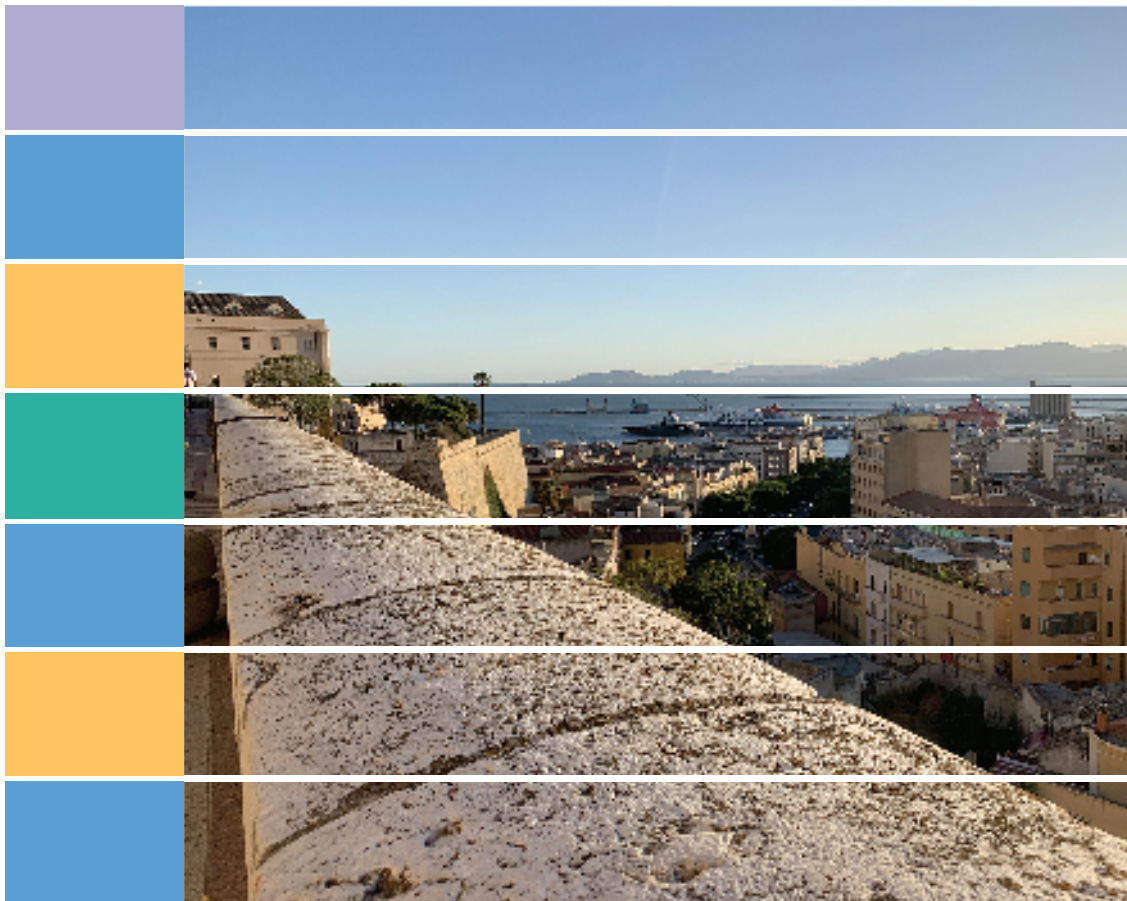


Carmela Gargiulo Corrado Zoppi  
*Editors*

# Planning, Nature and Ecosystem Services



**INPUT** TeMA Lab Dicesa UniNa



Federico II Open Access University Press





Università degli Studi di Napoli Federico II  
*Scuola Politecnica e delle Scienze di Base*

Smart City, Urban Planning for a Sustainable Future

**5**



Carmela Gargiulo Corrado Zoppi

*Editors*

## **Planning, Nature and Ecosystem Services**

INPUT aCAdeMy 2019

*Conference proceedings*

Tuslerian II Open Access University Press



La cooperazione al cuore del Mediterraneo

*Planning, nature and ecosystem services* / editors Carmela Gargiulo, Corrado Zoppi - Napoli: FedOAPress. 2019 - (Smart City, Urban Planning for a Sustainable Future. 5).

Web link:

<http://www.tema.unina.it/index.php/tema/Monographs>

ISBN: 978-88-6887-054-6

DOI: 10.6093/978-88-6887-054-6

*Editor*

Rocco Papa, University of Naples Federico II, Italy

*Editorial Advisory Board*

Mir Ali, University of Illinois, USA - Luca Bertolini, Universiteit van Amsterdam, Paesi Bassi - Luuk Boelens, Ghent University, Belgium - Dino Borri, Politecnico di Bari, Italia - Enrique Calderon, Universidad Politécnica de Madrid, Spagna - Roberto Camagni, Politecnico di Milano, Italia - Derrick De Kerckhove, University of Toronto, Canada - Mark Deakin, Edinburgh Napier University, Scotland - Aharon Kellerman, University of Haifa, Israel - Nicos Komninos, Aristotle University of Thessaloniki, Grecia - David Matthew Levinson, University of Sydney, Australia - Paolo Malanima, Magna Græcia University of Catanzaro, Italy - Agostino Nuzzolo, Università degli Studi di Roma Tor Vergata, Italia - Rocco Papa, Università degli Studi di Napoli Federico II, Italia - Serge Salat, Urban Morphology and Complex Systems Institute, France - Mattheos Santamouris, National Kapodistrian University of Athens, Greece - Ali Soltani, Shiraz University, Iran

**Selection and double blind review under responsibility of INPUT aCAdeMy 2019 Conference Committee**

© 2019 FedOAPress - Federico II Open Access University Press

Università degli Studi di Napoli Federico II

Centro di Ateneo per le Biblioteche "Roberto Pettorino"

Piazza Bellini 59-60 - 80138 Napoli, Italy

<http://www.fedoapress.unina.it>

Published in Italy

Gli E-Book di FedOAPress sono pubblicati con licenza

Creative Commons Attribution 4.0 International

Cover and graphic project: TeMALab

This book collects the papers presented at INPUT aCAdeMy 2019, a special edition of the INPUT Conference hosted by the Department of Civil and Environmental Engineering, and Architecture (DICAAR) of the University of Cagliari.

INPUT aCAdeMy Conference will focus on contemporary planning issues with particular attention to ecosystem services, green and blue infrastructure and governance and management of Natura 2000 sites and coastal marine areas.

INPUT aCAdeMy 2019 is organized within the GIREPAM Project (Integrated Management of Ecological Networks through Parks and Marine Areas), co-funded by the European Regional Development Fund (ERDF) in relation to the 2014-2020 Interreg Italy – France (Maritime) Programme.

INPUT aCAdeMy 2019 is supported by Società Italiana degli Urbanisti (SIU, the Italian Society of Spatial Planners), Istituto Nazionale di Urbanistica (INU, the Italian National Institute of Urban Planning), UrbIng Ricerca Scientifica (the Association of Spatial Planning Scholars of the Italian Schools of Engineering) and Ordine degli Ingegneri di Cagliari (OIC, Professional Association of Engineers of Cagliari).

#### SCIENTIFIC COMMITTEE

Dino Borri - Politecnico di Bari  
 Marta Bottero - Politecnico di Torino  
 Domenico Camarda - Politecnico di Bari  
 Arnaldo Cecchini - Università degli Studi di Sassari  
 Donatella Cialdea - Università del Molise  
 Giovanni Colombo - ISMB Istituto Superiore Mario Boella  
 Valerio Cutini - Università di Pisa  
 Andrea De Montis - Università degli Studi di Sassari  
 Romano Fistola - Università degli Studi del Sannio  
 Carmela Gargiulo - Università di Napoli "Federico II"  
 Davide Geneletti - University of Trento  
 Roberto Gerundo - Università degli Studi di Salerno  
 Paolo La Greca - University of Catania  
 Daniele La Rosa - University of Catania  
 Giuseppe Las Casas - University of Basilicata  
 Antonio Leone - Tuscia University  
 Sara Levi Sacerdotti - SITI  
 Giampiero Lombardini - Università degli Studi di Genova  
 Stefania Mauro - SITI  
 Giulio Mondini - Politecnico di Torino  
 Beniamino Murgante - University of Basilicata  
 Silvie Occeili - IRES Piemonte  
 Rocco Papa - Università di Napoli "Federico II"  
 Raffaele Pelorosso - Tuscia University  
 Alessandro Plaisant - Università degli Studi di Sassari  
 Bernardino Romano - Università degli Studi dell'Aquila  
 Francesco Scorza - University of Basilicata  
 Maurizio Tira - University of Brescia  
 Angioletta Voghera - Politecnico di Torino

#### LOCAL COMMITTEE

Ginevra Balletto - Università di Cagliari  
 Ivan Blečić - Università di Cagliari  
 Michele Campagna - Università di Cagliari  
 Ignazio Cannas - Università di Cagliari  
 Anna Maria Colavitti - Università di Cagliari  
 Sebastiano Curreli - Università di Cagliari  
 Maddalena Floris - Università di Cagliari  
 Chiara Garau - Università di Cagliari  
 Federico Isola - Università di Cagliari  
 Sabrina Lai - Regione Autonoma della Sardegna  
 Francesca Leccis - Università di Cagliari  
 Federica Leone - Università di Cagliari  
 Anania Mereu - Università di Cagliari  
 Marianna Agostina Mossa - Regione Sardegna  
 Salvatore Pinna - Università di Cagliari  
 Cheti Pira - Università di Cagliari  
 Daniela Ruggeri - Università di Cagliari  
 Laura Santona - Regione Sardegna  
 Corrado Zoppi - Università di Cagliari

This book is the most recent scientific contribution of the "Smart City, Urban Planning for a Sustainable Future" Book Series, dedicated to the collection of research e-books, published by FedOAPress - Federico II Open Access University Press. The volume contains the scientific contributions presented at the INPUT aCAdeMy 2019 Conference. In detail, this publication, including 92 papers grouped in 11 sessions, for a total of 1056 pages, has been edited by some members of the Editorial Staff of "TeMA Journal", here listed in alphabetical order:

- Rosaria Battarra;
- Gerardo Carpentieri;
- Federica Gaglione;
- Carmen Guida;
- Rosa Morosini;
- Floriana Zucaro.

The most heartfelt thanks go to these young and more experienced colleagues for the hard work done in these months. A final word of thanks goes to Professor Roberto Delle Donne, Director of the CAB - Center for Libraries "Roberto Pettorino" of the University of Naples Federico II, for his active availability and the constant support also shown in this last publication.

*Rocco Papa*

Editor of the Smart City, Urban Planning for a Sustainable Future" Book Series  
Published by FedOAPress - Federico II Open Access University Press

## Table of contents

Introduction <i>Corrado Zoppi</i>	15
<b>Sessione 1 - Ecosystem services and spatial planning</b>	
The Danube Riverside Development in the Iron Gates Gorge, Serbia, between Socio-economic needs and Protected Ecosystem <i>Branislav Antonić, Aleksandra Djukić, Milica Cvetanović</i>	17
From a species-centred to an ecosystem-based management approach, a case study of the saltmarshes of Hyères (Provence, France) <i>Patrick Astruch, Charles-François, Boudouresque, Thomas Changeux et al.</i>	29
Spatial evolutions between identity values and settlements changes. Territorial analyses oriented to the landscape regeneration <i>Donatella Cialdea</i>	39
Analyzing senior tourism. The role of ecosystem services to improve sustainable tourism destinations <i>Romano Fistola, Rosa Anna La Rocca</i>	52
Carbon sequestration and land-taking processes. A study concerning Sardinia <i>Maddalena Floris, Corrado Zoppi</i>	66
The impact of urbanization processes in landscape fragmentation. A comparison between coastal zones of Sardinia and Liguria <i>Giampiero Lombardini, Andrea De Montis, Vittorio Serra</i>	80
Areas of considerable public interest, territorial common goods and ecosystem services: an application case for the city of Cagliari <i>Marzia Morittu, Alessandro Plaisant</i>	86
A bottom up initiatives for biodiversity: ecologic representation for the inner areas of Sardinia <i>Giuseppe Roccasalva</i>	98
The soil matter between eco-systemic performance and spatial planning in metropolitan areas <i>Saverio Santangelo, Paolo De Pascali, Annamaria Bagaini, Clara Musacchio, Francesca Perrone</i>	111
Knowledge-building models for environmental planning: the case study of Bari <i>Stefania Santoro, Domenico Camarda, Pasquale Balena</i>	120
From Ecosystems to Ecosystem Services. A spatial methodology applied to a case study in Sardinia <i>Matilde Schirru, Simona Canu, Laura Santona, Sabrina Lai, Andrea Motroni</i>	130

## Session: 2 - Integrated management of marine protected areas and Natura 2000 sites

Organize the management of protected areas according to an optimal framework. Experimental case <i>Aicha Bouredji</i>	142
A methodological approach to build a planning environmental assessment framework in the context of marine protected areas <i>Ignazio Cannas, Daniela Ruggeri</i>	152
An experimental methodology for the management of marine protected areas <i>Maddalena Floris, Federica Isola, Cheti Pira</i>	165
Marine Forests (Fucales, Ochrophyta) in a low impacted Mediterranean coastal area: current knowledge and future perspectives. A phycological review in Sinis Peninsula and the Gulf of Oristano (Sardinia Island, Italy) <i>Daniele Grech, Luca Fallati, Simone Farina, David Cabana, Ivan Guala</i>	176
Assessing the potential Marine Natura 2000 sites to produce ecosystem-wide effects in rocky reefs: a case study from Sardinia Island (Italy) <i>Paolo Guidetti, Pierantonio Addis, Fabrizio Atzori et al.</i>	185
Bottlenecks in fully implementing the Natura 2000 network in Italy. An analysis of processes leading to the designation of Special Areas of Conservation <i>Sabrina Lai</i>	201
Urban pressure scenario on the protected areas systems. The case study of Teatina adriatic coast <i>Alessandro Marucci, Lorena Fiorini, Carmen Ulisse</i>	212
Posidonia banquettes on the Mediterranean beaches: To what extent do local administrators' and users' perceptions correspond? <i>Paolo Mossone, Ivan Guala, Simone Simeone</i>	225
The ecosystem services cascade perspective in practice: a framework for cost-benefits analysis in Marine Protected Areas. The study case of Portofino Marine Protected Areas <i>Chiara Paoli, Paolo Povero, Giorgio Fanciulli et al.</i>	235
The contribution of the assessment of policy consistency and coherence to the definition of the legislative provisions of marine protected areas. The examples of the regulations of "Tavolara-Punta Coda Cavallo" and "Isola dell'Asinara" <i>Salvatore Pinna, Francesca Leccis</i>	251
Passive acoustics to monitor flagship species near boat traffic in the Unesco world heritage natural reserve of Scandola <i>Marion Poupard, Maxence Ferrari, Jan Schlüter et al.</i>	260
Use of ecological indices to assess the health status of Posidonia oceanica meadows in the Eastern Liguria. Influence of ecological status on natural capital <i>Ilaria Rigo, Monica Montefalcone, Carla Morri et al.</i>	271
Coastal governance and planning agreements for integrated management of marine protected areas in UE coasting project <i>Saverio Santangelo, Paolo De Pascali, Maria Teresa Cutri et al.</i>	281



Innovative management tools to survey boat traffic and anchoring activities within a Marine Protected Area <i>Thomas Schohn, Patrick Astruch, Elodie Rouanet et al.</i>	292
SHADES. Sustainable and holistic approaches to development in European seabords <i>Francesco Vita, Fortunato Cozzupoli</i>	302

### **Session 3 - Rural development and conservation of nature and natural resources**

New local projects for disadvantaged inner areas. From traditional model to bio-regional planning <i>Anna Maria Colavitti, Alessio Floris, Francesco Pes et al.</i>	312
Inclusion of migrants for rural regeneration through cultural and natural heritage valorization <i>Elisa Conticelli, Claudia de Luca, Aitziber Egusquiza et al.</i>	323
Environmental and social sustainability of the bioenergy supply chain <i>Sebastiano Curreli</i>	333
Proposals on the Agricultural Land Use in According to the Features of the landscape: The case study of Sardinia (Italy) <i>Pasquale Mistretta, Giulia Desogus, Chiara Garau</i>	345
Common land(scape): morphologies of a multifunctional rural landscape in the Isalle Valley, Sardinia <i>Roberto Sanna</i>	356
SheepToShip LIFE: Integration of environmental strategies with rural development policies. Looking for an eco-sustainable sheep supply chain <i>Enrico Vagnoni, Alberto Atzori, Giovanni Molle et al.</i>	366

### **Session 4 - Geodesign, planning and urban regeneration**

The territorial planning of European funds as a tool for the enhancement and sustainable development of natural areas: the experience of the Strategic Relevance Areas of the ERDF OP 2014-2020 <i>Stefania Aru, Sandro Sanna</i>	375
The International Geodesign Collaboration: the Cagliari case study <i>Michele Campagna, Chiara Cocco, Elisabetta Anna Di Cesare</i>	385
A geodesign collaboration for the mission valley project, San Diego, USA <i>Chiara Cocco, Bruce Appleyard, Piotr Jankowski</i>	399
University and urban development: The role of services in the definition of integrated intervention policies <i>Mauro Francini, Sara Gaudio, Annunziata Palermo, Maria Francesca Viapiana</i>	410

Urban environment. An analysis of the Italian metropolitan cities <i>Giuseppe Mazzeo</i>	419
Recycled aggregates. Mechanical properties and environmental sustainability <i>Luisa Pani, Lorena Francesconi, James Rombi et al.</i>	431
Geodesign fast-workshops evidences. On field applications of collaborative design approach for strategic planning and urban renovation <i>Francesco Scorza</i>	443

### **Session 5 - Green and blue infrastructure**

Green infrastructure as a tool of urban regeneration, for an equitable and sustainable planning. An application case at l'Eixample, Barcelona <i>Clara Alvau Morales, Tanja Congiu, Alessandro Plaisant</i>	453
The value of water: ecosystem services trade-offs and synergies of urban lakes in Romania <i>Denisa Lavinia Badiu, Cristian Ioan Iojă, Alina Constantina Hossu et al.</i>	465
A blue infrastructure: from hydraulic protection to landscape design. The case study of the village of Ballao in the Flumendosa river valley <i>Giovanni Marco Chiri, Pino Frau, Elisabetta Sanna et al.</i>	476
Municipal masterplans and green infrastructure. An assessment related to the Metropolitan Area of Cagliari, Italy <i>Sabrina Lai, Federica Leone, Corrado Zoppi</i>	488
The Ombrone river contract: A regional design practice for empowering river communities and envisioning basin futures <i>Carlo Pisano, Valeria Lingua</i>	502
Green infrastructures in the masterplan of Rome. Strategic components for an integrated urban strategy <i>Laura Ricci, Carmela Mariano, Irene Poli</i>	513

### **Session 6 - Smart city planning**

Smart City Governance for Child-friendly Cities: Impacts of Green and Blue Infrastructures on Children's Independent Activities <i>Alfonso Annunziata, Chiara Garau</i>	524
Resilience, smartness and sustainability. Towards a new paradigm? <i>Sabrina Auci, Luigi Mundula</i>	539
Energy autonomy in symbiosis with aesthetics of forms in architecture <i>Pietro Currò</i>	549
Sharing governance and new technologies in smart city planning <i>Paolo De Pascali, Saverio Santangelo, Annamaria Bagaini et al.</i>	563

Smart Mapping Tools for the Balanced Planning of Open Public Spaces in the Tourist Town of Golubac, Serbia <i>Aleksandra Djukić, Branislav Antonić, Jugoslav Joković, Nikola Dinkić</i>	573
Towards a model for urban planning control of the settlement efficiency <i>Isidoro Fasolino, Francesca Coppola, Michele Grimaldi</i>	587
Somerville: Innovation City <i>Luna Kappler</i>	595
Urban regeneration for smart communities. <i>Caterina Pietra, Elisabetta Maria Venco</i>	605
Energy autonomy as a structural assumption for systemic development and circular economy <i>Manlio Venditelli</i>	619
<b>Session 7 - Water resources, ecosystem services and nature-based solutions in spatial planning</b>	
Landscape and species integration for a nature-based planning of a Mediterranean functional urban area <i>Erika Bazzato, Michela Marignani</i>	630
Tourism and natural disasters: integrating risk prevention methods into the Plan for tourism <i>Selena Candia, Francesca Pirlone</i>	640
Integrated management of water resources. An operative tool to simplify, direct and measure the interventions <i>Vittoria Cugusi, Alessandro Plaisant</i>	649
Application of NbS to the city plan of Segrate Municipality: spatial implications <i>Roberto De Lotto</i>	660
Nature-Based Solutions impact assessment: a methodological framework to assess quality, functions and uses in urban areas <i>Claudia De Luca, Simona Tondelli</i>	671
The recognition of the Aspromonte National Park ecosystem networks in the urban structure project of Metropolitan City of Reggio Calabria <i>Concetta Fallanca, Natalina Carrà, Antonio Taccone</i>	679
Shaping the urban environment for breathable cities. <i>Michela Garau, Maria Grazia Badas, Giorgio Querzoli, Simone Ferrari, Alessandro Seoni, Luca Salvadori</i>	692
Defense, adaptation and relocation: three strategies for urban planning of coastal areas at risk of flooding <i>Carmela Mariano, Marsia Marino</i>	704
Thermal Urban Natural Environment Development <i>Francesca Moraci, Celestina Fazia, Maurizio Francesco Errigo</i>	714

A network approach for studying multilayer planning of urban green areas: a case study from the town of Sassari (Sardegna, Italy) <i>Maria Elena Palumbo, Sonia Palumbo, Salvatore Manca, Emmanuele Farris</i>	723
Urban areas morphometric parameters and their sensitivity on the computation method <i>Luca Salvadori, Maria Grazia Badas, Michela Garau, Giorgio Querzoli, Simone Ferrari</i>	734
 <b>Session 8 - Conservation and valorisation of architectural and cultural heritage</b>	
Preservation and valorisation of small historic centers at risk <i>Maria Angela Bedini, Fabio Bronzini, Giovanni Marinelli</i>	744
Material and immaterial cultural heritage: identification, documentation, promotion and valorization. The courtyards and hallways of merit in the Murattiano district of Bari <i>Antonia Valeria Dilauro, Remo Pavone, Francesco Severino</i>	757
Planning of historic centers in Sardinia Region: conservation versus valorization of architectural and cultural heritage <i>Federica Isola, Federica Leone, Cheti Pira</i>	767
Approach towards the "self-sustainability" of ancient villages <i>Francesca Pirlone, Ilenia Spadaro</i>	776
Fostering architecture efficiency through urban quality. A project for via Milano site in Brescia <i>Michela Tiboni, Francesco Botticini</i>	787
 <b>Session 9 - Accessibility, mobility and spatial planning</b>	
The role of community enterprises in spatial planning for low density territories <i>Cristian Cannaos, Giuseppe Onni</i>	800
Measuring multimodal accessibility at urban services for the elderly. An application at primary health services in the city of Naples <i>Gerardo Carpentieri, Carmen Guida, Housmand Masoumi</i>	810
Urban accessibility for connective and inclusive living environments. An operational model at support of urban planning and design practice <i>Tanja Congiu, Elisa Occhini, Alessandro Plaisant</i>	826
Improving accessibility to urban services for over 65: a GIS-supported method <i>Carmela Gargiulo, Floriana Zucaro, Federica Gaglione, Luigi Faga</i>	839
Cycle networks in Natura 2000 sites: the environmental assessment of the Regional Cycling Plan of Sardinia, Italy <i>Italo Meloni, Elisabetta Anna Di Cesare, Cristian Saba</i>	851

Improving regional accessibility through planning a comprehensive cycle network: the case of Sardinia (Italy) <i>Italo Meloni, Cristian Saba, Beatrice Scappini et al.</i>	859
Vehicle routing problem and car-pooling to solve home-to-work transport problem in mountain areas <i>Antonio Pratelli, Massimiliano Petri</i>	869

### **Session 10 - Tourism and sustainability in the Sulcis area**

Wave, walk and bike tourism. The case of Sulcis (Sardinia -Italy) <i>Ginevra Balletto, Alessandra Milesi, Luigi Mundula, Giuseppe Borruso</i>	881
Smart Community and landscape in progress. The case of the Santa Barbara walk (Sulcis, Sardinia) <i>Ginevra Balletto, Alessandra Milesi, Stefano Naitza et al.</i>	893
A Blockchain approach for the sustainability in tourism management in the Sulcis area <i>Gavina Baralla, Andrea Pinna, Roberto Tonelli et al.</i>	904
People and heritage in low urbanised settings: An ongoing study of accessibility to the Sulcis area (Italy) <i>Nađa Beretić, Tanja Congiu, Alessandro Plaisant</i>	920
Place branding as a tool to improve heritage-led development strategies for a sustainable tourism in the Sulcis-Iglesiente region <i>Anna Maria Colavitti, Alessia Usai</i>	928
Walkability as a tool for place-based regeneration: the case study of Iglesias region in Sardinia (Italy) <i>Chiara Garau, Gianluca Melis</i>	943
The use of recycled aggregates in the implementation of Municipal Masterplans and Coastal Land-Use Plans. A study concerning Sulcis (Sardinia, Italy) <i>Federica Leone, Anania Mereu</i>	955
Relationships between conservation measures related to Natura 2000 sites and coastal land use plans: a study concerning Sulcis (Sardinia, Italy) <i>Federica Leone, Corrado Zoppi</i>	971
A Smart Planning tools for the valorisation of the Carbonia's building heritage via an energy retrofitting based approach <i>Stefano Pili, Francesca Poggi, Eusebio Loria, Caterina Frau</i>	983

### **Special session 1 - Ecological networks and landscape planning**

Resilient ecological networks. A comparative approach <i>Andrea De Montis, Amedeo Ganciu, Maurizio Mulas et al.</i>	995
--	-----

A complex index of landscape fragmentation: an application to Italian regional planning <i>Andrea De Montis, Amedeo Ganciu, Vittorio Serra</i>	1007
Measuring landscape fragmentation in Natura 2000 sites. A quantitative and comparative approach <i>Antonio Ledda, Andrea De Montis, Vittorio Serra</i>	1017
Regional ecological networks: theoretical and practical issues <i>Giuseppe Modica, Salvatore Praticò, Luigi Laudari et al.</i>	1028
Comparative ecological network analysis. Target and vector species and other naturalistic issues <i>Maurizio Mulas, Matteo Cabras, Andrea De Montis</i>	1038
Measuring connectivity in Natura 2000 sites. An application in Sardinia <i>Vittorio Serra, Andrea De Montis, Antonio Ledda</i>	1049



## **BOTTLENECKS IN FULLY IMPLEMENTING THE NATURA 2000 NETWORK IN ITALY**

AN ANALYSIS OF PROCESSES LEADING  
TO THE DESIGNATION OF SPECIAL  
AREAS OF CONSERVATION

**SABRINA LAI**

Assessorato della Difesa dell'Ambiente  
Regione Autonoma della Sardegna, Italy  
e-mail: slai@regione.sardegna.it

*How to cite item in APA format:*

Lai, S. (2019). Bottlenecks in fully implementing the Natura 2000 network. An analysis of processes leading to the designation of Special Areas of Conservation in Italy. In C. Gargiulo & C. Zoppi (Eds.), *Planning, nature and ecosystem services* (pp. 201-211). Naples: FedOAPress. ISBN: 978-88-6887-054-6, doi: 10.6093/978-88-6887-054.6

### **ABSTRACT**

*Biodiversity protection in the European Union has its legal foundations in two directives (Directive 92/43/EEC of 21 May 1992, the so-called "Habitats Directive", and Directive 2009/147/EC, the so-called "Birds Directive"), which establish an international, coordinated network of protected areas known as "Natura 2000". In this article, the implementation of the network is qualitatively analyzed by looking at the processes whereby Special Areas of Conservation are currently being designated in Italy, following a preliminary and required establishment of site-specific conservation measures which can optionally be included within appropriate management plans. Through a thorough documental analysis, four topics were examined as follows: integration of conservation measures in ordinary spatial plans; institutions and tiers of government involved in the management and planning of Natura 2000 sites; stakeholders' inclusion in the identification of conservation measures; nature and role of conservation measures in the Italian planning framework. The key outcome of the analysis is that processes greatly differ among regions, and a variety of approaches, more or less scientific and technocratic, more or less democratic and inclusive, emerge.*

### **KEYWORDS**

*Natura 2000 Network; Natural Protected Areas; Environmental Planning*

## 1 INTRODUCTION

Within the European Union (EU), two main pillars underpin policies aiming at preserving biodiversity and halting biodiversity loss. First, the EU Biodiversity Strategy, which envisions biodiversity and ecosystem services “protected, valued and appropriately restored” by 2050 in the EU and aims at halting biodiversity loss and the degradation of ecosystems by 2020 (European Commission, 2011). Second, a legal framework whose main pillars are Directive 92/43/EEC (“Habitats Directive”) and Directive 2009/147/EC (“Birds Directive”, codified version of Directive 79/409/EEC). The two directives establish a strict protection regime for wildlife and natural and seminatural habitats, and a coordinated network of terrestrial and marine protected areas that should ensure biodiversity maintenance or restoration at a favorable conservation status.

This network, which stretches over an impressive 800,000 km<sup>2</sup> inland (i.e., more than 18.2% of the European Union in size) and over 530,000 km<sup>2</sup> of sea waters (European Environmental Agency, 2018), is termed “Natura 2000 network” and comprises Sites of Community Importance (SCIs), Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). It is regarded as one of the most prominent international networks of protected areas (Lockwood, 2006; Kukkala, 2016) and as a successful example of spatial policies aiming at preserving biodiversity (Popescu et al., 2014). As argued by Rauschmayer et al. (2009), the effectiveness of biodiversity conservation policies can be assessed either by evaluating their outcomes or by analyzing their definition or implementation processes. As for the first type of assessment methods, numerous studies assess Natura 2000 performances by looking at species’ and habitats’ conservation status improvements since the establishment of the network with reference to specific areas, species, or *taxa*.

As for the second type, because of the environmental and social consequences of the establishment of such a widespread network, the implementation of the Habitats Directive has been the subject of a number of interdisciplinary studies, focusing on site designations and the establishment of the network (Alphandéry & Fortier, 2001; Haumont, 2003), management (Enengel et al., 2014), conflicts (Bryan, 2012; Gallo et al., 2018) concerning the definition and implementation of conservation measures required by the Directive, and participation processes (Beunen et al., 2013; Cent et al., 2014). Several studies, among the latter group, regard plan-making processes as the way forward to mitigate conflicts (Kamphorst et al., 2017; Krott et al., 2000) and the optimal tool to include stakeholders’ participation in setting conservation goals and defining conservation measures at the site level (Alphandéry & Fortier, 2001; Paavola, 2004; Rauschmayer et al., 2009; Young et al., 2013); inclusive planning processes are thus regarded as a proper counterbalance to the purely



technical process that led to selection and designation of Natura 2000 sites. In fact, the Habitats Directive requires that SCIs (which must be identified by member states on scientific grounds only) must be designated as SACs within six years from their establishment. A SAC designation process must be preceded with the establishment of site-specific conservation measures, which may involve appropriate site-specific management plans while also taking account of socio-cultural-economic requirements. So far, a very limited number of studies have analyzed institutional processes leading to the establishment of conservation measures (optionally including plan-making processes); among these, Gil et al.'s (2011), Kovacs et al.'s (2017), Cortina and Boggia's (2014). Building upon the above literature, this study aims at identifying governance and inclusion processes in the management of the Italian Natura 2000 network, by scrutinizing the ongoing process whereby SACs are being designated through an analysis of official documents that establish Natura 2000 conservation measures (hereinafter, CMs) or approve management plans (hereinafter, MPs).

The following section introduces the case study and provides the reader with some information on Natura 2000 in Italy and a brief presentation of the roles played by the various tiers of government involved in the designation process. In the third section, the results of the analysis are summarized, while in the fourth section the results are discussed and perspectives for future research are presented.

## 2 MATERIALS AND METHODS

### 2.1. CASE STUDY: THE NATURA 2000 NETWORK IN ITALY

Natura 2000 network in Italy stretches over approximately 19% of the national territory, while its marine area amounts to nearly 7,000 km<sup>2</sup> (European Environmental Agency, 2018). The national network is currently comprised of 2,613 sites, of which 2,335 are SCIs designated under the Habitats Directive; as of September 2018, only 82% SCIs for which the six-year deadline for their designation as SACs has expired had been established as SACs. The preliminary selection of Natura 2000 sites in Italy was carried out between 1994 and 1998 by the Ministry for the Environment, supported by scientific societies (Postiglione, 2006); Regions and the Autonomous Provinces of Trento and Bolzano were involved, as well (Amirante, 2003). On purely scientific bases, around 2,800 sites (Blasi, 1998) were identified, which led to conflicts and oppositions, both from stakeholders and local authorities (Neven et al., 2005) which felt excluded from the process. In April 2000, the Minister for the Environment issued a decree that approved two lists:

- the first list of SPAs, for which the State identification is sufficient to formally designate the sites;
- the preliminary list of proposed SCIs to be forwarded to the European Commission for the next designation steps.

The lists of SCIs for the Alpine and Continental biogeographic regions were adopted by the European Commission in 2004, whereas the list for the Mediterranean region was adopted in 2006. Starting from these dates, each Member state had to define the necessary CMs so as to designate the SCIs as SACs within six years from the lists being adopted. In Italy, the State (with which the responsibility for implementing the Habitats Directive lies) delegated the definition and approval of both CMs and MPs to its 19 regions and 2 autonomous provinces, while retaining control over SAC designation. Roles and responsibilities concerning the implementation of the Habitats Directive in Italy are therefore structured into three levels: first, the European Commission, which adopts the lists of SCIs; second, the State, which proposes the lists of SCIs to the European Commission and designates the SACs; third, the regions and autonomous provinces, which must define and approve CMs and MPs as a prerequisite to the SACs designation, and are responsible for the management of the sites.

## 2.2 METHODOLOGY

Official documents on the ongoing SACs designation process were retrieved from the website of the Italian Ministry for the Environment and Land and Sea Protection in June 2018. Many of the official acts were only available as scanned documents, hence text mining techniques could not be applied. Therefore, each single official act (i.e., at the state level: ministerial decrees concerning SAC's designations; at the regional/provincial level: regional deliberations or decrees approving site-specific CMs or MPs) was examined in order to retrieve information on the following items:

- institution in charge of defining CMs and MPs;
- stakeholders' involvement (if any) in the definition of CMs and MPs;
- implications on spatial planning (at the urban or regional level) entailed by CMs and MPs.

## 3 RESULTS

The SAC designation process, still ongoing in Italy, started in 2013 for sites belonging to the Aosta Valley region, and, as of today, has not started yet in Campania. Moreover, SACs in Abruzzo, Veneto and Emilia Romagna were designated after June 2018 (respectively, July 2018, December 2018, March 2019), when the document analysis was performed, hence the results here presented concern the remaining 15 regions and two autonomous provinces

(Trento and Bolzano) in Trentino-South Tirol. Because of space constraints, quantitative and qualitative results are not extensively presented in this article, but only summarized in Fig. 1, which provides, for each region: total number of SACs designated as of June 2018; progress towards designation completion; whether MPs or CMs (or both) were approved; type of institution responsible for MP or CM preparation (their approval always lies with the region, or with the autonomous province in case of Trentino South Tirol); type of participation processes implemented, if any; whether any planning implication is entailed by MPs or CMs.

REGIONS	no. SACs	% SACs	MPs	CMs	ORGANIZATION IN CHARGE OF CM IDENTIFICATION / MP PREPARATION	PARTICIPATION	PLANNING CONTENT
Aosta Valley	27	96.4		X	Region	1	
Apulia	56	70	X		Provinces, Municipalities, Mountain districts	2, 4	
Basilicata	54	96.4	X	X	Region	3	No
Calabria	178	100		X	Protected areas, Provinces	---	
Friuli V.G.	56	100	X	X	Region	2, 4	X
Lazio	180	99.5	X	X	Region	2, 4	
Liguria	126	100		X	Region, Regional environmental agency	2	
Lombardy	193	100	X	X	Region, SCIs management bodies	2	
Marche	76	100	X	X	Region, Provinces, Protected areas	2, 4	
Molise	60	70.6	X		Region, Mountain districts	2, 4	X
Piedmont	122	100	X	X	Region	2, 4	
Sardinia	56	62.9	X		Protected areas, Provinces, Municipalities	2, 4	X
Sicily	203	92.7	X		Protected areas, Provinces, Forestry agency	---	
Trentino S.T.	175	97.2		X	Province, Protected areas, Municipalities	2, 4	
Tuscany	134	100		X	Region	1	
Umbria	97	100		X	Districts, Protected areas, Municipalities	2, 3	

*Key:* 4. Meetings during the CM/MP drafting (both informative and participative meetings, either open to the public or involving only selected stakeholder groups); 3. Informative public meetings after the CM/MP elaboration or adoption; 2. Possibility to present written comments on CM/MP after its adoption and publication; 1. Limited consultation (institutions only).

Fig. 1 SAC designation process in Italy. (Author's elaboration on data retrieved from <ftp://ftp.minambiente.it/PNM/Natura2000/Materiale%20Designazione%20ZSC> in June 2018)

#### 4 DISCUSSION AND CONCLUSIONS

A first outcome of the analysis is that striking differences exist among Italian regions as to the role they play in the SAC designation process, the consideration of socio-cultural-economic requirements invoked by the Habitats Directive, the very same nature and function of CMs and MPs. First, as for the type of tool, six regions have made use of both CMs and MPs; seven have approved only CMs and four only MPs.

This is consistent with the Habitats Directive: while site-specific CMs are mandatory, they can optionally be integrated within MPs. Contrary to what happens in other EU member states, where MPs are compulsory (Beunen & Van Asche, 2013; Bouwma et al., 2008; Evans, 2012; Ferranti et al., 2010; Neven et al., 2005), Italy has retained the optional character envisioned in the directive. Moreover, the analysis of official documents suggests an interpretation quite different to that offered by Ferranti et al. (2010), who argue that most Italian regions chose to integrate Natura 2000 measures within other development plans, rather than preparing ad

hoc, site-specific MPs. Indeed, official acts record only a very few instances in which CMs were integrated in sectoral or territorial plans other than MPs; when such integration occurs, it is restricted to plans for natural protected areas (national parks or nature reserves) or to marine protected areas' regulations only.

This extremely low level of integration is most likely due to the limited consideration of nature and biodiversity within territorial plans, which in turns is linked to low awareness of the role played by biodiversity to sustain natural processes required for human life and development, and to widespread perception of conflicts between biodiversity preservation and socio-economic growth.

In this regards, current debates on ecosystem services provided by protected areas (Castro et al., 2014; Bastian et al., 2013), on their inclusion within planning processes (de Groot et al., 2010; Geneletti, 2013; Gómez-Baggethun & Barton, 2013), on the ecosystem approach to spatial planning (Vasishth, 2008; Yigitcanlar & Teriman, 2014) are promising research fields. Second, as for institutional tiers of government involved in managing and planning Natura 2000 sites, both the European Commission's and member states' competences are clearly defined in the Habitats Directive with reference to site identification and SAC designation. However, in Italy the state has devolved a number of competences (e.g., site management, surveillance, monitoring) to regions and autonomous provinces, leaving room for interpretations that differ across regions. For instance, while some regions have retained their planning and decisional role granted by the state (in that they have not only approved, but also defined CMs and prepared MPs), others have delegated this task to lower tiers of government; closer to local communities, the latter are probably considered as the most appropriate level to take account of social and economic needs and expectations. Further research is therefore needed so as to investigate whether the (higher or lower) level of government makes any difference in regard to CM and MP effectiveness, by looking at whether the choice of institutional level impacts on habitats' and species' conservation status, and, ultimately, on the integrity of the Natura 2000 network.

Third, participation in the establishment of CMs and MPs greatly varies among regions, both for categories of institutional actors and stakeholders involved, and for types of processes carried out and their timing.

For two regions (Calabria and Sicily) official acts do not mention any participatory or consultative process; for two further regions (Tuscany and Aosta Valley) official acts suggest that consultation was restricted to institutions only. For the remaining regions, documented participatory processes were indeed carried out and took different forms, among which consultation after adoption is the most common, while truly participative processes (for instance including the forestry or farming sector, or environmental associations, or hunting

associations), which can in principle result in agreed-upon conservation measures, are rarer. In this article, only the documented development of participatory processes was analyzed, without further investigating their effectiveness in shaping CMs and MPs.

Two recent works (De Meo et al., 2016; Paletto et al., 2017) attempt to assess participatory processes Natura 2000 planning and management in some Italian regions by looking at inclusiveness, democracy, and conflicts on the basis of surveys of a small group of stakeholders; the authors conclude that participation often took the form of mere information, that only in a few regions did participation allow planners to integrate local knowledge within MPs, and, finally, that only selected stakeholder categories were involved. Further research could therefore complement the documental analysis here carried out with a territorially systematic survey of stakeholders involved in participatory processes concerning CMs and MPs, so as to assess the effectiveness of such processes by comparing stakeholders' perceptions with the outcomes of the official, documental, narrative. Finally, implications on spatial and territorial planning only emerge in a limited number of regions.

In the Autonomous Province of Bolzano CMs are subject to the local planning law, similarly to what happens in Friuli Venezia Giulia, where, in addition, the official acts approving CMs state that, in case of differences or contradictions, CMs prevail over land use plans and regulations. In such cases, CMs (and MPs as well) are regarded as territorial planning tools. Conversely, Basilicata Region's official acts explicitly state that MPs are not subject to either the Strategic Environmental Assessment under Directive 2001/42/EC, because they are not regarded by the regional administration as territorial plans, or the Appropriate Assessment under the Habitats Directive, because only aimed at preserving habitats and species.

To the contrary, an Appropriate Assessment and a Strategic Environmental Assessment (which also provides a framework for structured stakeholders' participation) must be carried out, in Sardinia, for each MP because MPs comprise not only conservation measures, but also material and non-material interventions aiming, for instance, at enhancing local assets and resources, or at supporting local sustainable economies. Such differences concerning the very essence of CMs and MPs (as well as their binding or non-binding character) signal that an in-depth analysis of administrative and urban planning laws is required, possibly leading to a unified (national) legal framework across the regions. Ferranti et al. (2014) argue that nature conservation in the EU has historically evolved following a cycle: from initial technocracy (concerning, for instance, site designations only on scientific ground) to limited inclusiveness (e.g., farmers or hunters) in the management of the sites, to wider inclusiveness (e.g. tourism businesses), back to technocracy in the current phase (e.g., environmental economists, due to emphasis on natural capital, ecosystem services, and economic value of biodiversity), hence again marginalizing local communities.

The fragmented and varied Italian experience concerning SAC designation suggests that, rather than a sequence of historical phases, the coexistence of various approaches, some more technocratic and some more democratic and inclusive, can be observed depending on the region.

## REFERENCES

Alphandéry, P., & Fortier, A. (2001). Can a territorial policy be based on science alone? The system for creating the Natura 2000 network in France. *Sociologia Ruralis*, 41, 311-328. doi: <http://dx.doi.org/10.1111/1467-9523.00185>.

Amirante, D. (2003). La Direttiva Habitat e la rete Natura 2000: verso un modello europeo di conservazione integrata. In D. Amirante (Ed.), *La Conservazione della Natura in Europa. La Direttiva Habitat ed il Processo di Costruzione della Rete Natura 2000*. Milan, IT: FrancoAngeli. ISBN: 9788846456410.

Bastian, O. (2013). The role of biodiversity in supporting ecosystem services in Natura 2000 sites. *Ecological Indicators*, 24, 12-22. doi: <http://dx.doi.org/10.1016/j.ecolind.2012.05.016>.

Beunen, R., & Van Assche, K. (2013). Contested delineations: planning, law, and the governance of protected areas. *Environment and Planning A*, 45, 1285-1301. doi: <http://dx.doi.org/10.1068/a45284>.

Beunen, R., Van Assche, K., & Duineveld, M. (2013). Performing failure in conservation policy: the implementation of European Union directives in the Netherlands. *Land Use Policy*, 31, 280-288. doi: <http://dx.doi.org/10.1016/j.landusepol.2012.07.009>.

Blasi, C. (1996). BIOITALY: Natura 2000 in Italy. *Annali di Botanica*, 54, 31-38.

Bouwma, I.M., Kamphorst, D.A., Beunen, R., & Van Apeldoorn, R.C. (2008). *Natura 2000 Benchmark. A Comparative Analysis of the Discussion on Natura 2000 Management Issues*. <http://edepot.wur.nl/3419>.

Bryan, S. (2012). Contested boundaries, contested places: The Natura 2000 network in Ireland. *Journal of Rural Studies*, 28, 80-94. doi: <http://dx.doi.org/10.1016/j.jrurstud.2011.09.002>.

Castro, A.J., Martín-López, B., López, E., Plieninger, T., Alcaraz-Segura, D., Vaughn, C.C., & Cabello, J. (2015). Do protected areas networks ensure the supply of ecosystem services? Spatial patterns of two nature reserve systems in semi-arid Spain. *Applied Geography*, 60, 1-9. doi: <http://dx.doi.org/10.1016/j.apgeog.2015.02.012>.

Cent, J., Grodzińska-Jurczak, M., & Pietrzyk-Kaszyńska, A. (2014). Emerging multilevel environmental governance. A case of public participation in Poland. *Journal for Nature Conservation*, 22, 93-102. doi: <http://dx.doi.org/10.1016/j.jnc.2013.09.005>.

Cortina, C., & Boggia, A. (2014). Development of policies for Natura 2000 sites: A multi-criteria approach to support decision makers. *Journal of Environmental Management*, 141, 138-145. doi: <http://dx.doi.org/10.1016/j.jenvman.2014.02.039>.

de Groot, R.S., Alkemade, R., Braat, L., Hein, L., & Willemsen, L. (2010). Challenges in integrating the concept of ecosystem services and values in landscape planning, management and decision making. *Ecological Complexity*, 7, 260-272. doi: <http://dx.doi.org/10.1016/j.ecocom.2009.10.006>.

De Meo, I., Brescancin, F., Graziani, A., & Paletto, A. (2016). Management of Natura 2000 sites in Italy: An exploratory study on stakeholders' opinions. *Journal of Forest Science*, 62, 511-520. doi: <http://dx.doi.org/10.17221/52/2016-JFS>.

Engel, B., Penker, M., & Muhar, A. (2014). Landscape co-management in Austria: the stakeholder's perspective on efforts, benefits and risks. *Journal of Rural Studies*, 34, 223-234. doi: <http://dx.doi.org/j.jrurstud.2014.02.003>.

European Commission (2011). *Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions Our Life Insurance, Our Natural Capital: an EU Biodiversity Strategy*. COM(2011)0244. <https://eur-lex.europa.eu/legal-content/en/TXT/PDF/?uri=CELEX:52011DC0244>.

European Environmental Agency (2018). *Natura 2000 Barometer*. <https://www.eea.europa.eu/data-and-maps/dashboards/natura-2000-barometer>.

Evans, D. (2012). Building the European Union's Natura 2000 network. *Nature Conservation*, 1, 11-26. doi: <http://dx.doi.org/10.3897/natureconservation.1.1808>.

Ferranti, F., Beunen, R., & Speranza, M. (2010). Natura 2000 Network. A comparison of the Italian and Dutch implementation experiences. *Journal of Environmental Policy & Planning*, 12, 293-314. doi: <http://dx.doi.org/10.1080/1523908X.2010.505417>.

Ferranti, F., Turnhout, E., Beunen, R., & Behagel, J.H. (2014). Shifting nature conservation approaches in Natura 2000 and the implications for the roles of stakeholders. *Journal of Environmental Policy & Planning*, 57, 1642-1657. doi: <http://dx.doi.org/10.1080/09640568.2013.827107>.

Gallo, M., Malovrh, S.P., Laktić, T., De Meo, I., & Paletto, A. (2018). Collaboration and conflicts between stakeholders in drafting the Natura 2000 Management Programme (2015–2020) in Slovenia. *Journal for Nature Conservation*, 42, 36-44. doi: <http://dx.doi.org/10.1016/j.jnc.2018.02.003>.

Geneletti, D. (2013). Assessing the impact of alternative land-use zoning policies on future ecosystem services. *Environmental Impact Assessment Review*, 40, 25-35. doi: <http://dx.doi.org/10.1016/j.eiar.2012.12.003>.

Gil, A., Calado, H., Costa, L.T., Bentz, J., Fonseca, C., Lobo, A., Vergilio, M., & Benedicto, J. (2011). A methodological proposal for the development of Natura 2000 sites management plans. *Journal of Coastal Research*, S.I.64, 1326-1330.

Gómez-Baggethun, E., & Barton, D.N. (2013). Classifying and valuing ecosystem services for urban planning. *Ecological Economics*, 86, 235-245. doi: <http://dx.doi.org/10.1016/j.ecolecon.2012.08.019>.

Haumont, F. (2003). Il recepimento della Direttiva negli Stati membri dell'Unione europea. In D. Amirante (Ed.), *La Conservazione della Natura in Europa. La Direttiva Habitat ed il Processo di Costruzione della Rete Natura 2000*. Milan, IT: FrancoAngeli. ISBN: 9788846456410.

Kamphorst, D.A., Bouwma, I.M., & Selnes, T.A. (2017). Societal engagement in Natura 2000 sites. A comparative analysis of the policies in three areas in England, Denmark and Germany. *Land Use Policy*, 61, 379-388. doi: <http://dx.doi.org/10.1016/j.landusepol.2016.11.019>.

Kovács, E., Kelemen, E., Kiss, G., Kalóczkai, Á., Fabók, V., Mihók, B., Megyesi, B., Pataki, G., Bodorkós, B., Balázs, B., Bela, G., & Lockwood, M. (2006). Global protected area framework. In M. Lockwood, V. Graeme and A. Kothari (Eds.), *Managing Protected Areas: A Global Guide*. Trowbridge, UK: Cromwell Press. ISBN: 978-1844073030.

Margóczy, K., Roboz, A., & Molnár, D. (2017). Evaluation of participatory planning: Lessons from Hungarian Natura 2000 management planning processes. *Journal of Environmental Management*, 204, 540-550. doi: <http://dx.doi.org/j.jenvman.2017.09.028>.

Krott, M., Julien, B., Lammertz, M., Barbier, J.M., Jen, S., Ballesteroz, M., & De Bovis, C. (2000). Voicing interests and concerns: Natura 2000: an ecological network in conflict with people. *Forest Policy and Economics*, 1, 357-366.

Kukkala, A.S., Arponen, A., Maiorano, L., Moilanen, A., Thuiller, W., Toivonen, T., Zupan, L., Brotons, L., & Cabeza, M. (2016). Matches and mismatches between national and EU-wide priorities: Examining the Natura 2000 network in vertebrate species conservation. *Biological Conservation*, 198, 193-201. doi: <http://dx.doi.org/http://dx.doi.org/10.1016/J.BIOCON.2016.04.016>.

Neven, M.G.G., Kistenkas, F.H., Van Apeldoorn, R.C., Schröder, R.R.G., & Bruszick, A. (2005). *Eurosites Insights. Image, Implementation, Interpretation and Integration of Natura 2000 in European Perspective*. (Alterra-rapport 1221-2). <https://library.wur.nl/WebQuery/wurpubs/fulltext/39692>.

Paavola, J. (2004). Protected areas governance and justice: theory and the European Union's Habitats Directive. *Environmental Sciences*, 1, 59-77. doi: <http://dx.doi.org/10.1076/evms.1.1.59.23763>.

Paletto, A., Graziani, A., Brescancin, F., & De Meo, I. (2017). Pubblica partecipazione nell'implementazione della rete Natura 2000 in Italia: le esperienze dei portatori d'interessi. *Forest@*, 14, 13-27. doi: <http://dx.doi.org/10.3832/efor2131-014>.

Popescu, V.D., Rozyłowicz, L., Niculae, I.M., Cucu, A.L., & Hartel, T. (2014). Species, habitats, society: an evaluation of research supporting EU's Natura 2000 network. *PLoS ONE*, 9(11), e113648. doi: <http://dx.doi.org/10.1371/journal.pone.0113648>.

Postiglione, A. (2006). *Impact of Natura 2000 Sites on Environmental Licensing. Italian Report*. <https://www.eufje.org/images/docConf/hel2006/IT%20hel2006.pdf>.

Rauschmayer, F., Berghöfer, A., Omann, I., & Zikos, D. (2009a). Examining processes or/and outcomes? Evaluation concepts in European governance of natural resources. *Environmental Policy and Governance*, 19, 159-173. doi: <http://dx.doi.org/10.1002/eet.506>.

Rauschmayer, F., Van Den Hove, S., & Koetz, T. (2009b). Participation in EU biodiversity governance: how far beyond rhetoric? *Environment and Planning C: Government and Policy*, 27, 42-58. doi: <http://dx.doi.org/10.1068/c0703j>.

Vasishth, A. (2008). A scale-hierarchic ecosystem approach to integrative ecological planning. *Progress in Planning*, 70, 99-132. doi: <http://dx.doi.org/10.1016/j.progress.2008.05.001>.



Yigitcanlar, T., & Teriman, S. (2014). Rethinking sustainable urban development: towards an integrated planning and development process. *International Journal of Environmental Science and Technology*, 12, 341-352. doi: <http://dx.doi.org/10.1007/s13762-013-0491-x>.

Young, J.C., Jordan, A., Searle, K.R., Butler, A., Chapman, D.S., Simmons, P., & Watt, A.D. (2013). Does stakeholder involvement really benefit biodiversity conservation? *Biological Conservation*, 158, 359-370. doi: <http://dx.doi.org/10.1016/j.biocon.2012.08.018>.

#### **AUTHOR'S PROFILE**

**Sabrina Lai** is a civil engineer, Sabrina Lai is Research Doctor in Land Engineering (Italy, 2009), and MSc in International Planning and Development (UK, 2008). She is currently an officer at the Regional Administration of Sardinia, Department for the Environment, Division for Nature Protection.

Carmela Gargiulo is full professor of Urban Planning Techniques at the University of Naples Federico II. Since 1987 she has been involved in studies on the management of urban and territorial transformations. Since 2004, she has been Member of the Researcher Doctorate in Hydraulic, Transport and Territorial Systems Engineering of the University of Naples "Federico II". She is Member of the Committee of the Civil, Architectural and Environmental Engineering Department of the University of Naples "Federico II". Her research interests focus on the processes of urban requalification, on relationships between urban transformations and mobility, and on the estate exploitation produced by urban transformations. On these subjects she has co-ordinated research teams within National Project such as Progetto Finalizzato Edilizia - Sottoprogetto "Processi e procedure" (Targeted Project on Building – Subproject "Processes and procedures), from 1992 to 1994; Progetto Strategico Aree Metropolitane e Ambiente, (Strategic Project Metropolitan Areas and Environment) from 1994 to 1995; PRIN project on the "Impacts of mobility policies on urban transformability, environment and property market" from 2011 to 2013. Principal investigator of the Project Smart Energy Master for the energy management of territory financed by PON 04A2\_00120 R&C Axis II, from 2012 to 2015. Scientific Responsible Unit Dicea Project by Fondazione Cariplo "MOBILAGE. Mobility and aging: daily life and welfare supportive networks at the neighborhood level" 2018-2020. Scientific Responsible Unit TeMALab Dicea ERASMUS+ Key Action2: Project "Development of a Master Programme in the Management of Industrial Entrepreneurship for Transition Countries" (MIETC), partners: University of Santiago de Compostela (leading organization), University of Ljubljana, Academy of Science of Turkmenistan, Karaganda Economic University of Kazpotrebsouz (2020-2022). Author of more than 130 publications. Since 2008 Associate Editor of TeMA Journal of Land Use, Mobility and Environment.

Corrado Zoppi, Civil engineer, is Doctor of Philosophy in Economics (Northeastern University, Boston, Massachusetts, United States, 1997), Doctor of Research in Territorial Planning (University of Reggio Calabria, 1992), and Master of Science in Economic Policy and Planning (Northeastern University, 1990). Since October 1 2015 he is Professor (Full Professor, Scientific Disciplinary Sector ICAR/20 Urban and Regional Technique and Planning)) at the Department of Civil, Environmental Engineering and Architecture. In the past, he taught at the Faculty of Engineering of the University of Cagliari, and at the Faculties of Architecture of the Universities of Rome "La Sapienza" and Sassari-Alghero. He is presently the Official Professor of the Module of Strategic Planning of the Integrated Course of Strategic Environmental Planning and of the Course of Regional and Urban Planning at the Faculty of Engineering of the University of Cagliari, and the Coordinator of the Undergraduate and Magisterial Degree Programs at the Faculty of Engineering and Architecture of the University of Cagliari. He was the Coordinator of the Panel for the Assessment and Evaluation of Public Investments of the Sardinian Regional Administration in the period 2007-2013. He was the Coordinator of the Graduate Committee of Environmental and Territorial Engineering of the University of Cagliari in the period 2012-2015. He is the President of the Faculty Committee of Engineering and Architecture of the University of Cagliari.

ISBN:978-88-6887-054-6

DOI:10.6093/978-88-6887-054-6