity to collect the rainwater directly from the PV modules storing it is much easier and no electric power is needed to pump the water up to the roof. With special plant troughs it is even possible to water the plants automatically.

It was possible to design a solution for the PV rooftop garden, where no penetration of the roof and the sealing layer is necessary. The weight of the green roof is enough that the static requirements are fulfilled. Also no sound can be transferred from the steal construction of the PV into the concrete building structure. Because of the absence of a direct connection to the building structure, it can be also used on existing buildings.

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Susan Schatzinger[1], Chyi Yng Rose Lim[2]

RETHINKING THE TAXI: CASE STUDY OF HAMBURG ON THE PROSPECTS OF URBAN FLEETS FOR ENHANCING SUSTAINABLE MOBILITY

Tags: taxi, mobility-on-demand service, service innovation perspective, service design, sustainable mobility

Abstract: Increasing world population and urbanization imply that mobility needs of this growing urban population are also on the rise. Metropolitan regions enabling high level of innovative mobility services are more likely to minimize their urban communities' need to use private car, thereby setting the path towards sustainability. Hence, sustainable mobility not only remains a central topic on the agenda of planners and policymakers worldwide, but it also sparks a growing interest in various fields such as urban engineering, IT and business–all with a common goal to advance the quality of life in cities and regions. While the path towards sustainable mobility involves reduction of private car trips, the standpoint here is not to challenge individual mobility per se–seen as violating politically sensitive notions of freedom and choice–but to rethink mobility and bring about innovative solutions so that people's mobility needs can still be met in the most effective and sustainable way. Accordingly, optimization of urban fleets such as the taxi–individualized public transport mode providing point-to-point, flexible mobility-on- demand services–can be both environment-friendly and capable of improving the quality of urban life. Despite being a vital part of the urban mobility system, the taxi receives little attention from planners and policymakers thus its potential to enhance sustainable mobility are often overlooked. Supported with funding from the Ministry of Economic Affairs, Labor and Housing of the federal state Baden-Württemberg in Germany, the »Future Urban Taxi« is one of the sub-projects under the joint initiative »Ambient Mobility Lab« between the Fraunhofer- Institute for Industrial Engineering in Germany and the Massachusetts Institute of Technology in the U.S. that aims to develop, evaluate and apply innovative mobility concepts for existing and future urban systems so as to set the course for sustainable urban mobility and improve the quality of urban life. Later phase of this project explores the fundamental requirements of designing sustainable mobility services in respective urban contexts. Consequently, following the project's initial phase, Hamburg is selected as the German use case for studying the taxi in the light of cities' urban mobility system. Considering the complex and unique urban conditions of a city, respective services always have to be adapted to particular context since taxi components are embedded within the larger urban mobility system of a city. Focusing on taxi service, Hamburg's taxi system is analyzed using an integrative framework for sustainable mobility and service design. Adopting a service innovation perspective, this paper aims to assess the performance of existing taxi service in Hamburg which, in turn, reveals the prospects for the shift towards sustainability in this case study city through the design of innovative and more effective sustainable mobility services (e.g. automatization/electrification of taxi fleets, taxi ridesharing). Since mobility services are strongly based on expert knowledge. built through continuous interaction with end users (i.e. knowledge intensive services), expert interviews were conducted in this

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project phase to gain insights into Hamburg's taxi system. The service-oriented approach serves to rethink the taxi for enhancing sustainable urban mobility–this paper argues for the need to look at the taxi differently because this transport mode forms an essential part of future urban fleets with the potential to overcome today's mobility challenges thus ushering in a sustainable future where the taxi will play a key role in shaping cities' urban mobility landscape. Using the integrated service design framework as analytical lens and based on the German case study city, this paper presents a review of taxi service in the context of Hamburg's urban mobility system whereby the rethinking of urban fleets–here, the taxi–reveals prospects for enhancing sustainable mobility

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Leopoldo Sdino[1], Sara Magoni[2]

SHARING ECONOMY AND REAL ESTATE MARKET

Tags: sharing economy, real estate, AirBnB

Abstract: During the last decade, new forms of sharing economy have been developed as an alternative aimed at the satisfaction of different needs. From the short and long distance transportation to the rental of apartments, this new economy has created a new private supply of services that were traditionally provided by professionals.

In parallel to its unexpected development, the entity of its relative impact on traditional economic sectors has grown too. This fact has determined the need, ever more urgent, of studies on the dynamics that characterize this phenomenon.

The sector of short-term housing rentals plays a central role within the universe of sharing economy. In fact, a new rental market has been born, parallel to the traditional one, characterized by short and very-short-term contracts and by the immediate and eased encounter between demand and supply, made possible by the use of some digital platforms.

AirBnB is, without any doubt, the main subject that intervenes in this phenomenon. Born in the United States, in few years, it has had an astonishing global expansion. In fact, currently, this portal operates in 191 countries, in an almost homogeneous way, that is to say, without trying to match the enormous differences between local legislations, concerning tourism and real estate, to major differences in the procedural and systemic field.

This service was born in 2007, but it is only since 2013 that its presence has become massive in Italy; during the previous years, in fact, there were only few hundreds of accommodations' advertisements published within the whole nation. Its development has been exponential, and as the projections confirm, in all likelihood, it will have the same rates of growth for the next decade too.

By now, it has already been several years that researchers and operators have highlighted the influence of *AirBnB* on the market of tourist-accommodations. On the contrary, what is still poorly detailed, perhaps because it is less obvious and immediate than the first one, is the relationship that this kind of rental contracts have with the traditional real estate market. Therefore, this study wants to be a first step towards the comprehension of the impact that the uncontrolled growth of the sharing economy has, specifically, on the Italian real estate market.

Logically, the rental submarket is the one that is affected the most by the growth of sharing economy. In fact, compared to traditional rentals, contracts that are stipulated with *AirBnB* provide to lessors much higher revenues and much lower restrictions. Despite the cost due to the portal from the tenant, in fact, the rentals stipulated with AirBnB determine, on average, much higher rates of capitalization than the ones generated by traditional contracts.

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That is one of the reasons that the *Airbnb's* user base has had such an enormous expansion. This, however, has also led to the fear that this new dynamics are liable to distort the traditional real estate market.

Therefore, this paper intends to carry on a brief methodological framing of the characteristics of permanent and temporary rental markets, followed by an analysis, comparative and statistical, of this phenomenon in the most important Italian cities.

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Marichela Sepe[1]

PLACEMAKING, LIVABILITY AND PUBLIC SPACES: ACHIEVING SUSTAINABILITY THROUGH ECO-LIV@BLE DESIGN

Tags: cultural heritage and identity, livelihood and livability, material and immaterial flows, smart territorial linkages

Abstract: Livability of places - and in particular of public spaces - is given by many factors which are in turn influenced by a variety of tangible and intangible elements concerning the area in question and its surrounding. Urban environments are increasingly designed to be distinctive, trying to create memorable sensory experiences and give perception of wellbeing for the people who use them. Through complex analysis of places, a more detailed and qualitative interpretation of the contemporary city is carried out. This is not only circumscribed to its aesthetic essence, nor even to its physical geometry. The functional and symbolic interpretations of the elements of a place are the fundamental factors for understanding its meaning.

At the same time, computer science and new technologies have in recent decades become increasingly useful supports for improvement of studies and applications in the field of area investigations. Consequently, placemaking - "the art of making places for people"-, in order to face new urban topics, has updated its theory and has added new methods and representational tools in order to become suitable to illustrate more complex urban scenes and provide both urban livability and sustainability. One of this is the original Ecoliv@ble design method which consists of different kind of surveys, observations and questionnaires.

Starting from these premises, aim of this paper is to present the Ecoliv@ble design method, carried out in the framework of CNR research projects. The method aims at: identifying sustainable urban livability and the factors which make places livable from the users point of view; identifying design interventions to enhance or create livability.

A series of case studies have been carried out on squares, pedestrian and semi-pedestrian thoroughfares, urban parks and waterfronts, and cultural districts which are particularly representative of the city of belonging. Regarding waterfronts, these include: Hankou River in Wuhan, Lungomare Caracciolo in Naples, Bordeaux Waterfront in Bordeaux, The Bund in Shanghai, HafenCity in Hamburg. Examples of cultural districts include: 798 Art District in Beijing, Nanluoguxiang in Beijing, and Museums Quartier in Vienna. Concerning parks, the case studies include: Millenium Park in Chicago, Citygarden in Saint Louis (Missouri), and Promenade du Paillon in Nice. Regarding thoroughfares, the Ramblas in Barcelona and the Graben in Vienna were researched. Finally, the Stadtlounge in St Gallen, the Place des Voges in Paris, the Piazza del Campo in Siena and Piazza Trevi in Rome are the squares.

The results of the pilot case studies enabled the creation of the Charter of happiness and livability of public spaces with twenty principles which is part of the method.

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In order to collect elements by users point of views, overlap these data with others coming from internet database and visualize the results in "friendly" multimedia maps, the method is supported by a software for smart phone or multimedia tablet. That tool can support both in the phase of collection of information and frequency of actions, and both in the administration and collection of questionnaires.

The final product will be constituted by *interactive mosaics* capable to visualize places and factors which contribute to urban livability. The software can be connected to q-codes posed on-site by which download both further information about the site and itineraries and places derived by the maps which are carried out. The main users to who the computer science tool is devoted include visitors, tourists, technicians and administrators who are interested in more liveable and sustainable places. The software, designed in open source, can be downloaded by a web site and customized to different needs.

The description of the software which can support the method, still in development, and observation both on main case studies and software conclude the paper.

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Giovanni Sergi[1], Paolo Rosasco[2], Chiara Bianchi[3]

SMART CITIES FOR LOCAL GROWTH. THE EXPERIENCE OF SMART CITY IN LIGURIA. THE CASE STUDIES OF THE MUNICIPALITIES OF SAVONA AND LA SPEZIA

Tags: Smart City in Liguria Region, holistic approach, strategic planning, master plan

Abstract: The main results of this paper will be the explanation of methods and contents of the main experiences in Liguria aiming at changing a consolidated urban organism into a Smart City. Specific attention is paid to the experience in the Municipalities of Savona and La Spezia.

In 2016 in Italy, a great number of municipal administrations, over 160, have worked on the issue of smart city developing several projects, more than 1300 which would require a financial capacity of 3.7 billion Euro.

The analysis of experiences in the 160 Italian municipalities that faced the issue of Smart City carried out by ANCI (Association of Italian Municipalities) highlighted that the sectors in which most measures were taken are mobility, environment and participation. We can say that similarly to what happened in the past years in lots of European and North American cities, the first projects related to the Smart City in Italy concern the possibility to introduce new technologies to make components of the urban system more efficient. In a second step, local institutions identified new technologies as one of the tools to develop new models of economic development and welfare.

For some years in Italy there has been a debate on the issue of Smart City within research institutions, universities and leading companies in the sector of advanced technologies. This debate has highlighted both some of the most interesting experiences in Italy and the difficulty to develop a holistic approach for this complex issue. Here are some of the most interesting contributions from Italy: Riva Sanseverino E. et alii (a cura di), *Atlante delle Smart City*,2012; Anci Osservatorio Nazionale Smart City,*Vademecum per la città intelligente*, 2013; Testoni C., *Towards Smart City. Amministrazione Pubblica e città di media dimensione: strategie di governance per uno sviluppo intelligente, sostenibile e inclusivo del territorio*, 2016.

The ways in which regional, provincial, metropolitan and municipal administration cooperate with companies in the ICT sector have changed considerably. Besides proposing technologically-advanced products for public administrations, these companies should undertake to work with universities and research centres in order to promote the growth of the system and local employment.

There are two different approaches of regions and municipalities towards the issue of Smart City. The first one is the most widespread approach and deals with one or several specific areas of the

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urban system: mobility, energy, transport. The second approach, that could be defined as holistic, considers the city as a system able to support and spread innovation.

In Liguria some big Municipalities like Genoa and La Spezia have worked on the issue of Smart City, based on a holistic approach that considers the city as a system able to support and spread innovation.

The Municipality of Savona has focused on the implementation of models to upgrade specific parts of the city investing in smart grids and energy-efficiency upgrade.

The Municipality of Genoa has established an interesting organisational structure called Genova Smart City in which the Municipality of Genoa, research institutions, big and middle- sized companies are involved. After an initial phase to develop several research projects, some operational projects have been defined in relation to components of the urban system.

Since 2015, the Municipality of La Spezia, has started a process called «La Spezia 20.20 – la città diventa Smart», aiming at developing a new vision within the strategic planning towards 2020. In this document 45 initiatives were outlined and planned.

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Bolzano/Bozen (Italy), 22-24 March 2017

Dritan Shutina[1]

TOWARDS A GENUINE AND REALISTIC MODEL OF REGIONAL GOVERNANCE IN ALBANIA

Tags: Multilevel governance, place-based, regionalization, Albania

Abstract: Regions constitute an intermediate governance level and elusive space, with roles and boundaries defined upon a multitude of factors. Consequently, the region is conceptually and practically dynamic and undergoes timely alterations both, physically and institutionally. Countries and governments consider the region and associated processes in various ways, i.e. through regionalization, regional development, regionalism, territorial governance, etc. Each process represents a specific recipe of combined governance model and institutions, political relationships and power, development mechanisms, social and natural capital. Therefore, the related underlying objectives can include: balanced and territorial development; efficiency of services and good governance; multilevel governance; environmental protection and resilience; electoral reforms; political power shifts; and promotion of social movements.

Albania has a short history of nation state, whereas regions as territorial, government and political entities have existed since centuries, but continuously restructuring. So, provinces of the centuries VII-II B.C. represent some form of autonomous regions created around Albanian antiquity centres. The principalities existed in 12th-13th centuries A.D. in very different historical conditions. As part of the Ottoman Empire, the Albanian territory was divided into four vilayets and several sanjaks. Prefectures were established in 1912 and the Qark concept was born by the end of 20th century. Each typology of region comprises competencies that vary over time. Territorial delineation has occurred based on historical relationships and political criteria. The further back in time, the more historical and cultural factors relate to the territory, (i.e. watershed). The closer to nowadays, the less important are geographical factors. Territorial features do not constitute a barrier of communication, while environmental protection and territorial development are not high in the political agenda. This shift of criteria has brought about a mental change on the region as a form of governance. Political stakeholders do not show interest on regionalization of governance.

After the collapse of the centralised economy, Albania initiated governance reforms, very similar to those in the Eastern Europe. The first substantial reform took place in 1999-2000, while a second one happened recently (2015-2016). In both cases, Albanian institutions did not take a clear position regarding “the region”. Therefore, all issues related to territorial and place-based development, multilevel governance, environmental protection, and efficiency of services were not addressed. The decision not to embark on any region’s reform, moved the Albania`s trajectory of good territorial governance away from the mainstream of the eastern European practices. Detailed social, spatial and economic analysis show for high territorial disparities, service delivery inefficiencies, poor resource management and no participatory governance. This leads to a pressing need for reconsidering regional development and governance regionalization. There should be no denial of borrowing know-how from neighbours’ experiences, but Albania has to create its own model, fitting into its geopolitical identity.

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Albania has lost twice the momentum, but a third one seems appearing in the horizon - the Government's fragile agenda of regional development as a clue to shaping a meaningful regions' governance reform. Because the region remains a complex notion and entity, very much-depended on context and not a one-time event, writing prescriptions on healthy conception is not apposite. Nonetheless, historical paths before and after 1912 to the current days, together with the disparities' analysis provide sufficient input for understanding the context and making relevant suggestions. It is the intention of this paper to bring this analysis and those suggestions for a broader audience discussion.

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Raffaele Sisto[1], Javier García López[2], José Manuel Paéz Borrallo[3], Julio Lumbreras Martín[4]

OPEN DATA PORTALS ASSESSMENT IN ITALIAN AND SPANISH CITIES

Tags: smart city, open government, open data, transparency, urban level

Abstract:

INTRODUCTION

During the last years local, regional and national governments are acquiring a strong commitment to a horizontal strategy of their performances called Open Government. This idea of governance is based on policies which promote public administration transparency, open data and citizens' interaction in decision-making processes and ongoing collaboration through bottom-up strategies. Kontinakis and Katalin proved on their city council surveys that the main challenges that cities are dealing with the open data processes in Europe are: financial and human resources, datasets collaborations, standards, best practices, and business cases related to open data. They also agree that stakeholders and citizens are basic elements for any Smart City project. Thereby, most of the public administrations improve citizen information through portals of Transparency and Participation. In this context, the Open Data appears whose philosophy is to promote free access to public sector data so they can be reused by others to attract and serve citizens, businesses, and any other institution.

OBJECTIVES

The main objective of this study is: to obtain a real and updated vision about the status of initiatives of Open Data with a special focus on Spanish and Italian cities that are the countries with the highest maturity levels on open data portals in Europe (ODME, 2015); to identify best practices within their efforts and strategies; to demonstrate gaps as lack of standardization or homogeneous structure; to assess the quality of open data regarding incorrect formats, useless or outdated data that do not meet the requirements to qualify them as open data; to help them to prepare and improve their open data strategy. Therefore, it assesses best open data city portals for understanding which data is more valuable and which are the techniques and technologies more adequate to both data scientists use and regular citizen use.

METHODOLOGY

The three areas of Open Government were assessed. The paper carried out analysis and research of the most important Open Data websites through navigation and user experience as conventional features. It also analyzes only the official websites of public administration and local authorities. Further, the study is focused on Spanish and Italian provincial capital and cities over 200,000 inhabitants who have promoted a specific open data portal.

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The assessed cities were evaluated according to the next criteria:

Participation analysis (using two dimensions).

- The existence of a specific participation councillorship
- Publication of ideas, maturity, results and online activity
- Transparency analysis is (based on two main axes).
- The existence of a specific transparency councillorship
- Transparency indicators (according to Spanish and Italian law)

Finally, the paper focused on open data portals. The four assessment dimensions were:

Data quality. How the data may be used and how reliable the data is. Five features were evaluated: Data available is open source, free to everyone and updated; Data sources are official ones; Format based on the 5-star open data;

Data accessibility. This evaluation is based on six features: Aggrupation downloaded (RDF); SPARQL/API Service; Languages; Accessibility; Online and downloadable data.

Data typology. A holistic approach to data is an essential element in smart cities in make available data from all sectors of the city.

Data visualization. Not only data scientist should allow accessing open data. Thereby, the paper analyzes there key visualization tools that allow better data accessibility: dashboard, data previsualization before downloading, readable format, relevance.

EXPECTATIONS

This paper shows Spanish and Italian best practices not only in open data but also in open government from the citizen and stakeholders perspective. It also provides understanding of the main tendencies for an open smart government strategy are to an assessment from the citizen point of view.

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Avram Sorin[1], Vîlcea Cristiana[2], Drăcea Raluca[3]

THE PLACE OF URBAN-RURAL FRINGES IN THE TERRITORIAL PLANNING CASE OF METROPOLITAN CITIES

Tags: urban rural fringes, rural-urban interaction, metropolitan cities, smart territorial linkages

Abstract: The specific terminology used to describe in literature the space that cannot be easily categorized as rural or urban varies a lot. Starting from the concept of peri-urban and reaching the recent terms of urban-rural interface, used for non-metropolitan cities, or the urban fringe concept, used for metropolitan cities, this space may be considered as the solution for a sustainable and intelligent development of urban areas. Smart territorial linkages between urban and rural spaces may be a solution to avoid the urban sprawl phenomenon by innovative governance approach. The present study analyses the metropolitan areas in Romania from the functional and socio-economic point of view in order to fundament the need for considering the rural-urban fringe as a distinct territorial entity from those of urban or rural areas.

The proposal made in this study regarding an identity for the urban fringe is emphasized by the need of sustainable development, by the climatic changes and by the depletion of traditional energetic resources. Metropolitan communities should provide in the future, as much as possible, food resources, energy as close as possible to the urban settlements. In this respect, the planning actions to modify the territorial balance are quite limited by the exiting constructions. As a result, the rural space, but with strong urban influences, located inside the metropolitan areas, may be approached in a smart territorial linkages manner.

Beside the functional features of the urban-rural fringe, the people tend to concentrate in urban/ metropolitan areas will increase even more the environmental pressure with effects on the quality of living. The later aspect was studied and included in this research, taking into account the demographic structures of each metropolitan area in Romania in order to have a complete image over the characteristics of human resources available. The main conclusion is that the changes foreseen by territorial planning should take into account all features mentioned above in order to provide the smart territorial linkages.

For this study, 14 metropolitan areas in Romania were taken into consideration, 13 of them being part of the FMAUAR (Federation of Metropolitan Areas and Urban Agglomeration in Romania - Bacău, Baia Mare, Botoșani, Brașov, Cluj, Constanța, Craiova, Iași, Oradea, Vîlcea, Satu Mare, Timișoara and Tg Mureș) and Ploieşti metropolitan area, that is not included in the association mentioned because of the specific topography and industrial profile of this area. The analysis of all fourteens areas include two directions of study: the functional aspects (land use, value of isochrones, environmental features, topography, natural environment) and the socio-economic aspects divided into four categories -

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viability (poverty, specific urban infrastructure), competitivity (economic structure, access to modern technology), administration (coordination between authorities, management efficiency) and performance of banks (presence of banks, attractivity of private investments, credibility of local authorities). The methods consisted in overlapping different thematic vectorial or raster maps (using ArcGIS software) in order to establish the limits of the urban-rural fringe for each metropolitan area under study. The delineation was based on the present features identified for the metropolitan areas and on the conceptual models identified in the international literature specific for the area under study. The second part of the study include the analysis of the connection, sustainability and integration of the main urban pole to the secondary urban poles and the urban-rural fringe.

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Sabine Sulzer[1]

FACTOR 3 REDUCTION OF ENVIRONMENTAL FOOTPRINT IN SWISS BUILDING STOCK

Tags: building stock, districts, decentralized energy systems, renewable energies, energy efficiency, environmental footprint

Abstract: Buildings represent the largest share of energy demand in Switzerland: heating, ventilation and air conditioning (HVAC) account for roughly 40% of the final energy demand. Therefore, the goals of the Swiss Energy Strategy 2050 and the Swiss Climate Strategy can only be met if buildings become much more energy efficient relative to the current situation, and if the remaining demand is primarily met by renewable sources. Accordingly, key performance indicators include the energy intensities (in kWh/m^2) used for the operation of buildings, and the carbon content (in g CO_2 /kWh) of energy used. The environmental footprint of the building stock, defined as the product of these two KPIs, should be reduced by a factor of three by 2035.

This challenging goal is set by one of the eight "Swiss Competence Centers for Energy Research" (SCCERs) launched in 2014, the SCCER "Future Energy Efficient Buildings and Districts" (FEEB&D). This center combines six universities in Switzerland and more than 40 collaboration partners from industry to work on the following areas of research:

- **Efficiency at Building Scale**: Optimal control of energy fluxes through the building envelope, and user centered control algorithms for efficient operation of buildings. Special attention is paid to better understanding and mitigating the performance gap (difference between planned and measured energy demand)
- **Renewable Energy Systems from Building to District Scale**: Development of tools, which allow for the identification of optimal combinations of building, district and centralized solutions.
- **Energy Performance at Regional and National Scale**: Spatio-temporal data of national present and future energy demand related to buildings, and spatio-temporal potential of renewable energy sources, such as solar, wind and shallow geothermal energy.
- **Diffusion of FEEB&D Technologies**: Measures to foster the use of energy efficient building technologies; optimization of decentralized energy systems, business models for energy efficient buildings and districts.

The keynote speech gives insights to the research activities, the organization and collaborations within the SCCER and with the collaboration partners in order to utilize synergies in research and implementation activities.

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Luca Tricarico[1]

COMMUNITY ENERGY ENTERPRISES: *COMMUNITIES, SOCIO--INSTITUTIONAL SYSTEMS AND MANAGEMENT OF THE FUTURE DISTRIBUTED ENERGY GEOGRAPHY*

Tags: Community Energy, Community Enterprises, Distributed Energy

Abstract: We are recently witnessing the birth of a new and specific disciplinary framework on energy and social sciences, born out of the need to cast the net wider and include social-organizational and institutional issues alongside the more technical aspects of distributed energy production. In this regard the systemic institutional transformation necessary to support wide-spread adoption of community energy schemes has received limited attention to date. Community energy initiatives can be considered as part of this *socio-material* transition, involving innovative organizations, institutions and approaches in users and citizens' engagement. In these initiatives, community engagement means much more than merely situating smaller energy units close to consumers. "Energy" must not be considered as a simple economic asset or an ecological phenomenon but also, and critically a social relation. In this perspective, the need for advancing planning research in energy and community initiatives is clear and can be broken into two primary purposes.

The first entails overcoming the current organization of the energy paradigm, historically conceived in a fixed centralized model, with hardly any citizen engagement in energy generation.

The second aims to enhance local community access in the energy market as a crucial factor for the "low carbon challenge", contrasting both energy poverty and climate change, through the promotion of an institutional environment that is able to spread sustainable community-based energy production and efficiency initiatives. Built environments are organised according to energy resources and energy power systems are therefore influenced also by the nature of its fuel supply. The transition from centralised systems based on fossil fuel to more decentralised ones based on renewable resources will therefore also have important effect on spatial configurations.

Within the different community initiatives, the analysis on specific organization such as Community Energy Enterprises is based on particular organizational form in which the community is treated as completely endogenous to the enterprise and the entrepreneurial process. These organizations are keen on developing local energy projects in an open and participatory manner, aiming to deliver benefits (social and economic) to the local community. The key organizational aspect relies on the role of local communities which create collective business ventures and, through them or their results, aim to contribute to both local economic and social development initiatives.

My contribution in the investigation of these organizations will be conducted in three different ways:

First. Suggesting and analysing new socio-political meanings for "local communities" in the planning theory debate.

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Second. Analysing the possible territorial implications in the shift towards the distributed energy scenario, in terms of infrastructural and institutional re-organization.

Third. Analysing the specific features of the community engagement processes and the outcomes of these organizations.

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Mihai Radu Vanturache[1]

DYNAMICS OF THE URBAN COMPOSITION MODELS REPORTED TO THE CURRENT CLIMATIC CHANGES - WAYS OF DEALING WITH THE URBAN PLANNING

Tags: microclimate, composition, models, urban planning

Abstract: Urbanization in the history of human settlement planning, was established on the basis of principles of humanity came from the need to organize and serve as a community. These principles, first consider the primary functions were modified, supplemented exactly as history shows - a development of these settlements.

Nowadays, with this development and the need for complex management of territory in the country can bring into discussion six types / ways of living, each different in its character, feature and function: village, town, city, municipality, county capital and the metropolis. Because of the complexity of approaching to land use, bring into question the interdisciplinary form, the way of organizing the city as a structure of relations between the systems, management of the sources and resources in the urban planning.

Complexity, dynamics and population density has led, in time, to climatic changes at various scales, which are becoming more visible and felt by the urban population. Weather phenomena are different in smaller scale in the urban space as a result of the emergence of some dysfunctions (specific in form and manifestation) transposed into thermal discomfort that may be associated with the phenomenon, for example - the urban heat island.

INTRODUCTION

The study of climate change on the phenomenon U.H.I. within this material, in terms of urban, is limited to a theoretical approach and practical one.

A. The theoretical approach:

- Land management as an activity which should be assured by the chief architect, is based on guiding features, contextual and implementation (the activity of specific policy objectives).
- In the city (urban structure) the keywords (such as management of the territory), above, the specific policy objectives, will serve integration and development. These two approaches, reported to the planning, addresses to the user (as an unique "actor") that the mark (the creative, legislative, executive and the functioning) causes two types of approaches: a positive approach and a negative one;
- So in the urban structure (when referring to an urban and complex area - for example metropolis) urban management has the urban composition as a primary tool (as a spatial-

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volumetric structure) a discipline extracted from the specialists' need to configure and organize city / metropolis after the function, operation and functioning. In theory, between these components there are completing, subordination and complementarity relations, and also incompatibility relations.

- The socio-economic part of the urban composition is divided in:

    A. A positive approach → an "adjustment" by the dynamic use of the land (a sustainable and durable strategic approach), the urban composition for the reduction or elimination of the disfunctions regarding the quality of living and environment

    B. A negative approach → when the interests of the population do not "coincide" with the strategic approach to urban scale, with the general strategic objectives and it is limited to specific actions on the territory, sometimes at scale of the particular architectural object, extrapolated from the urban context.

- The material presented is meant to explain the components listed below (sources and resources of land management) that contribute to a balanced and integrated intelligent use of urban space either formal or informal.

- These components are:

    - IT data;

    - Energetic efficiency;

    - Social inclusion (as a concept regarding the use of urban public space)

- These components are derived from a interdisciplinary approach: architecture, engineering, climatology, geography and urban planning, sociology, etc., of the land use:

    A. Infrastructure - road infrastructure, technical equipment, tehnical and utilitary systems, etc;

    B. Superstructure - road infrastructure, technical and utilitary equipments, buildings, etc.

- Regardless of the type and "place" of the intervention, studies identify, define and explain their fuction and features, among others detailing the type of building materials (natural and artificial), facilities (equipment and facilities for energy efficiency). But through an integrated approach, in the urban context, for example, from macro - to micro any intention, development and materialization of a sustainable investment involves three principles that should be pursued:

    A. Land mobility;

    B. Quality of the environment - Quality of living;

    C. Circular economy;

- These principles define, among other things, dynamic of the patterns and urban composition on diminishing or eliminating dysfunctions. Defining is a process, a research that aims to identify

patterns of "correction" through the use of standardized and legislated (includes integration and coherent development).

- Eliminate or reduce a function of these components (the scheme relationships between systems) causes dysfunctions. One of the dysfunctions that can occur at the level of urban planning, urban dome is delimited geographically and is called "urban heat island". This dysfunction is actually a phenomenon (which is associated inter alia with thermal discomfort in summer) is formed in densely urban area utilization, especially in large urban centers (cities).
- In this case, a current concern of sustainable spatial configuration tools through an urban approach, are the percentage of land occupation and land use coefficient. The two indicators (which are not dynamic) become tools of control density in the area (population density, vehicles, green spaces). These tools are elements of urban form misused in the urban space, cause malfunctions on the environment and thus on life. However, the number of vehicles or green areas are components consequential number of people (the density). So percentage of land occupation and land use coefficient may, (includes director), direct positively, but not dynamically shaping a composition that land use areas. But too many components can lead to confusion in the interpretation and use. Therefore it's proposed an urban approach (research) stages where the analytical method indicates a close link between urban composition by percentage of land occupation and land use coefficient (As tools for correction or removal of dysfunctions) and climate change in cities.

B. The practical approach:

With this material I propose:

- Highlighting the urban heat island as a disfunction that appears because of a negative management of the land;
- Several challenges in the methodological enforcement rules of the laws 350/2001 and 50/1991:
    1. redefining (modification / completion) calculation of the percentage of land occupation in relation to the built area (with respect to STAS or not ...);
    2. redefining (modification / completion) calculation of the land use coefficient (for example: referring to functions, basement, semi-basement);
    3. defining the semi-basement and the basement from an urban point of view (not limiting to a standard fire safety);
    4. defining the area built in terms of urban (not limiting the definition thereof in a STAS);
    5. defining the built area conducted in urban point of view, (not limiting to defining this in a STAS or under law 350/2001) without interpretation and alternatives. Percentage of land occupation and land use coefficient no tools are "dynamic" in the sense of urban composition. So future methodological norms must define what the dynamics of urban land use in relation to sustainable economic growth and sustainable socio-to be "established" based on strategic documents, programmatic director respectively character, medium and long term.

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Federica Viganó[1], Giorgio Tavano Blessi[2], Enzo Grossi[3]

DIFFERENCES IN URBAN -RURAL WELL-BEING: WHEN THE CITY SIZE MATTERS. THE CASE OF ITALY

Tags: Urban-rural; Psychological General Well-being Index; Life satisfaction; city size

Abstract: The paper analyzes the relation between psychological well-being and urban and rural contexts in Italy. According to the literature on agglomeration economies, cities and urban areas are linked to benefits like higher productivity and wages, more learning opportunities and exchanges, higher rate of innovation and creativity, and more public services or other aspects that might positively influence individuals' well-being. Moreover there are also negative aspects connected with the increased city size, like higher costs of living, higher environmental costs (pollution or congestion), potential social conflicts. All these elements might reduce life satisfaction and psychological well-being.

A cross-sectional survey of the main socio-demographic characteristics such as gender, age, education, income, diseases, employment, and civil status, which are listed as major well-being determinants in the subjective well-being literature was undertaken in the autumn of 2010 on a relatively large sample (750 polled) of residents living in both urban and rural areas in Italy. The survey has been conducted with the assistance of Doxa, an Italian pollster company, through telephone interviews, according to the Computer-Aided Telephone Interview (CATI) system. The survey has been modeled on the PGWBI (Psychological General Well-Being Index), an instrument specifically targeted in order to measure individual subjective well-being, employed for the evaluation of the impact of different subjective well-being determinants.

The results of our analysis clearly show that there is a significant difference in PGWBI in relation to the size of the town or city and consequently the rural or urban areas. More specifically, adopting a classification criterion for urban and rural contexts based on the number of inhabitants, we observe a significantly higher PGWBI for rural contexts with a dimension between 2000 and 20.000 inhabitants and a decrease of the PGWBI for urban contexts between 20.000 and 100.000 inhabitants (cut-off 20.000). When the number of inhabitants increases over 100.000 the PGWBI starts to grow again.

Our analysis investigates in depth how certain sets of socio-demographic variables meet to determine subjective well-being in the two different environments, the urban and the rural, and how the specific determinants for a positive or negative perception of psychological well-being vary in relation to the environment size. Given the scarcity of empirical evidence on urban-rural differences in life satisfaction, our research contribute an empirical research on this topic in Italy, providing an innovative contribute at methodological level, conducting a multivariate analysis through a data mining approach, based on artificial neural networks.

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Pascal Vullo[1], Alessio Passera[2], Roberto Lollini[3]

ENERGY RETROFIT OF FACADES: INTRODUCING PERFORMANCE CRITERIA IN PUBLIC TENDERS AT EARLY DESIGN STAGE

Tags: Building energy efficiency, public procurement, façade retrofit, design adaptation, performance indicators

Abstract: Buildings have to be able to create comfortable indoor conditions, to protect from outdoor conditions and to adapt to local climate. At the same time they account for a significant share of global energy demand and greenhouse gas emissions. A main challenge is the energy retrofit of buildings, starting from public buildings where public authorities have direct influence on the decision-making. In a building the façade is the interface between indoor and outdoor climate and of course a key factor for achieving energy efficiency and internal comfort. This paper focuses on the energy retrofit of facades of public buildings. It proposes a strategy, on the one hand for the adaption of their design to specific local conditions and specific requirements depending on the building typology, on the other hand on the mitigation of the carbon footprint of the use of these buildings.

Decisions taken during the early design stage of building retrofit interventions have a great influence on the final overall performance of buildings, because it means important cost and effort to do major modifications in later design stages. However, current public procurement procedures during early design don't allow for an evaluation of the overall building performance of the proposed design solutions that include energy efficiency, internal comfort and its complex interactions. The reason is that tenders are commonly based on single values describing the properties of façade components like U- and g- values that don't consider interrelation between facade properties, the dynamic behaviour of buildings and specific local climate. This paper presents a procedure for a concept that integrates multi objective performance indicators into public tenders. It is operationalized by a user friendly tool that predicts the overall performance of user-defined façade design variations. Performance indicator results are subsequently integrated into public tenders by calculating an overall score for the proposed design. The whole procedure was applied on a simulated case study scenario of a public school building where the potential of the approach is demonstrated.

The method sensitizes designers and public awarding authorities to consider the overall performance of a façade design from the very early design and helps making informed design decisions. The tool can also be perceived as a common language between designers and awarding authority based on performance criteria. Further research is needed mainly on choosing and weighting performance criteria and on the implementation of the approach in real tenders. Following steps could be the development of tools and procedures for the integration of performance indicators into tenders of later design stages including more detailed and validated models.

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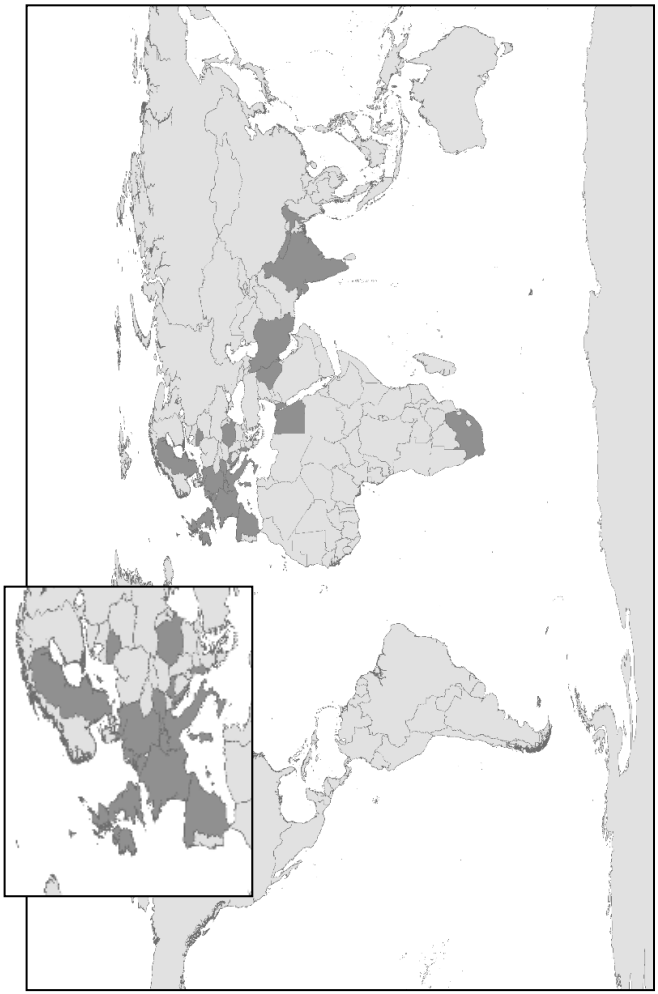

In 2017 contributions, participations and support from 21 countries around the World proved internationality of the SSPCR conference

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NOTES

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