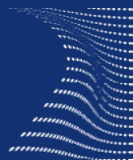ScuDo
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PhD in Urban and Regional Development
IN VARIETATE CONCORDIA

Urban and Regional Development Ph.D. Programme
ANNUAL REPORT 2024

Politecnico di Torino

UNIVERSITÀ DI TORINO

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Urban and Regional Development Ph.D. Programme - ANNUAL REPORT

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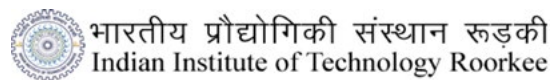
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INTRODUCTION

This report contains information on all the Ph.D. students enrolled in the interuniversity Ph.D. Programme in Urban and Regional Development (URD). The Ph.D. programme is hosted at the DIST, the Interuniversity Department of Urban and Regional Studies and Planning of the Politecnico di Torino and Università degli Studi di Torino.

The Ph.D. programme is designed to train highly qualified doctors in socio-spatial dynamics of development. To do so, it aims at attracting motivated and qualified candidates from all over the world, offering courses and a research environment which corresponds to the highest academic and professional standards.

The programme is offered in English, and it has a multi-disciplinary approach that combines social and technical sciences (SSH and STEM). It is meant to promote individual talents by providing training and research opportunities in a wide variety of scientific fields that are grouped in three main research areas:

1. Urban and Regional Studies;
2. Spatial Planning, Evaluation and Management;
3. Technologies, Techniques and Methodologies for Sustainable Development.

Ph.D. students attend soft and hard skills courses organised around the thematic areas, and each student, supported by members of the Academic Board, can design a specific study plan to match their research and academic interests. The Ph. D. educational offer includes frequent contributions from scholars of other universities and promotes research and training activities in highly qualified institutions across the globe. As part of the programme, Ph.D. students are encouraged to organise seminars, promote events, and open the programme to the department, the academic community, and the society as a whole. The programme is based on the acknowledgement of the Ph.D. students' ambition to think beyond borders, both while completing their educational and academic training, and while searching for a job. Our Ph.D. may start an academic career or search for management positions in public or private structures, related to the planning and management of spatial transformation processes.

Career opportunities offered by doctoral training can be summarized as follows:
- Public and private scientific research carried out at national, European, and international level;
- University education;
- Spatial and urban management in national, state, regional and local administrations;
- Employment in transports and/or environmental protection organisations;
- Construction companies, real estate market;
- Local development agencies, urban development companies;
- Engineering companies and architecture consulting firm and professional offices.

The Ph.D. programme is focused on topics that are developed across the three main research areas. Furthermore, such topics can be related to four Sustainable Development Goals (SDGs) adopted by the United Nations Member States in the Agenda 2030:

SDG 11
Sustainable cities and communities
- Urban and regional governance
- Spatial planning
- Urban studies
- Human, economic, and political geography
- Built environment
- Real estate
- Natural environment
- Landscape
- Cultural heritage
- Social innovation

SDG 13
Climate actions
- Climate change
- Sustainable land use and territorial resilience
- Risk prevention and management
- Geomatics

SDG 9
Industry, innovation and infrastructure
- Transport systems
- Building information modeling
- Big data for spatial development
- Virtual and augmented reality for spatial development

SDG 7
Affordable and clean energy
- Renewable energy and energy transition
- Water management

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XXXVII CYCLE - 3rd YEAR STUDENTS

| NAME | **Farzaneh ALIAKBARI** |
| E-MAIL | farzaneh.aliakbari@polito.it |

COURSE	XXXVII cycle - 3rd year
RESEARCH TITLE	Historical perspective on Cultural Natural Heritage (CNH) as a resource for local communities: Qeshm Island post-colonial narratives
TUTOR(S)	Rosa TAMBORRINO

ACADEMIC CONTEXT

— Matthee R., Flores J. (Editor/S), 2011. *The Persian Gulf and Safavid Persia*. Leuven: Peeters. https://hdl.handle.net/1814/18435
— Boxer C. R., 2004. *Commentaries of Ruy Freyre de Andrada*. London: Routledgede Gray.
— Birch, W., 2017. *The Commentaries of the Great Afonso Dalboquerque, Second Viceroy of India: Volume I*. London: Hakluyt Society.
— Vosughi, M. B., 2002. *The history of migration of tribes in the Persian Gulf: The kings of Hormuz* (تاریخ مهاجرت اقوام در خلیجفارس: ملوک هرمز). Daneshnameh Fars.
— Amanat A., 2017. *Iran: A Modern History*. New Haven, CT: Yale University Press. https://doi.org/10.1080/00210862.2019.1649005.

EXTERNAL COLLABORATIONS

— Qeshm Island UNESCO Global Geopark, Iran: Host for the research period

HIGHLIGHTS OF THE RESEARCH ACTIVITY

Qeshm Island, located at the crossroads of significant historical trade routes of Persian Gulf, has long been a key trading station in the Persian Gulf. This study explores the geographical and historical importance of the Qeshm Island as a remote island within a network of trading activities, discovering the influences of colonial empires—including the Portuguese, Dutch, and British—on its Cultural Natural heritage (CNH) values. Through a post-colonial lens, the research explores the evolution of islands living heritage and cultural practices, particularly considering modern governance and geopolitical shifts from the Pahlavi era to contemporary Iran.

The research also investigates the heritagization process of Qeshm, emphasizing its designation as a UNESCO Global Geopark and the role of Iranian law in heritage preservation. Moreover, the study highlights the intercultural encounters on the island and the gendered dimensions of its heritage, focusing on the role of women that have played in maintaining cultural traditions.

Within this framework, the research employs Digital Humanities (DH) methodologies for surveying, managing, and representing data and information. It creates a systematic and comprehensive digital narration of the island's living heritage across historical trade, colonial, and cultural routes. The research includes local stakeholders/ communities in the survey by collaborative methods and promote participatory mapping processes. This framework encompasses traditional cultural practices and local knowledge of indigenous communities of Qeshm Island. By situating Qeshm's heritage within both local and global contexts, this research contributes to the broader understanding of resilience through cultural heritage in remote island environments.
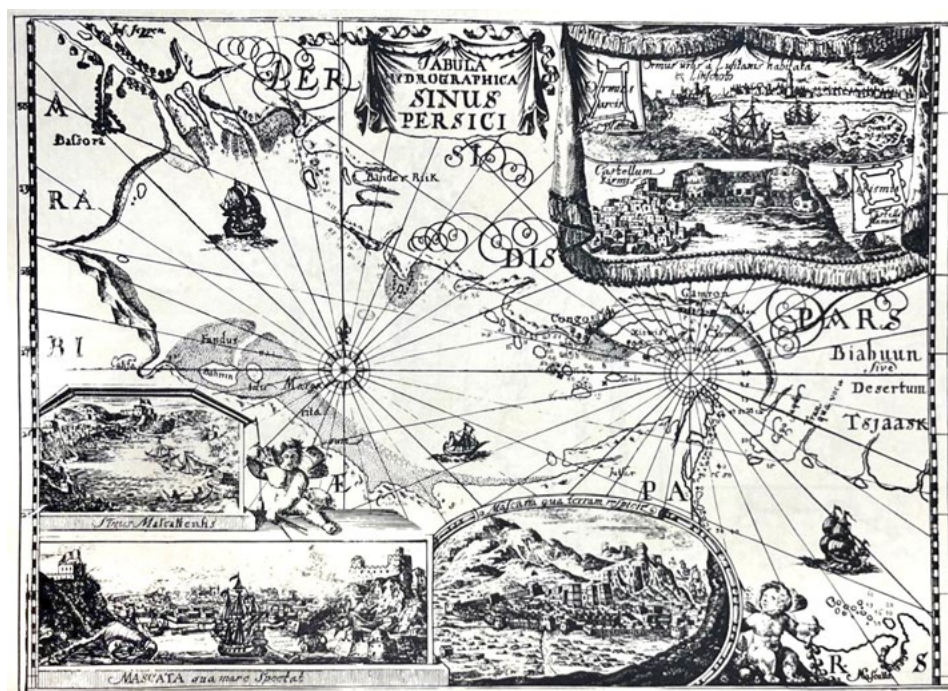
NAME	**Arthur BOHN**
E-MAIL	arthur.bohn@polito.it

COURSE	XXXVII cycle - 3rd year
RESEARCH TITLE	Studies and observation about two sustainable construction techniques: hemp-lime as a loadbearing material and recycled aggregates gabions for housing basement
TUTOR(S)	Andrea BOCCO

ACADEMIC CONTEXT

- Bohn A., Mazelli R. and Bocco A., 2022. Loadbearing Hempcrete? A preliminary research. In: NOCMAT, *18th International Conference on Non-conventional Materials and Technologies*. Online, 7-28 June 2022.
- Mazelli R., Bohn A., Zea Escamilla E., Habert G., Bocco A. 2023. Comparative Life Cycle Assessment of Two "Vegetarian Architecture" Pavilions. In: Amziane S., Merta I., Page J. (eds). *Bio-Based Building Materials*, 45, pp. 982-999. RILEM. https://doi.org/10.1007/978-3-031-33465-8_76.
- Stanwix W. and Sparrow A., 2014. *The Hempcrete Book: Designing and Building with Hemp-Lime*. Cambridge: Green Books.

EXTERNAL COLLABORATIONS

- ETH of Zurich, Chair of Sustainable Construction (host for visiting)

HIGHLIGHTS OF THE RESEARCH ACTIVITY

Today, bio-sourced materials represent an important technological field of study, as they could reduce the emissions of some greenhouse gases during the production process by sinking the atmospheric carbon dioxide into buildings. Finding construction solutions using materials made from minor industrial transformations would also reduce the environmental cost of the construction sector, which emitted more than 2.9 Mt of CO2 by 2020.

This research highlights the potential of a "wet" technique that is the poured hemp-lime as a loadbearing alternative material, and a dry technique which is the filled with recycled aggregates gabion.

Hemp-lime is a material that meets both these requirements. It is an insulating product that can be modulated and used as a versatile building component. The challenge is to provide it a mechanical strength that will enable it to be used as structure of the building. This research is based on two experimental campaigns such the prototype of a pointed arch that has been built using hemp-lime in Cardiff University in 2009, and a set of samples realised to observe the collapsing uniaxial compression kinetic by 3D Digital Image Correlation. The entire machinery has been self-realised to acquire real experimental autonomy; the aim being to observe a mesoscopic phenomenon with a relatively qualitative expectation of results.

Recycled aggregates gabions were realised during of full-scale Vegetarian Architecture pavilion in Grugliasco (TO) for a period of a month and a half and representing a total of more than 30 meters long. Thus, as well as highlighting the construction principles and technical details of this site, this research attempts to correlate actual subsidence with a finite element simulation. To do this, and in line with the principle of ethical computing, it was decided to use open-source software tools such as OpenFoam and to proceed according to the Finite Volume Method. Such correlation tempts to confirm or refute the accuracy of a such unpredictable load transfer within a randomly arranged and then compacted set of rigid elements inside a galvanised steel cage.

NAME	**Giorgio CAPELLO**
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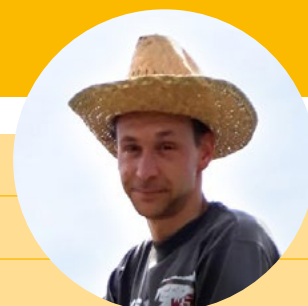
COURSE	XXXVII cycle - 3rd year
RESEARCH TITLE	Innovation in the management of vineyard soils through the adoption of good practices and tools to support field activities
TUTOR(S)	Stefano FERRARIS, Marcella BIDDOCCU

ACADEMIC CONTEXT

– Capello G., Biddoccu M., Ferraris S. and Cavallo E., 2019. Effects of tractor passes on hydrological and soil erosion processes in tilled and grassed vineyards. *Water*, 11(10), 2118. https://doi.org/10.3390/w11102118.

– Capello G., Biddoccu M. and Cavallo E., 2020. Permanent cover for soil and water conservation in mechanized vineyards: A study case in Piedmont, NW Italy. *Italian Journal of Agronomy*, 15(4), pp. 323-331. https://doi.org/10.4081/ija.2020.1763.

– Caffaro F., De Gregorio E., Capello G., Vigoroso L., Bagagiolo G., Cavallo E., Biddoccu M., 2024. Winegrowers' Perceptions and Adoption of Sustainable Soil Management Practices and Technologies: A Case Study in Piedmont, Italy. *Land Degradation and Development*, in review.

– Dorigo W., Himmelbauer I., Aberer D., Schremmer L., Petrakovic I., Zappa L., Preimesberger W., Xaver A., Annor F., Ardö J., Baldocchi D., Bitelli M., Blöschl G., Bogena H., Brocca L., Calvet J.-C., Camarero J. J., Capello G., Choi M., Cosh M. C., van de Giesen N., Hajdu I., Ikonen J., Jensen K. H., Kanniah K. D., de Kat I., Kirchengast G., Kumar Rai P., Kyrouac J., Larson K., Liu S., Loew A., Moghaddam M., Martínez Fernández J., Mattar Bader C., Morbidelli R., Musial J. P., Osenga E., Palecki M. A., Pellarin T., Petropoulos G. P., Pfeil I., Powers J., Robock A., Rüdiger C., Rummel U., Strobel M., Su Z., Sullivan R., Tagesson T., Varlagin A., Vreugdenhil M., Walker J., Wen J., Wenger F., Wigneron J. P., Woods M., Yang K., Zeng Y., Zhang X., Zreda M., Dietrich S., Gruber A., van Oevelen P., Wagner W., Scipal K., Drusch M., and Sabia R., 2021. The International Soil Moisture Network: serving Earth system science for over a decade. *Hydrol. Earth Syst. Sci.*, 25, pp. 5749-5804. https://doi.org/10.5194/hess-25-5749-2021.

EXTERNAL COLLABORATIONS

– STEMS-CNR (Istituto di Scienze e Tecnologie per l'Energia e la Mobilità Sostenibili – Consiglio Nazionale delle Ricerche): funding of the research and host

HIGHLIGHTS OF THE RESEARCH ACTIVITY

This research investigates soil degradation processes in sloping vineyards of Piedmont, focusing on soil erosion, soil compaction and the decline of organic matter. These problems affect ecosystem services, soil quality, fertility, water resource availability, and vineyard production.

The study aims to introduce optimal soil management techniques to mitigate soil degradation. Innovations include improved soil management practices, agro-meteorological monitoring, and ICT tools for data management to assist farmers. The goal is to improve soil water retention, reduce runoff, and erosion response, increase water and nutrient availability for vines, and understand the impact of vehicle passage on soil compaction and hydrological conditions.

In five vineyards, different soil management practices have been implemented to compare their effects on soil degradation and soil water content. Each vineyard is equipped with specific systems for continuous monitoring of runoff and erosion, soil water content, and meteorological parameters (temperature, air humidity, precipitation). Periodic in-field surveys were conducted to measure soil parameters such as bulk density, water content, penetration resistance, and hydraulic conductivity. Data collected over two agricultural years showed few differences in runoff and soil erosion results among treatments, due to the limited amount of precipitation. This also influenced soil water content, which showed a decreasing trend, likely exacerbated by scarce winter precipitation and soil compaction in spring.

The project's Good Practices Chart supports technicians and viticulturists in soil management decisions. Innovative soil management practices generally do not negatively impact harvest yield or vine vigor. Permanent grass cover management reduces erosion and runoff while promoting rainwater infiltration, with no negative effects on production. Transitioning to innovative management is challenging due to delayed results and the competitive nature of permanent grass cover. Good Practices to reduce erosion and runoff include maintaining permanent grass cover in all or alternate rows, managing grass cover through mowing or shredding, avoiding fine soil tillage, performing sporadic deep tillage with a decompactor, and sowing cover crops to select less competitive herbaceous species. Recommendations include minimizing traffication on wet soil is also advised.

NAME	**Giulio CAVANA**
E-MAIL	giulio.cavana@polito.it

COURSE	XXXVII cycle - 3rd year
RESEARCH TITLE	Preference Learning approach to evaluate the optimization of the energy renovation of the building stock within the Renewable Energy Communities framework
TUTOR(S)	Marta BOTTERO, Cristina BECCHIO

ACADEMIC CONTEXT

– Gjorgievski V. Z., Cundeva S. and Georghiou G. E., 2021. Social arrangements, technical designs and impacts of energy communities: A review. *Renewable Energy*, 169, pp. 1138-1156. https://doi.org/10.1016/j.renene.2021.01.078.
– Hüllermeier E. and Fürnkranz J., eds., 2011. *Preference learning*. Heidelberg: Springer Berlin.
– Lowitzsch J., Hoicka C. E. and van Tulder F. J., 2020. Renewable energy communities under the 2019 European Clean Energy Package–Governance model for the energy clusters of the future?. *Renewable and Sustainable Energy Reviews*, 122, p. 109489. https://doi.org/10.1016/j.rser.2019.109489.
– Suppa A. R., Cavana G. and Binda T., 2022. Supporting the EU Mission "100 Climate-Neutral Cities by 2030": A Review of Tools to Support Decision-Making for the Built Environment at District or City Scale. In: O. Gervasi, B. Murgante, S. Misra, A.M.A.C. Rocha, C. Garau, eds. *Computational Science and Its Applications – ICCSA 2022 Workshops*. Cham: Springer. pp. 151-168.

EXTERNAL COLLABORATIONS

– Institut Pierre Louis d'Epidémiologie et de Santé Publique, Sorbonne Université, Paris. (host for visiting period)

HIGHLIGHTS OF THE RESEARCH ACTIVITY

Responsible of 40% of energy consumption and 36% of energy-related CO_2 emissions, the building sector has been seen as strategic in the effort to reduce Europe environmental impacts. At the district scale, the adoption of cooperative behaviors in energy sharing and technological adoption can generate further benefits compared to the building by building approach.

Renewable Energy Communities (RECs) are considered capable of providing several benefits to their members, as well as to the area in which they operate. European legislation recognizes the fundamental role of the enabling framework in supporting the participation of individuals. In this regard, it is important to evaluate the citizens' response to such incentive measures.

The aim of the thesis is to evaluate this aspect by estimating individuals' preferences based on their socio-demographic characteristics, and to determine the correspondence between the preference towards the performance of possible alternative configurations of RECs at district scale and the performance thresholds established by the inhabitants in the decision to participate or not.
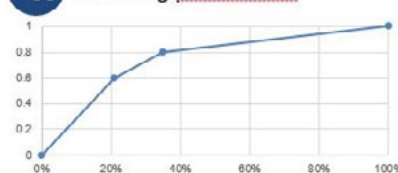
The methodology used applies a Machine Learning technique capable of learning individual preferences towards participation in a REC and then spatializing these preference models using a statistical matching algorithm using socio-demographic data from census surveys.

The expected results are intended to inform public decision makers in the context of resource allocation assessments with the aim of encouraging broad and equitable participation of inhabitants in the energy transition, removing barriers to achieving higher levels of individual and collective well-being.

Methodology

1. Learning preferences
2. Population synthesis
3. Feature selection: regression with moderators
$$Y = \beta_0 + \beta_1 * X + \beta_2 * Z + \beta_3 * X * Z + \varepsilon$$
4. Spatialization
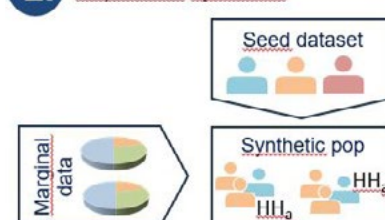
NAME	**Marco DEL NIBLETTO**
E-MAIL	marco.delnibletto@polito.it

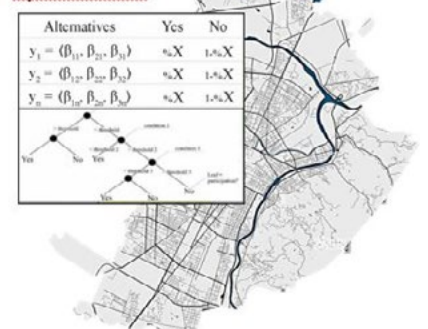| COURSE	XXXVII cycle - 3rd year
RESEARCH TITLE	Valuing the presence of retailers in the housing market evidence from Turin
TUTOR(S)	Giulio ZOTTERI, Luigi BUZZACCHI

ACADEMIC CONTEXT

– Jang M., & Kang C. D., 2015. Retail accessibility and proximity effects on housing prices in Seoul, Korea: A retail type and housing submarket approach. *Habitat International*, 49, pp. 516-528.
– Wu C., Ye X., Du Q. & Luo P., 2017. Spatial effects of accessibility to parks on housing prices in Shenzhen, China. *Habitat International*, 63, pp. 45-54.
– Zhang L., Zhou J. & Hui E. C. M., 2020. Which types of shopping malls affect housing values? From the perspective of spatial accessibility. *Habitat International*, 96, p. 102118.

EXTERNAL COLLABORATIONS

– FULL – the Future Urban Legacy Lab (co-financer)

HIGHLIGHTS OF THE RESEARCH ACTIVITY

Retailers represent one of the most valuable amenities offered by urban spaces, as they contribute to the local economy, and enhance the vibrancy of the neighborhood and safety of streets. In the urban context, brick-and-mortar retailers play a role that goes beyond what they sell: they contribute to building that 'sense of place' that forms enjoyable neighborhoods, allowing people to meet, create social connections, and exchange information (Baker, 2010). Also In the urban context, retailers assume a role that goes beyond what they sell. These elements contribute to fostering the urban vibrancy of streets and enhance their 'vitality', generating value for the inhabitants and homeowners of streets.

The research aims to offer empirical support for the impact of amenities, namely the presence of retailers, on real estate values (Wu, 2017) and how different types of retailers influence the value of apartments in the context of Turin. Retailers are classified into 4 groups according to Copeland (1923) to explore how different retail typologies are valued and explore the positive and possibly negative externalities generated.

Analyses are carried out using statistical tools, the hedonic price model and Geographically Weighted Regression model to explore the relationship between accessibility to retailers and housing values in different areas of Turin.

Results show that accessibility to shopping, supermarket, and food&drink retailers positively relates to real estate values, while accessibility to convenience retailers is negatively related to real estate values. Accessibility to shopping retailers has a positive impact on real estate values in the city center, while the same area is negatively impacted by convenience retailers. The relationship is mirror-like in the periphery. The relationship between real estate and accessibility to supermarkets is consistent in most of the areas of study. On the other part, accessibility to food&drink retailers is valued more in a specific area around the city center.

The research offers insights into how safeguarding the presence of brick-and-mortar retailers can propose economic policies at the urban level. The study can offer suggestions for dealing with the phenomenon of retail deserts (Schuetz, 2012), quantifying how the absence/ closure of different types of businesses generates a loss of value for homeowners and residents.
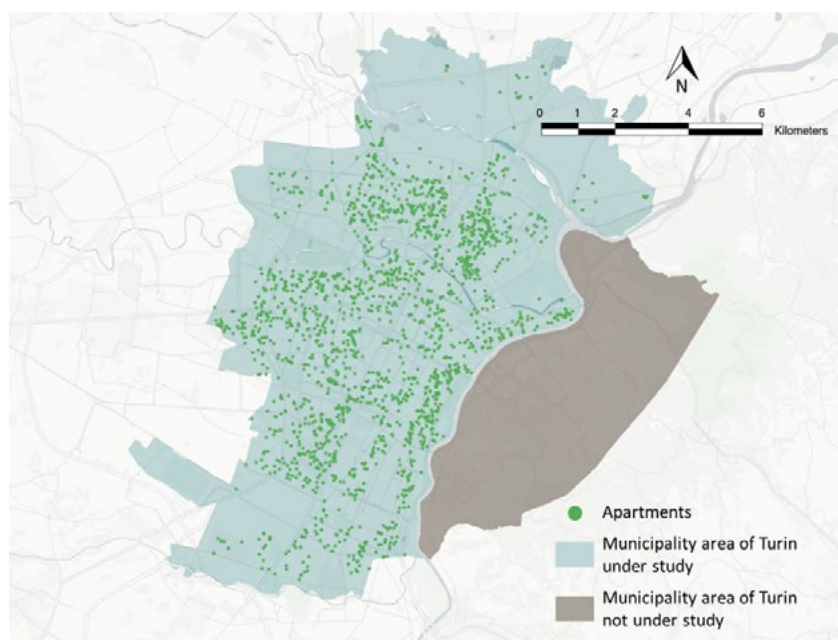
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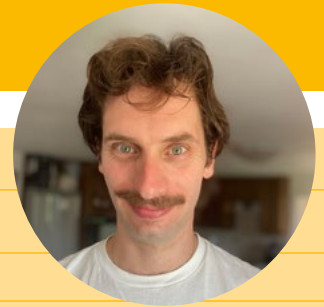
COURSE	XXXVII cycle - 3rd year
RESEARCH TITLE	Figures of an(other) Play: Francis Alÿs's Children's Games, Skateboarding in Milano Centrale and Ugo La Pietra's *Gioco dell'Uso*
TUTOR(S)	Camillo BOANO

ACADEMIC CONTEXT

– Agamben G., 2005. *Profanazioni*. Roma: Nottetempo.
– Fardin J. I., 2023. The Politics of Play, Ugo La Pietra's Design without Ends. *Design Iusses*, 39(3), pp. 19-29.
– Marmont G. 2022, Another Use, Another Sociality: Some Reflections on Giorgio Agamben's Radicalization of Use. *Design and Culture*, 14(2), pp. 185-203.

HIGHLIGHTS OF THE RESEARCH ACTIVITY

In contemporary society, play is everywhere. Everything is made to look like play, though often in the interests of the production of value for capital as well as individualistic self-expression and creativity. This emphasis on play has important consequences for the way in which we perceive and relate to space—the aesthetics of space. The space of play becomes a space of appropriation in the name of self-expression and individuality and play becomes a proper or more authentic use of space, against which "inappropriate" uses are inevitably produced. Operating within this mechanism of separation, play masks the generalized impossibility of a use that is not consumption or exhibition which, following certain political philosophers, characterizes contemporary life.

Federico Casella, 2020

My project aims at bringing to the fore an(other) play—one that instead of masking today's impossibility of use would be capable of using this very impossibility, one that is repetitive, profaning, and is capable of relating to an inappropriable. More specifically my project focuses on certain spatial practices and their potential, often obscured, to open onto (other) ways of perceiving and relating to the built environment, ways that do not pass through appropriation and creation but rather through inappropriate uses and suspension. The project asks: What is the unexhausted radical potential of play? And, more specifically, what spatial aesthetics does it open onto?

In order to address these questions, I will build a dialogue between an(other) theory of play grounded on critical theory, continental philosophy and psychoanalysis, and a study of three spatial practices of play—namely skateboarding, Ugo La Pietra's art and architecture practice as well as the seriers of Children's Games recorded by Francis Alÿs. These three spatial practices offer the possibility for a reading against the grain the discourse of appropriation that brings to the fore an(other) play. The figures these practices create become a vantage point from which to observe the possibility of spatial uses of our present impossibility of use.

NAME	**Feiran HUANG**
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COURSE	XXXVII cycle - 3rd year
RESEARCH TITLE	Digitalisation of the Agriculture and Its implication on Rural Landscape
TUTOR(S)	Claudia CASSATELLA

ACADEMIC CONTEXT

– Huang F. & Cassatella C. 2024. Examining Rural Landscape Change in the Context of Agriculture Digitalisation: A Review. *Landscape Research*. 1-18.
– Legun K. & Burch K. 2021. Robot-ready: How apple producers are assembling in anticipation of new AI robotics. *Journal of Rural Studies*, 82, pp. 380-390.
– Primdahl J. & Swaffield S. 2010. *Globalisation and agricultural landscapes: change patterns and policy trends in developed countries*. Cambridge: Cambridge University Press.
– Swanwick C. 2002. *Landscape Character Assessment: Guidance for England and Scotland*. Cheltenham (UK): Countryside Agency.

## HIGHLIGHTS OF THE RESEARCH ACTIVITY

Agriculture is one of the most important sectors that has been digitalised in the context of digital transformation of the society. Variety of digital technologies have been integrated with the farming process to increase the resource/labour efficiency and reduce the negative impact on the environment. Such practices have been labelled as 'digital agriculture (DA)' or 'smart farming' and different countries and regions have been developing polices to facilitate the digitalisation of agriculture. Numerous research has focused on the socio-economic and environmental impact of DA, while few has studied this issue from a landscape perspective even though technology has been widely acknowledged as a key driving force for landscape change. Therefore, it raises the question on whether the new agriculture revolution characterised by information technology and digitalisation also have the similar effects on rural landscape. On this account, this research intends to examine the influence of DA on rural landscape, focusing on two key questions: (1) how DA has been integrated into the farming process; (2) how and which aspects of landscape are influenced due to the DA implementation. The landscape change checklist has been proposed in this research, which divides landscape into three dimensions (cultural/social, natural, and perceptual/aesthetic) with multiple aspects. It has been used as the main framework to understand the influence of DA on landscape. Three methods have been selected to acquire knowledge about DA-driven landscape change. They are systematic literature review, example review, and expert survey. The knowledge obtained by conducting these methods contributes to the production of the two final output: (1) the scenarios that illustrate the plausible future of landscape which aim to raise the awareness of this topic particularly among scholars, and (2) impact identification toolkit that helps to evaluate the influence of DA in practices. These outputs will help to inform policy makers and planners to develop landscape policies and planning, which is able to protect and enhance landscape values in the digital era.

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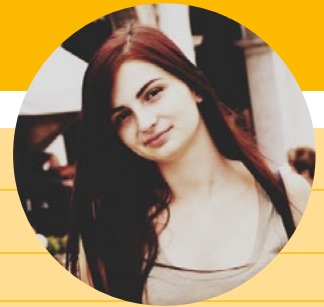
COURSE	XXXVII cycle - 3rd year
RESEARCH TITLE	Non-conventional materials: opportunities for a paradigm shift in the construction sector
TUTOR(S)	Andrea BOCCO

ACADEMIC CONTEXT

– Mazelli R. & Bocco Guarneri A., 2024. Strawbale buildings as carbon sinks: Influence of the design and construction process on carbon emissions. In: *IOP Conference Series: Earth and Environmental Science, World Sustainable Built Environment 2024* (WSBE24, Online, 12-14 June 2024), 1363(1), 012036. Bristol: IOP Publishing Ltd. https://doi.org/10.1088/1755-1315/1363/1/012036.

– Mazelli R., Bohn A., Zea Escamilla E., Habert G. & Bocco A., 2023. Comparative Life Cycle Assessment of Two "Vegetarian Architecture" Pavilions. In: Amziane S., Merta I. & Page J., eds., *Bio-Based Building Materials: Proceedings of ICBBM 2023* (Vol. 45). Geneva: Springer Nature Switzerland, pp. 982-999. https://doi.org/10.1007/978-3-031-33465-8_76.

– Mazelli R., Bocci M., Bohn A., Zea Escamilla E., Habert G. & Bocco A., 2023. Fair Play: Why Reliable Data for Low-Tech Construction and Non-conventional Materials Are Needed. In: Arbizzani E., Cangelli E., Clemente C., Cumo F., Giofrè F., Giovenale A. M. Palme M. & Paris S., eds., *Technological Imagination in the Green and Digital Transition*. Geneva: Springer International Publishing, pp. 367-379. https://doi.org/10.1007/978-3-031-29515-7_33.

– Bohn A., Mazelli R. & Bocco A., 2022. Loadbearing Hempcrete? A preliminary research. In: Harries K. & Papadopoulos C., eds., *Proceedings of 18th International Conference on Non-conventional Materials and Technologies* (NOCMAT 2022, Online, 7-28 June 2022). Geneva: Zenodo. https://doi.org/10.5281/zenodo.6631769.

EXTERNAL COLLABORATIONS

– Chair of Sustainable Construction, ETHz (host for visiting period)

HIGHLIGHTS OF THE RESEARCH ACTIVITY

The urgent need to reduce carbon emissions and achieve carbon neutrality in the built environment has become a global challenge and requires significant and radical changes in the construction industry.

The research project "Experimental Pavilions of Vegetarian Architecture" aims to the construction of full-scale buildings on which to experiment the application of advanced building techniques and the use of natural materials, capable of achieving high environmental performance. It includes the design, construction, and monitoring of two pavilions, namely in loadbearing straw bales and timber framed light earth construction, and of a loadbearing hemp lime prototype.

The results of the life cycle analysis of the first two pavilions for the life cycle stage module A, cradle to handover, show that the use of low processed, local materials has allowed to produce near zero carbon buildings. Moreover, the calculations of the stored biogenic CO2 show that the studied pavilions can store around 20 tCO2eq each, around ten times the CO2 emitted by the production of construction materials and their transport to the construction site. This is to be mainly attributed to the use of high amounts fast-growing bio-based materials. Current results show that the studied techniques and related construction materials present a radical solution to the challenge of achieving a net-zero built environment and withhold a significant regenerative potential.

The field research has also enabled the opportunity to explore the challenges and opportunities of upscaling bio-based and other natural materials in the construction market in the Italian north-western area. A systematic investigation of the state of the art has allowed for a comprehensive database and mapping of designers, contractors, manufacturers and specialised craftsmen of the field, with the scope of identifying market barriers. The interaction with various experts has permitted to identify other challenges related to regulatory, perception and educational barriers. The scope is to facilitate the development of strategies to overcome scalability challenges and accelerate a paradigm shift in the construction sector that favours a low-carbon and regenerative built environment.

NAME	**Alessandra MOSSA**
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COURSE	XXXVII cycle - 3rd year
RESEARCH TITLE	Post-asylum geographies of madness. Finding space for getting mad
TUTOR(S)	Michele LANCIONE

ACADEMIC CONTEXT

– Basaglia F., Lovell A. & Scheper-Hughes N., 1987. *Psychiatry inside out : selected writings of Franco Basaglia*, New York ; Guildford: Columbia University Press.
– Butler R. & Parr H., 1999. *Mind and body spaces : geographies of illness, impairment and disability*, London: Routledge.
– Crooks A., Andrews G. & Pearce J., 2018. *Routledge Handbook of Health Geography*. London and New York: Routledge.
– Philo C., 2005. The geography of mental health: An established field? *Current Opinion in Psychiatry*. 18, pp. 585-591.
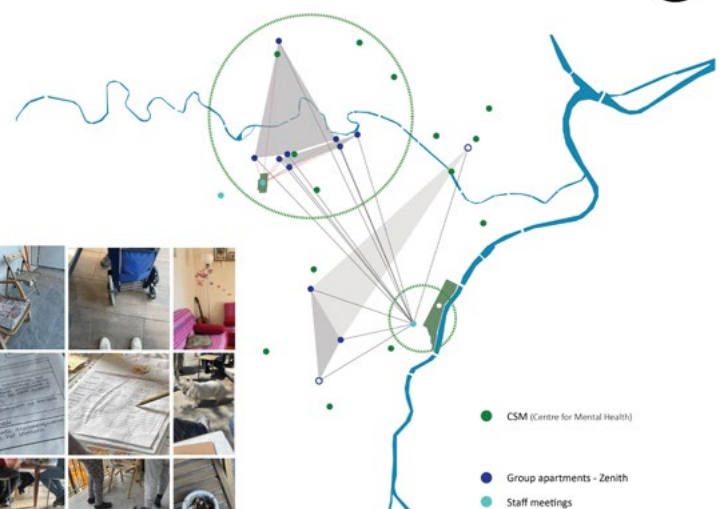
EXTERNAL COLLABORATIONS

– University of Glasgow - School of Geographical & Earth Sciences (visiting period in July and August 2024)

HIGHLIGHTS OF THE RESEARCH ACTIVITY

My research sits within the literature that looks at the process of deinstitutionalization of the mental health system through the lived geographies placed outside the walls of the asylum (Philo, 1997; Philo, 2005). It addresses mental health geographers' call for a practiced and situated knowledge about mental health and aims to provide an examination of different geographies of mental care at the local scale (Butler & Parr, 1999; Parr & Philo; 2003; Conradson, 2003; Parr, 2000). By monitoring a series of mental care practices that go from drop-in centres to supported accommodation, my study intends to assess the current and future implications of these spatial and relational practices in terms of belonging, self-determination and resistance. Through an analysis of benefits and detriments that users recognise in each of these practices, and their impact at the urban level, I will get a more specific understanding

of how different spatial arrangements, and their associated narratives contribute to dynamics of power and exclusion. This study aims to identify pros and cons that different settings imply for chronically ill patients and will offer a fine-grained analysis of how different spatial arrangements act at the individual and collective level (Söderström et al., 2017). The main ethnographic analysis has been carried out, via participant observation and life-story interviews, in a series of group homes run by a cooperative operating in the city called Zenith. A focus on spatiality and embodied experiences has allowed to explore to what extent space, and its relational traits affect the psyche and how psychosis transform individuals' perception and use of space (Söderström et al., 2017; Söderström, 2019). Personal stories and spatial biographies have provided insight on where

PARTICIPANT OBSERVATION: Group homes

Turin

CSM (Centre for Mental Health)
Group apartments - Zenith
Staff meetings

madness is created, how it is perceived, when it is instead a mere product of cultural or direct violence (Galtung 1990). Therefore, as part of its main investigation, this study on post-asylum geographies of mental health care will go beyond mapping the shift that, in relation to political, economic and social drivers has led to the current set of settings and practices, to include the intimate and everyday response of individuals. This with the aim to build up a micro-geography of mental health care that, by putting the human and its everyday life at the centre of its inquiry, will make individuals'"embodied and contested subjectivities to emerge more clearly" (Parr, 2000: 226).

NAME	**Simone PERSICO**
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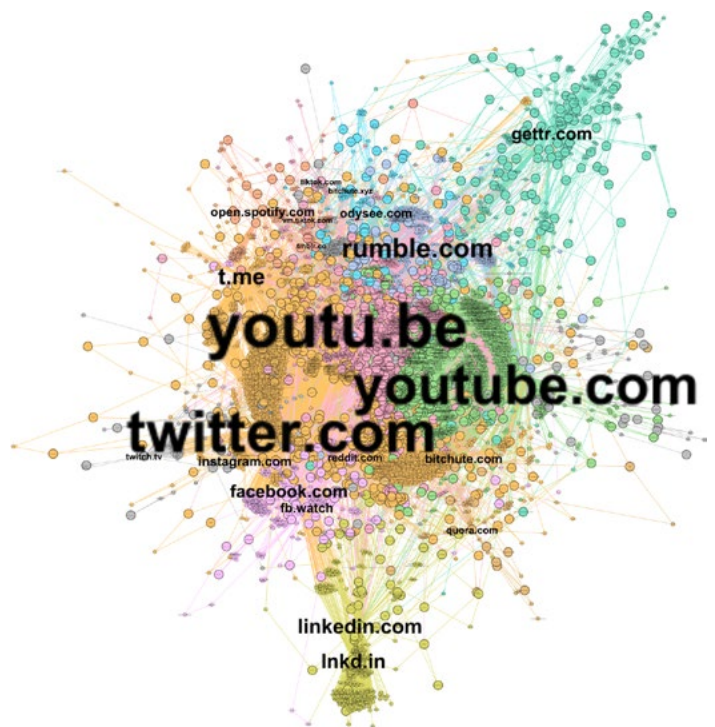| COURSE	XXXVII cycle - 3rd year
RESEARCH TITLE	Social Media Ecosystem & Disinformation: the nuclear energy debate and the atomic conflict narrative between platforms' fragmentation and the Digital Services Act regulation
TUTOR(S)	Sara MONACI

ACADEMIC CONTEXT

– Monaci S. & Persico S., 2022. The COVID-19 Vaccination Campaign and Disinformation on Twitter: The Role of Opinion Leaders and Political Social Media Influencers in the Italian Debate on Green Pass. *International Journal of Communication*, 16.
– Monaci S., Morreale D. & Persico S., 2023. The Eurabia Conspiracy Theory: Twitter's Political Influencers, Narratives, and Information Sources. *Media and Communication*, 11(4).
– Monaci S. & Persico S., 2023. La disinformazione in tempo di guerra. Il ruolo delle piattaforme sottotraccia nell'ecosistema dei social network. *Comunicazione politica*, 24(2), pp. 271-296.
– Rogers R., 2019. *Doing digital methods*. Sage.

HIGHLIGHTS OF THE RESEARCH ACTIVITY

Digital phenomena pose unique challenges to social science researchers studying the impact of new and changing technologies with citizens that play a crucial role in the information ecosystem. This project draws inspiration from concepts that have explored the world of technologically mediated communication over the past 60 years such as the concept of Global Village (McLuhan), Network Society (Castells), Platform Society (van Dijck), Platform Sovereignty (Bratton), and Radical Indifference (Zuboff). The aim of this contribution is to explore the Social Media Ecosystem, since social media has been a disruptive technology that has shaped social relations and markedly changed the world in which we live. In order to pursue an all-embracing perspective the work has been declined in different directions: first by examining the relations between digital/virtual world and real world, and secondly by exploring the digital environment with a Transmedia perspective, conceiving the single social media platforms as part of a larger multiplatform narrative system. This approach aims to investigate how the dynamics of disinformation and polarization can affect multiple digital environments, the users who navigate them, and shape the world that surround us, to finally shift our gaze to the recent initiatives to regulate platforms and mitigate risks. To look at these different aspects, the project focus on nuclear energy, a topic that by its nature is highly polarizing and potentially prone to disinformation. The contribution considers two different declinations of the subject: nuclear energy for civilian purposes (since its introduction in the European taxonomy for sustainable activities) and the atomic conflict narrative (raised with the escalation of the Ukraine conflict).

A quanti-qualitative methodological approach has been designed following an explanatory sequential design. The quantitative phase relies on digital methods (Rogers, 2019) and Machine Learning to give shape and characterize the social media ecosystem that is further qualitatively analysed following a digital ethnography approach (Caliandro and Gandini, 2019).

As the communicative effectiveness of social media plays an increasingly important role in a country's democratic dynamics, this research contributes by offering a multidisciplinary perspective on the debate over the social media ecosystem and reflects on the latest initiatives to regulate digital platforms, such as the Digital Service Act.

NAME	**Maurizia PIGNATELLI**
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COURSE	XXXVII cycle - 3rd year
RESEARCH TITLE	An interactive Spatial Decision Support System to co-recovery sustainable villages and marginal areas
TUTOR(S)	Patrizia LOMBARDI, Sara TORABI MOGHADAM

ACADEMIC CONTEXT

– Pignatelli M. et al., 2023. Spatial clustering-based method for Italian marginal areas toward the sustainable regeneration. *Valori e Valutazioni,* 32, pp. 77-89. doi: 10.48264/VVSIEV-20233207.

– Pignatelli M. et al., 2023. Spatial decision support system for low-carbon sustainable cities development: An interactive storytelling dashboard for the city of Turin. *Sustainable Cities and Society*, 89, p. 104310. doi: 10.1016/j.scs.2022.104310.

– Caselli B., Ventura P. and Zazzi M., 2020. Performance-based spatial monitoring. An interpretative model for long-term shrinking medium-small Italian towns. *Sustainable Cities and Society*, 53, p. 101924. doi: 10.1016/j.scs.2019.101924.

– Torabi Moghadam S., Genta C., Pignatelli M. and Lombardi, P., 2020. Supporting sustainable urban planning process based on scenarios development. *IOP Conference Series: Earth and Environmental Science*, 588, p. 042022. doi: 10.1088/1755-1315/588/4/042022.

EXTERNAL COLLABORATIONS

– Osservatorio per lo Sviluppo dei Territori (Istituto EURISPES e Ragioneria Generale dello Stato)
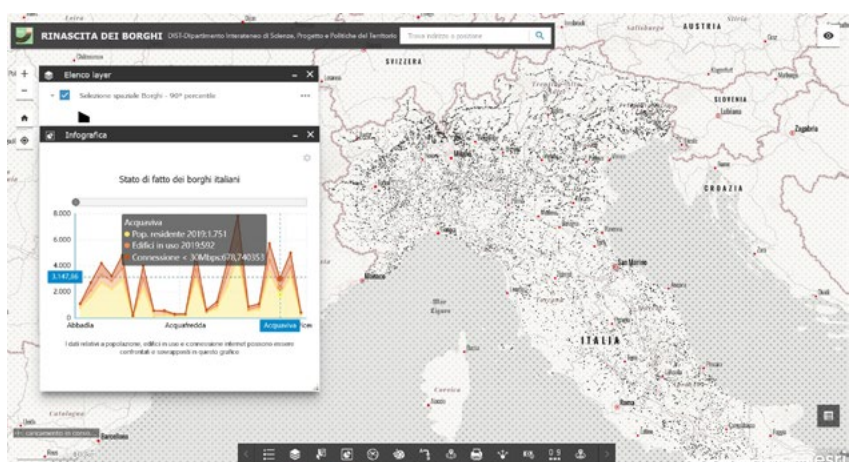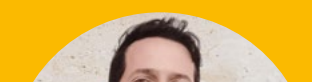
HIGHLIGHTS OF THE RESEARCH ACTIVITY

In the Italian Post-COVID 19 scenario, marginal villages have gained focus as key areas for promoting sustainable regional growth. Innovative local spatial planning is underway to shape future scenarios in line with global sustainability goals. The national initiative "Renaissance of Villages for the Revitalization of Marginal Areas" aims to recover shrinking territories by creating new centers of attraction, addressing repopulation and regional balance.

This doctoral study focuses on empowering existing spatial decision support systems by integrating Multi-criteria assessment (MCA) tools and Geographical Information System (GIS) instruments for tackling the local problems of Italian villages. Indeed, the preliminary phase of the study involved conducting a systematic literature review. A comparative maturity analysis was performed to evaluate the most robust existing digital decision support tools, based on their type of use and user categories.

The research aims to define a digital interactive spatial tool taking into account multiple criteria - Multicriteria Spatial Decision Support System (MC-SDSS) - to aid local authorities in creating a responsive environment for future local policy actions toward sustainable local development. Furthermore, It envisages the active involvement of the stakeholders in the implementation of multi-sectoral analysis and spatial assessment approaches in a multi-scalar way. The methodological framework of this study is structured in three parts: (i) explore socio-economic and territorial dynamics in the Italian context, select villages as the current most distressed marginal areas in Italy and develop a multivariate cluster analysis to assess the context in which each village is located identifying four archetypes of villages. (ii) Define the web dashboard with a GIS structure complemented by an evaluation framework based on Key Performance Indicators (KPI), useful to define targets and strategies through the implementation of MCA and a Social Design System Thinking (SDST) approach. (iii) Implement the dashboard in four villages chosen as case studies. The results support Italian policymakers by providing an innovative digital SDSS that analyses and assesses territories for making more efficient spatial planning processes and co-creating future scenarios consistent with global goals and effective at the local level.

NAME	**Andrea Marco Raffaele PRANZO**
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COURSE	XXXVII cycle - 3rd year
RESEARCH TITLE	Biogeographical detection of "Holocene Refugia" in Italian ecoregions. An applied proposal
TUTOR(S)	Angelo BESANA

ACADEMIC CONTEXT

– Barnosky A. D., Hadly E. A., Bascompte J., Berlow E. L., Brown J. H., Fortelius M., … & Smith A. B., 2012. Approaching a state shift in Earth's biosphere. *Nature*, 486(7401), pp. 52-58.

– Blasi C., Capotorti G., Copiz R., Guida D., Mollo B., Smiraglia D. & Zavattero L., 2014. Classification and mapping of the ecoregions of Italy (with Extended Appendix). *Plant Biosystems-An International Journal Dealing with all Aspects of Plant Biology*, 148(6), pp. 1255-1345.

– Guisan A., Thuiller W. & Zimmermann N. E., 2017. *Habitat suitability and distribution models: with applications in R*. Cambridge: Cambridge University Press.

– Monsarrat S., Jarvie S. & Svenning J. C., 2019. Anthropocene refugia: integrating history and predictive modelling to assess the space available for biodiversity in a human-dominated world. *Philosophical Transactions of the Royal Society B*, 374(1788), 20190219.

HIGHLIGHTS OF THE RESEARCH ACTIVITY

Facing the accelerating pace of climate change that the Italian peninsula is experiencing, any attempt to define long-term strategies for habitat integrity conservation seems doomed to excessively high levels of uncertainty. Besides, anthropic disturbance on bio-geomorphological systems occurs not only indirectly, with climate change, but also directly, with massive land use conversion which entails complex, non-linear effects in terrestrial ecosystems. These forcings are expected to keep on increasing exponentially in the next decades, eventually attaining unknown thresholds beyond which the entirety

the Earth's surface can be considered virtually affected by human presence (Barnosky et al., 2012). The conflict between human settlements and the biosphere seems to be unavoidable, however Earth observation techniques and geostatistics can give a detailed overview on the critical boundary along which this friction manifest itself. They can produce not only a definite asset of territorial data and their synthetic interpretation, but also, through cartography, their combination with complementary information, allowing retrospective, present-day and prospective analyses, thus merging the outputs offered by different disciplines, such as atmospheric physics, field biology and remotely sensed geomorphology. Ecology, in its turn, provides the basic principles founding the theory of ecological corridors and
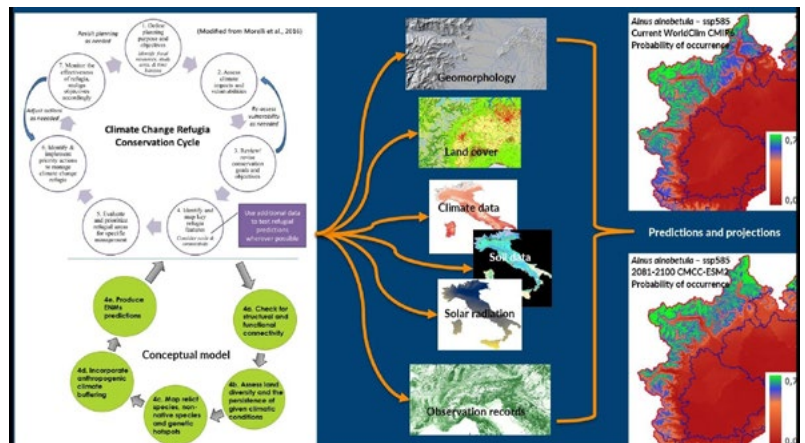
their operative setting, given by both structural and functional landscape connectivity, which should ensure that territorial contiguity is maintained to help mobile species in their forced upslope altitudinal and poleward latitudinal migration. Within this framework, the so-called climate change refugia, i.e., those geographical areas exhibiting a delayed response to the global trends of climate change, may become a key factor to dampen the effects of anthropic disturbance on ecosystems, yielding a locally smoothed transition to higher temperature scenarios (Monsarrat et al., 2019). To achieve objectively manageable results, the state-of-the art methods in biogeography suggest Ecological Niche Modelling (ENM) algorithms as the most advanced tools able to define species distribution ranges predictions, as well as their projections into future scenarios of non-analogue climate conditions (Guisan et al., 2017). For this task, the available climate data simulation outputs from different General Circulation Models (GCM) can be selected and imported to transfer the models into different environmental variable regimes. With my research I test and produce a workflow to locate those strategic areas across Italian ecoregions, tailoring the investigation on some representative species of the Northwestern Alps ecoregional subdivision, by partially mimicking a regional-scale phytosociological approach (Blasi et al., 2014). I generate cartographic deliverables and assess their reliability. Their final scope is to serve as reference points for subsequent conservative planning initiatives through which the attainment of SDG 15 (protection of terrestrial ecosystems), and, in particular, SDG Target n. 15.5 (natural habitat integrity) could be more easily evaluated and fostered at the regional (or, better, ecoregional) level.

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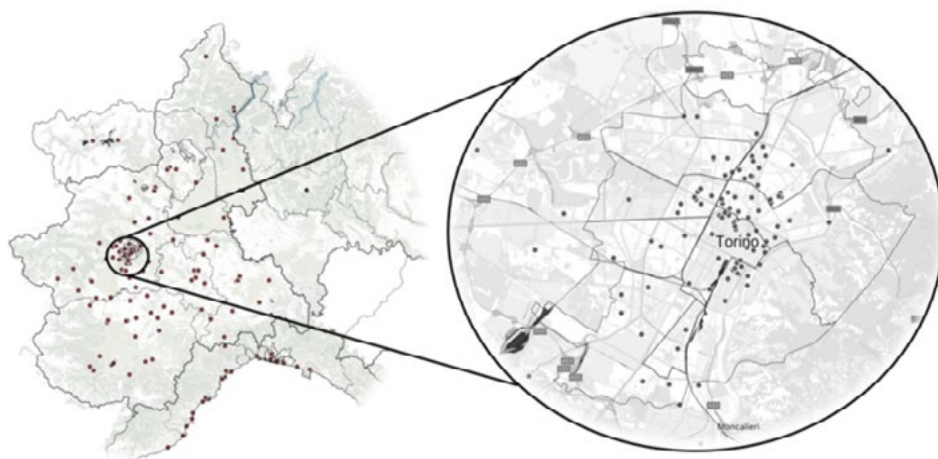| COURSE	XXXVII cycle - 3rd year
RESEARCH TITLE	The Spatial Politics of Italian Philanthropic Action: Alternative Cultural Production, Sustainable Development and Social Innovation
TUTOR(S)	Carlo SALONE

ACADEMIC CONTEXT

– Webber S., Leitner H. and Sheppard E., 2020. Wheeling out urban resilience: Philanthrocapitalism, marketization, and local practice. *Annals of the American Association of Geographers*, 111(2), pp. 343-363.
– Montero S., 2020. Leveraging Bogotá: Sustainable development, global philanthropy and the rise of urban solutionism. *Urban Studies*, 57(11), pp. 2263-2281.
– Mitchell K. and Sparke M., 2016. The new Washington consensus: Millennial philanthropy and the making of global market subjects. *Antipode*, 48(3), pp. 724-749.
– Fuentenebro P., Bok R., Rosenman E. and Acuto M., 2024. Geographies of super-philanthropy: Disaggregating the global philanthropic complex. *Dialogues in Human Geography*. doi: 10.1177/20438206241228659.

EXTERNAL COLLABORATIONS

– Fondazione Santagata for the Economics of Culture

HIGHLIGHTS OF THE RESEARCH ACTIVITY

The emergence of the urban as a site of governance is always a negotiated political process, and one that gets established through prevailing discourses and associated power geometries. Taking this as a starting point, the general aim of my work is to contribute to the development of an understanding of the relationship between the spatial patterns of urbanisation and the institutionalisation of public authority outside the realm of government institutions. Instead of assuming the existence of bounded and coherent local authorities responsible for urban governance, therefore, I'm interested in the power-laden processes through which institutional decision-making contexts are produced through the relationship between different actors. Accordingly, my research tries to expand the emerging debate in political economic geography which is concerned with the increasing prominence of philanthropies in the institutional formations responsible for the spread of entrepreneurial modes of urban governance (Mitchell and Sparke, 2016; Montero, 2020; Webber et.al, 2020; Fuentenebro et.al 2024). To pursue this aim I try to understand what is the role of the Italian foundations of banking origin in the institutionalisation of alternative cultural organisations; as well as what are the symbolic and material implications of this process for the production of space at the urban level. I have structured my research as a collection of four articles. The first article proposes a conceptual and empirical framework to analyse alternative cultural organisations as an ecological community and apply it to the analysis of the economic, spatial, and relational structure of more than 50 art spaces in Turin, Italy. The second article, adopts a Cultural Political Economy approach to build a meta-framework for analysing the role of the Italian Foundations of Banking Origin (FOBs) in the institutionalisation of alternative cultural organisations through two heuristics: (de)politicisation and (de) territorialisation . The third and the fourth article apply the framework to the in-depth qualitative analyses of two call for grants promoted by a local foundation of banking origin in Turin.

NAME	**Alice RE**
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COURSE	XXXVII cycle - 3rd year
RESEARCH TITLE	Assessment of coastal vulnerability in semi-enclosed sea basins: focus on a spatially explicit analysis of exposure
TUTOR(S)	Alessandro PEZZOLI, Lorenzo MINOLA

ACADEMIC CONTEXT

– IPCC, 2019. Sea Level Rise and Implications for Low-Lying Islands, Coasts and Communities. In: Pörtner H.-O. et al., *IPCC Special Report on the Ocean and Cryosphere in a Changing Climate*.

– Woznicki S.A., Baynes J., Panlasigui S., Mehaffey M. and Neale A., 2019. Development of a spatially complete floodplain map of the conterminous United States using random forest. *Science of the Total Environment*, 647, pp. 942-953. https://doi.org/10.1016/j.scitotenv.2018.07.353 .

– Re A., Minola L. and Pezzoli A., 2023. Climate scenarios for coastal flood vulnerability assessments: a case study for the Ligurian coastal region. *Climate*, 11(3), p. 56. https://doi.org/10.3390/cli11030056 .

– Löwe R., Böhm J., Jensen D.G., Leandro J. and Højmark Rasmussen S., 2021. U-FLOOD – Topographic deep learning for predicting urban pluvial flood water depth. *Journal of Hydrology*, 603, 126898. https://doi.org/10.1016/j.jhydrol.2021.126898.

EXTERNAL COLLABORATIONS

– University of Valencia (host for visiting period)

HIGHLIGHTS OF THE RESEARCH ACTIVITY

Assessing vulnerability to climate-related hazards is crucial for climate change adaptation. Coastal communities are among those who will likely be affected the most by relevant climate change-related outcomes such as sea level rise and floods. Projections of future urban population trends point towards coastal cities growing in the next years, and to more people being consequently exposed to such hazards. The aim of this PhD research is to advance the knowledge in this field, with a focus on assessing physical exposure to coastal inundation and extreme sea level changes in the Mediterranean Sea basin and specifically for the Italian region Liguria.

The first phases of the PhD research were devoted to developing a case study for the assessment of exposure to inundation and erosion for a large shoreline stretch in Liguria. The vulnerability of the area was analysed by computing a qualitative Coastal Vulnerability Index of relative exposure along the region's coastline. The index was obtained as combination of several bio-geophysical variables determining local exposure to storm events. The results of the analysis can be used to identify which coastline portions are of most concern, in order to orient more in-depth studies. Though, this index-based approach had significant limitations in terms of the type of spatial output, index construction and output validation possibilities. Thus, during the second part of the PhD the research objective was approached as a machine learning-based supervised classification task aimed at the production of a map of susceptibility to compound fluvial and coastal flooding for the same area of interest. Using a series of static predictors related primarily to local topography, binary classification models were developed at different levels of complexity (linear, random forest and U-Net) and for varying levels of spatial aggregation. Flood inundation maps produced by regional authorities in the context of the EU Floods Directive 2007/60/EC were used as ground truth for both model training and validation. The results of the analysis demonstrated the effectiveness of the proposed data-driven approach to identify areas susceptible to flooding in the region, overcoming some of the hindrances encountered during the initial research phases. Inter-model and spatial variation in the results of the analysis provided further insight into the site-specific features that can contribute to the effectiveness of the approach.
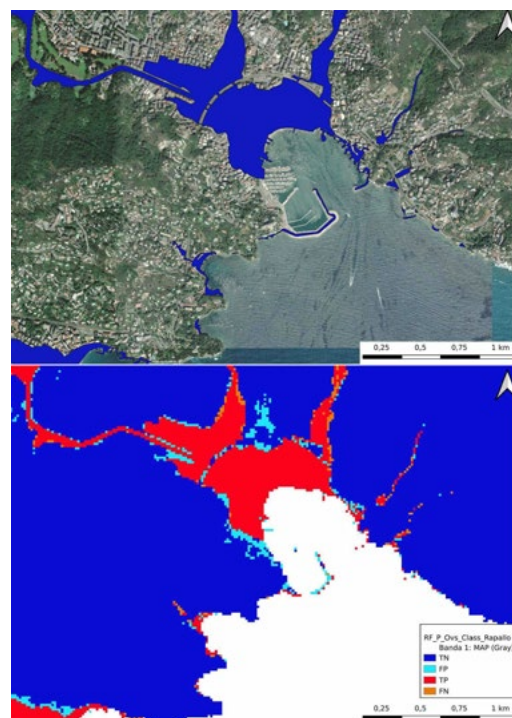
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COURSE	XXXVII cycle - 3rd year
RESEARCH TITLE	Migration Governance and Transnational Municipal Networks: Traces of Policy Knowledge Exchange in Four Italian Cities
TUTOR(S)	Fabrizio DI MASCIO, Tiziana CAPONIO

ACADEMIC CONTEXT

– Campbell T., 2012. *Beyond Smart Cities: How Cities Network, Learn and Innovate*. London: Routledge.

– Zapata-Barrero R., Caponio T. and Scholten P., 2017. Theorising the 'Local Turn' in a Multi-level Governance Framework of Analysis: A Case Study in Immigrant Policies. *International Review of Administrative Sciences*, 83(2), pp. 241-246. https://doi.org/10.1177/0020852316688426.

– Lacroix T. 2022. Migration-related City Networks: A global overview. *Local Government Studies*, 48(6), pp. 1027-1047. https://doi.org/10.1080/03003930.2021.1938553.

– Haupt W., Chelleri L., van Herk S. and Zevenbergen C., 2020. City-to-city learning within climate city networks: definition, significance, and challenges from a global perspective. *International Journal of Urban Sustainable Development*, 12(2), pp. 143-159. https://doi.org/10.1080/19463138.2019.1691007.

HIGHLIGHTS OF THE RESEARCH ACTIVITY

The project explores the processes through which Italian municipalities acquire and integrate new policy-related knowledge into their local migration governance. Particular focus is placed on their involvement in transnational municipal networks – political and technical platforms where cities voluntarily convene for economic, political, symbolic, or educational purposes – to exchange knowledge and share best practices. Scholars widely agree that knowledge exchange is one of the primary motivators for cities to engage in such activities (Kern & Bulkeley 2009; Acuto & Rayner 2016; Oomen 2020). However, while much of the literature has focused on large cities and metropolises (Kern & Bulkeley 2009), the dynamics of how smaller municipalities – often perceived as less equipped in terms of technical, organizational, and political resources – participate in transnational municipal networks and engage in knowledge exchange aimed at governance and policy innovation are less well understood (Coulombe, Maya-Drysdale & McCormick 2022).

This work then aims to contribute to previous scholarship in two ways. On the one hand, this dissertation intends to improve the understanding of the mechanisms of policy knowledge exchange among cities participating in transnational municipal networks. Building from the concept of 'modalities of learning' by Campbell (2012) and that of 'learning tools' by Domorenok, Bassoli & Cagnoli (2023), I advance '*modes and tools of policy knowledge exchange*' as new analytical devices to identify and assess respectively the 'methodologies' and 'methods' through which policy knowledge is vehiculated from city to city through transnational municipal networks' opportunity structures.

On the other hand, given the unique characteristics of each local context, it is crucial to recognise that understanding policy knowledge exchange is not complete without considering its impacts on local governance arrangements. Adopting a qualitative multi-method research design, this dissertation investigates whether specific local features, particularly size-related dimensions, can facilitate or hinder policy knowledge exchange and, consequently, policy and governance innovation. It is posited that technical and organisational capacity shortcomings and poor coordination mechanisms among local actors can impede policy knowledge exchange and slow policy and organisational innovation. While the literature supports these assumptions, they must be tested on specific cases using thematic analysis (Boyatzis 1998; Braun & Clarke 2012).

I propose a comparative study of four Italian cities – Turin, Bologna, Settimo Torinese, and Capaci – that participate in policy knowledge exchange initiatives facilitated by four transnational municipal networks: UNHCR's Carta per l'Integrazione, ECCAR, Eurocities, and CEMR. This study examines the methods and tools offered by these networks, as well as the impact of policy knowledge exchange on local migration governance. By analyzing these dynamics, the research will reveal how cities of varying sizes learn from one another's experiences, and how, particularly in smaller municipalities, the involvement of policy entrepreneurs (such as national networks) can help overcome capacity and organizational challenges, promoting policy knowledge exchange and learning. The findings will offer valuable insights to inform future policy and governance decisions, highlighting the potential of transnational municipal networks to shape effective strategies.

NAME	**Sofía Beatriz RIVERA GARCÍA**
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COURSE	XXXVII cycle - 3rd year
RESEARCH TITLE	Between violence and care: Socio-spatial practices of (un)care amid extreme and chronic violence in El Salvador
TUTOR(S)	Camillo BOANO

ACADEMIC CONTEXT

– Gilmore R. W., 2007. *Golden gulag: Prisons, surplus, crisis, and opposition in globalizing California. Vol. 21*. Berkeley: University of California Press.
– Guizardi M., López E. and Gonzálvez H., 2021. Las violencias del cuidado. Las experiencias de mujeres paraguayas en la triple-frontera del Paraná. Confluenze. *Rivista di Studi Iberoamericani*, 13(1), pp. 500-541.
– Rivera-García S., 2023. The caregivers' strike: a tale of violence and care in the entrails of San Salvador. *Lo Squaderno*, 65, pp. 49-53. ISSN 1973-9141.
– Rivera-García S., 2023. Bodily Infrastructures of Care. *Roadsides*, 9, pp. 17-22.

EXTERNAL COLLABORATIONS

– Universidad Centroamericana José Simeón Cañas (UCA), El Salvador

HIGHLIGHTS OF THE RESEARCH ACTIVITY

The Latin American region has moved forward in blurring the already undefined boundaries between security policies and state violence. In the case of El Salvador, after more than two decades of anti-gang policies, massive incarceration and repressive measures, the level of insecurity did not decreased, and violence continued to be used as a means to resolve conflicts not only by gangs but also by the state, who mystifies police and military *control* as *care* (Sirimarco, 2021). In this scenario, caring practices continue to be provided, sustaining and weaving the complex web that sustains life (Fisher and Toronto, 1990; Soto-Villagrán, 2022). The violence and oppression inherent in care relations, constituted by unequal power relations where the role of the caregiver is imposed on women by a gender mandate (Guizardi, Lopez, and Gonzalvez, 2021), contribute to recognizing the importance of problematizing and analyzing the entanglements and connections between violence and care (Bartos, 2018). To this end, this research aims to investigate how caring relations and practices are produced, spatialized, mediated, and embodied in the context of extreme and chronic violence and how violence is embedded in caring practices, relations and spatialities. By placing the experiences of caregivers at the center, I aim to recognize women's bodies as "complex sites of both care and violence" (Bartos, 2018:2). The stage of fieldwork was conducted in the city of San Salvador, El Salvador, between November 2022 and Jule 2023, where the effects of the Exception Regime established in March 2022 have resulted in the emergence of socio-spatial practices of care and resistance. I focused on and engaged with the experience of (1) a group of women, mothers (and others) who have inhabited the surroundings of *El Penalito*, a temporary jail where almost every prisoner passed prior permanent confinement and before liberation, and (2) the Azoro Cultural Association (ACA) and La Cachada Teatro, a group of female street vendors who founded a theater company and started the Nave Cine Metro project, a space dedicated to performing arts where street vendors were able to rest and practice self-care.

NAME	**Daniela SANTANA TOVAR**
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COURSE	XXXVII cycle - 3rd year
RESEARCH TITLE	Definition of a standard framework for ESG assessment in construction companies
TUTOR(S)	Patrizia LOMBARDI, Sara TORABI MOGHADAM

ACADEMIC CONTEXT

– Daugaard D. and Ding A., 2022. Global Drivers for ESG Performance: The Body of Knowledge. *Sustainability (Switzerland)*, 14(4), pp. 1-21. https://doi.org/10.3390/su14042322.
– Khan M.A., 2022. ESG disclosure and Firm performance: A bibliometric and meta analysis. *Research in International Business and Finance*, 61(February), p. 101668. https://doi.org/10.1016/j.ribaf.2022.101668.
– Billio M., Costola M. and Pelizzon L., 2021. Inside the ESG ratings: (Dis)agreement and performance. *Corporate Social Responsibility and Environmental Management*, 28(5), pp. 1426-1445. https://doi.org/10.1002/csr.2177.
– Vieira De Castro A., Ramírez Pacheco G., Neila González F.J., 2020. Holistic approach to the sustainable commercial property business: Analysis of the main existing sustainability certifications. *International Journal of Strategic Property Management*, 24, pp. 251-268. https://doi.org/10.3846/ijspm.2020.12174.

EXTERNAL COLLABORATIONS

– Programma Operativo Nazionale Ricerca e Innovazione 2014-2020 (CCI 2014IT16M2OP005), risorse FSE REACT-EU, Azione IV.5 "Dottorati su tematiche Green" (PhD grant)
– Green Building Council Italy – Host of internship period

HIGHLIGHTS OF THE RESEARCH ACTIVITY

The private sector is crucial in delivering practical, innovative solutions that will eventually lead to a zero-carbon economy. In addition, encouraging businesses to make decisions based on climate change is the best approach to developing and building more equitable and healthy societies. While there is a global trend toward mandated sustainability disclosure, acknowledging that it provides stakeholders and investors with significant company information, there is skepticism about the value that businesses place on reporting when sustainability criteria are not in line with corporate goals. Establishing a strategic and standard evaluation framework is required to raise the level of openness and accountability in environmental, social, and governance (ESG) and lower the expenses it entails. This is particularly true in construction, where there is a lack of standardized criteria for ensuring sustainability in the built environment. This framework should allow for the comparison of the sustainability metrics between construction companies, disclosure reports and value creation of businesses.

By aligning the values of companies with sustainability goals, the cost of sustainability reporting could be oriented towards the development of efficient measurements. Economies are reshaping into sustainable practices, conducting businesses into the consideration of ESG issues in decision-making, and using reporting as a key initiative to achieve the value creation of the sector with the SDGs.

There is a need for a standard sustainability reporting tool that can compare sustainability report measurements between companies, to report progress in climate change mitigation and advancement in the achieving of the 2030 agenda, while also being of benefit to the companies' financial objectives.

The result is a ESG indicators framework, specific for construction companies that consists of 119 indicators categorized into (44) environmental, (54) social, and (20) governance. This framework enables construction companies to assess comprehensively ESG performance, and to guide mandatory ESG disclosure compliance aligned with current European regulations.

The treatment of ESG practices has to be holistic, starting from policymaking to the standardization of assessment and disclosure frameworks and ending with the development of sustainability strategies in each company.

Environmental, Social and Governance (ESG) – Introduzione al tema

NAME	Saanchi SAXENA
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COURSE	XXXVII cycle - 3rd year
RESEARCH TITLE	Negotiating Spatial Inequality: Caste and Gender Dynamics among Women Street Vendors in Mumbai, India
TUTOR(S)	Michele LANCIONE

ACADEMIC CONTEXT

– Anjaria J.S., 2006. Street Hawkers and Public Space in Mumbai. *Economic and Political Weekly*, 41(21), pp. 2140-2146.
– Bandyopadhyay R., 2009. Archiving from Below: The Case of the Mobilised Hawkers in Calcutta. *Sociological Research Online*, 14(5). https://doi.org/10.5153/sro.2008.
– Chakravarti U., 2018. *Gendering caste through a feminist lens*. New Delhi: SAGE Publications Stree.
– Sundaresan J., 2019. Urban planning in vernacular governance: Land use planning and violations in Bangalore, India. *Progress in Planning*, 127, pp. 1-23.

HIGHLIGHTS OF THE RESEARCH ACTIVITY

Street vendors in Mumbai are targeted on various fronts: by the forces of neoliberalism that term vendors as 'encroachments' over property; a state that views them as an obstacle to an ordered urban life; "bourgeois environmentalists" that consider street vendors as 'eyesores' and sources of 'filth'; as well as xenophobic, regionalist political parties that protest against the 'influx' of migrant workers in the city. How does the intersection of gender and caste influence these multiple axes of oppression faced by street vendors?

For Indian women, the decision to work outside the home involves crossing boundaries – both social and material – that are based on the traditional perception of where a woman's domain should lie. It is this very tension between the workplace and home, the public and private that gives birth to a spatiality shaped by the intersections of gender, caste, and class. Women street vendors in Mumbai are, thus, uniquely vulnerable to urban policies that encourage segregation of the commercial from the residential, create rigid "no-hawking" zones, rely on technocratic solutions, and focus on formalising rather than supporting street vendors. Knowledge produced about and with women street vendors will be key to addressing this gap. Thus, I carried out a 9 month multi-sited ethnography grounded in the social and historical geography of the city in order to understand the experiences of women street vendors in Mumbai. My findings have the potential to critique the current urban planning paradigm in India, interrogate how the intersection of gender, caste, and class has produced urban space, and shift attention to the policy-based, political, and epistemological exclusion of women and caste minorities in India. To do this, I built upon three main conceptual frameworks in my research – decolonial Southern urbanism, feminist geography, and anti-caste geography. Therefore, the broad research aim of my project is to expand our understanding of the intersection of caste, gender, and space in Indian cities, and how this relation has produced urban space,

through the experiences of women street vendors in Mumbai. This included understanding the everyday experiences of women street vendors through an ethnographic approach, focusing on the impact of contemporary urban planning policies on them, and finally, analysing, through a historical lens, how street vending has been viewed by the colonial and postcolonial state.

NAME	**Elia SILVESTRO**
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COURSE	XXXVII cycle - 3rd year
RESEARCH TITLE	The Geography of Logistics Real Estate in Northern Italy. Financialized Growth and Governance of Logistical Hinterlands in a Global City-Region
TUTOR(S)	Carlo SALONE

ACADEMIC CONTEXT

– Brenner N., Katsikis N., 2020. Operational Landscapes: Hinterlands of the Capitalocene. *Architectural Design*, 90 (1), pp. 22-31. https://doi.org/10.1002/ad.2521.
– Dablanc L., Ross C., 2012. Atlanta: A Mega Logistics Center in the Piedmont Atlantic Megaregion (PAM). *Journal of Transport Geography*, 24 (C), pp. 432-42. https://doi.org/10.1016/j.jtrangeo.2012.05.001.
– Molotch H., 1993. The Political Economy of Growth Machines. *Journal of Urban Affairs*, 15 (1), pp. 29-53.
– Raimbault N., 2022. Outer-Suburban Politics and the Financialisation of the Logistics Real Estate Industry: The Emergence of Financialised Coalitions in the Paris Region. *Urban Studies*, 59 (7), pp. 1481-98. https://doi.org/10.1177/00420980211014452.

EXTERNAL COLLABORATIONS

– Laboratoire Ville Mobilité Transport (LVMT), Université Gustave Effeil, Paris (visiting period, Jan-Feb 2023)

HIGHLIGHTS OF THE RESEARCH ACTIVITY

Logistics facilities development has surged to satisfy the demand of globalized production and trade. Warehouses, distribution centres, courier facilities and intermodal hubs are built alongside industrial parks and in other strategic locations such as highway interchanges. This is especially prevalent in the sprawling hinterlands of global city-regions, where cheap undeveloped land plots along transport infrastructure can be found (Dablanc and Ross 2012). I approach this logistics urbanization as a local economic strategy based on real estate development and investigate the actors behind its materialisation. First, I perform a quantitative (GIS) survey of Northern Italian logistics facilities to identify case studies. The resulting fieldwork stretches across the Italian provinces of Alessandria and Piacenza, a poorly industrialised but strategic area for goods flows from and to the port of Genoa and the rich manufacturing sector of Northern Italy as well as a gateway to the Northern European markets. I investigate the processes behind logistics real estate development through semi-structured interviews with key experts from the governmental and non-governmental sphere (investors, fund managers, logistics operators, real estate firms as well as government officers).

Building on my fieldwork, I reconstruct these processes as growth coalitions (Molotch 1993), constellations of governmental and non-governmental (market) actors interested in land-based growth. This exposes a network stretching across scales from the global to the local, as the financial strategies of global investment funds are channelled down to suburban municipalities through the advanced services of global city-regions – in this study, Milan – resulting in a financialized growth machine for logistics.

Second, I posit that, like in other cases (Raimbault 2022), regional governance is weak and is ultimately in the hands of revenue-seeking municipalities trying to logistics facilities with little regard for planning. Finally, I argue that my case study shows how extended urbanization is fuelled through global finance as the 'operational landscapes' of Global North hinterlands (Brenner and Katsikis 2020) are built through global capital.

My research explores an uninvestigated aspect of Northern Italian urbanization from the perspective of urban geography. It also informs urban planning and territorial governance in a region where land consumption is rampant.
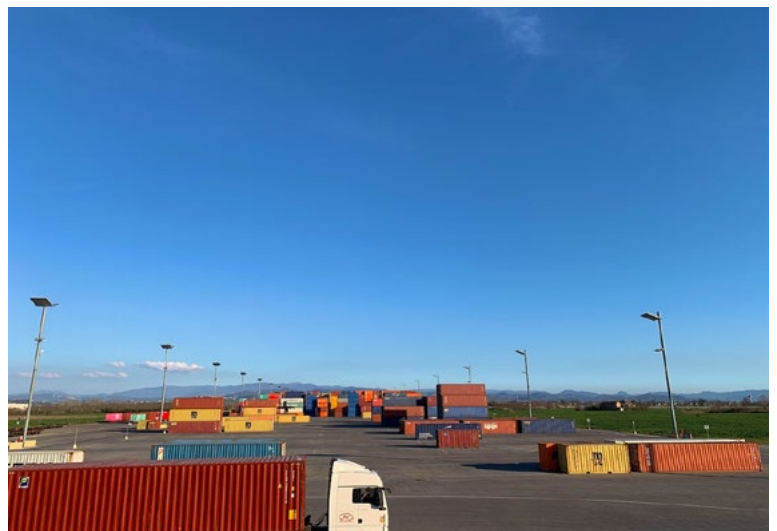
NAME	**Anthony SUPPA**
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COURSE	XXXVII cycle - 3rd year
RESEARCH TITLE	Climate-neutral Turin: evaluating energy, emissions, and financial costs and savings in district-scale building retrofit scenarios
TUTOR(S)	Marta Carla BOTTERO, Vincenzo CORRADO

ACADEMIC CONTEXT

– Suppa A.R., Aliberti A., Bottero M.C., Corrado V., 2024 [in press]. Can a neural network see windows like an architect? Detecting district-scale window-wall ratio from automatically extracted street view imagery using deep learning.

– Suppa A.R., Corrado V., 2023. Supporting the EU mission "100 climate-neutral cities": using urban building energy modeling for zero-emission building retrofit scenarios at district scale. In: *Building Simulation Conference Proceedings Vol.18* (ISSN: 2522-2708).

– Suppa A.R., Ballarini I., 2023. Supporting climate-neutral cities with urban energy modeling: a review of building retrofit scenarios, focused on decision-making, energy and environmental performance, and cost. *Sustainable Cities and Society*, 98 (2023), 104832.

– Becchio C., Bottero M.C., Corgnati S.P. and Dell'Anna F., 2018. Decision making for sustainable urban energy planning: an integrated evaluation framework of alternative solutions for a NZED (Net Zero-Energy District) in Turin. *Land Use Policy*, 78, pp. 803-817.

HIGHLIGHTS OF THE RESEARCH ACTIVITY

Climate deadlines are fast approaching. As a participant in the EU mission "100 climate-neutral cities by 2030", Turin must eliminate all Scope 1 & 2 CO_2 emissions in a district of 50,000 people by end of the decade. Decarbonization requires retrofit strategies to reduce energy demand in buildings, a sector accounting for 40% of energy consumption and 36% of energy-related CO_2 emissions in the EU.

Cities need support to develop and assess action plans, spur innovation, and increase stakeholder collaboration (Huovila et al. 2022). One tool supporting city-wide decarbonization is urban building energy modeling (UBEM), creating models at district or city scale, quantifying baseline and post-retrofit energy and CO_2 performance.
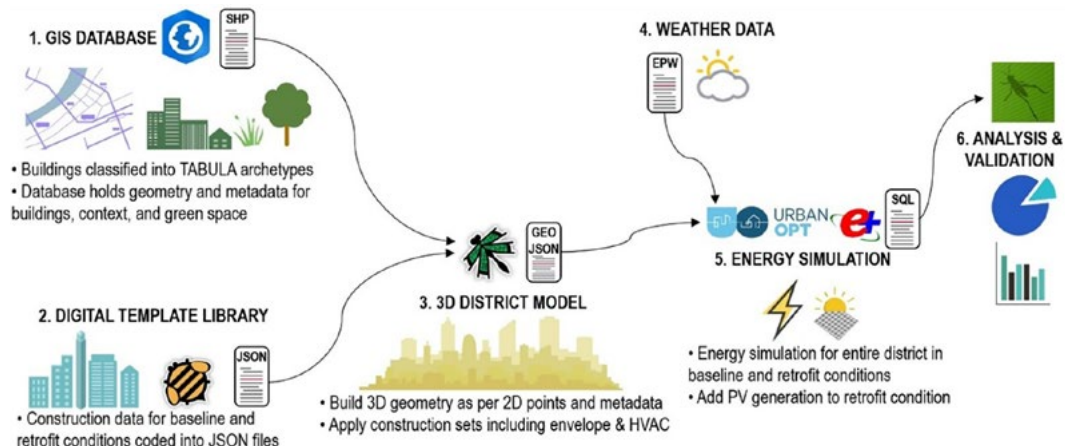
The PhD candidate's research unfolds over four academic articles, as follows:

Article 1, a review of retrofit-focused UBEM studies, examines decision-making, energy and environmental performance, and costs of simulated retrofits. We highlight approaches using context analysis to generate and share energy in districts, economic criteria to mirror real-world conditions, and stakeholder engagement to meet local priorities.

Article 2 uses UBEM to model the effect of retrofitting 1,761 residential buildings in Turin's *Barriera di Milano* district. The approach targets retrofits using the zero-emissions building concept while emphasizing decision-making toward efficiency and constructability of retrofits. The results show a reduction of overall primary energy use of 56% to 71% in retrofit scenarios including envelope and mechanical system measures, and adding onsite PV energy generation reduces carbon emissions by 90% compared to baseline.

Article 3 uses deep learning to automatically extract window-wall ratio (WWR) from street view imagery, applying the methodology to 2,400 buildings in Turin's *Circoscrizione 6*. Façade WWRs are upscaled to building and district level, to be used in UBEM simulations.

Article 4 adds the automatically detected glazing to the UBEM for the *Barriera* district on a building-by-building basis, along with roof surfaces detected the municipal database of LiDAR points. We quantify results in terms of energy and CO_2 emissions saved, as well as a life cycle cost model to show financial costs and savings of the retrofit investments.

1. GIS DATABASE — SHP
• Buildings classified into TABULA archetypes
• Database holds geometry and metadata for buildings, context, and green space

2. DIGITAL TEMPLATE LIBRARY — JSON
• Construction data for baseline and retrofit conditions coded into JSON files

3. 3D DISTRICT MODEL — GEO JSON
• Build 3D geometry as per 2D points and metadata
• Apply construction sets including envelope & HVAC

4. WEATHER DATA — EPW

5. ENERGY SIMULATION — URBAN OPT — SQL
• Energy simulation for entire district in baseline and retrofit conditions
• Add PV generation to retrofit condition

6. ANALYSIS & VALIDATION

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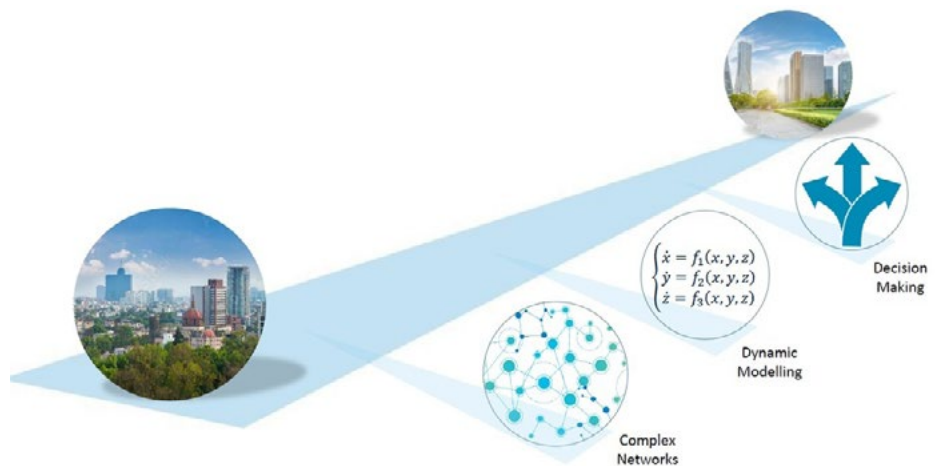| COURSE	XXXVII cycle - 3rd year
RESEARCH TITLE	Urban Evolution: a dynamic model for development, sustainability and resilience
TUTOR(S)	Marta BOTTERO, Elena DE ANGELIS, Giancarlo COTELLA

ACADEMIC CONTEXT

– Assumma V., Bottero M., De Angelis E., Lourenço J.L., MonacoR., Soares A.J., 2021. A decision support system for territorial resilience assessment and planning: an application to the Douro Valley (Portugal). *Science of the Total Environment*, 756, 143806.
– Bettencourt L.M.A., 2021. *Introduction to Urban Science*, Cambridge: MIT Press.
– Della Marca R., Groppi M., Soares A.J., 2022. Human-induced oscillations in a network landscape model. *Communication in Nonlinear Science and Numerical Simulation*, 115, 106722.

HIGHLIGHTS OF THE RESEARCH ACTIVITY

Since the middle of the XX century, the world's population has experienced a sharp increase due to a general improvement in living conditions and in the last 35 years urban population had a leap of 2.3 billion people. The analyses show a consolidated trend, which will bring 68% of people to live in cities by 2050. The control of urban processes and which tools are to be used to achieve this result have, thus, become a central issue for managing such complex realities, in constant economic, social and building development, not to mention the environmental fall-outs. The research aims to address urban evolution using Mathematical tools to predict possible scenarios and support decision makers, in order to guide cities' development.

From the literature review (in terms of complexity, urban development, networks, dynamic models and resilience), the research path leads to the development of a mathematical model of urban evolution accounting for several components: urban growth, environmental sustainability and the human factor, joint together in a multi-dimensional dynamics represented by a set of differential equations. Such a dynamics may allow to gather the urban future growth trends and support the decision making process, identifying the stable equilibriums, because they represent a stable evolution path and, therefore, lead to predictable scenarios. The second target is the introduction in the dynamics of proper parameters, which make the system move towards a preferred equilibrium and thus guide urban evolution on a preferred direction.

In this final year, the research has been focused on the development of the final mathematical model. From the simplified two-dimensions dynamics already finalised during the second year, the research reached the final stage developing a 3-equation differential system in three state variables: pedestrianization (as the state variable relating to sustainability and environment), people favour (human factor) and economic value of residential properties (urban growth). The analysis of the behaviour of the system with the equilibrium states and the close relation with resilience has been studied and applied to a case-study (San Salvario borough, Turin, Italy).

NAME	**Matteo TRANE**
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COURSE	XXXVII cycle - 3rd year
RESEARCH TITLE	*shapEUrbe*. SHAPing the green transition in the EU for sustainable URBan Environment under the European Green Deal and the 2030 Agenda
TUTOR(S)	Patrizia LOMBARDI, Riccardo POLLO, Luisa MARELLI, Alice SIRAGUSA

ACADEMIC CONTEXT

– Trane M., Marelli L., Siragusa A., Pollo R. and Lombardi P., 2023. Progress by Research to Achieve the Sustainable Development Goals in the EU: A Systematic Literature Review. *Sustainability*, 15, 7055. https://doi.org/10.3390/su15097055.
– Trane M., Genta C., Siragusa A., 2023. The 2030 Agenda in European Urban context. Procedures and tools to support the localization of SDGs. Urban@it working papers. *Città e territori del PNRR - Casi e approfondimenti*, vol. 16.
– Brandon P.S. and Lombardi P., 2011. *Evaluating Sustainable Development in the Built Environment*. 2nd ed. Oxford: Wiley-Blackwell.
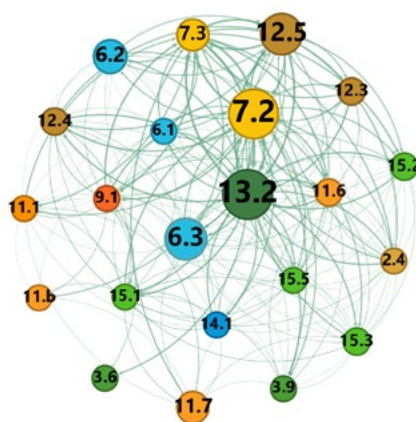
EXTERNAL COLLABORATIONS

– European Commission's Joint Research Centre, Ispra (JRC) – Directorate D Sustainable Resources, Unit D.1 Forests & Bioeconomy

HIGHLIGHTS OF THE RESEARCH ACTIVITY

The *2030 Agenda for Sustainable Development* (A/RES/71/313) was launched in 2015 by the United Nations. Halfway there to 2030, there is evidence that the influence the SDGs have had so far on politic agendas, governance, and paradigm changes has been limited. The European Union (EU) commitment to the 2030 Agenda mainstreaming has been strengthen by 2019-2024 European Commission six headline priorities. Specifically, the European Green Deal (EGD) is aiming at turning the EU in the first climate-neutral continent. In this pathway, the role of EU cities, where more than 70% of EU citizens live and more than 60% of the SDG targets will be reached, is crucial.

This Thesis investigates the role of EU cities against the EGD via the SDG framework, finally providing cities with a "toolkit" to support the achievement of green transition policy targets. As a first step, a systematic literature review has highlighted the growing interests of scholars in in operationalizing the SDGs at urban and intra-urban level. After critical review of EGD policies and latest trend, the JRC performed a comprehensive assessment of the EU current status with respect to the EGD ambitions (upcoming publication). From there, a legislative framework for cities emerged, consisting of 76 targets. Merged to the best SDG proxy targets and indicators, they constitute a priority reference framework for EU cities to contribute to the EU green transition. Possible synergies and trade-offs among these targets and policies have been highlighted for ensuring coherence. Structural challenges to the EGD thematic areas and local best practices have emerged after a scoping literature review, expert workshop, and EU level stakeholder consultation, collecting more than 200 responses from all Member States. The results, elaborated via a novel "digitalized" version of the playing card method, highlight a

SYNERGIES   TRADE-OFFS

high diversity of views, calling for targeted support to overcome emerged challenges. A final international workshop is envisaged for the 24th October 2024 at Politecnico di Torino, where EU-level policy makers, academics, urban networks representatives, architectural and landscape firms will identify key enablers to support cities in achieving the EGD targets and designing their green transition pathways. Key findings and implications from the Ph.D. research will convey in a booklet with enabling tools (priority policy framework, interlinkages, key challenges, enablers to achieve the targets, and best practices), which will be officially presented at the *2024 European Week of Regions and Cities* (7-10th October 2024) and published by November 2024.

NAME	**Anna TREVES**
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COURSE	XXXVII cycle - 3rd year
RESEARCH TITLE	A spatial dynamic integrated approach for beavers management as Nature-based Solution for freshwater ecosystem restoration
TUTOR(S)	Elena COMINO, Giovanni ZENEZINI

ACADEMIC CONTEXT

– Treves A., Bottero M., Caprioli C. and Comino E., 2020. The reintroduction of Castor fiber in Piedmont (Italy): An integrated SWOT-spatial multicriteria based approach for the analysis of suitability scenarios. *Ecol. Indic.*, 118.
– Treves A., Terenziani A., Angst C. and Comino E., 2022. Predicting habitat suitability for Castor fiber reintroduction: MaxEnt vs SWOT-Spatial multicriteria approach. *Ecological Informatics*, 72.
– Treves A. and Comino E., 2023. A bibliometric literature review in beaver management: when does the beaver become a resource? *Mam Rev*, 54, pp. 213-228.
– Siemer W.F., Hall B., Jonker S.A., Decher D.J. and Organ J.F., 2013. Toward an understanding of beaver management as human and beaver densities increase. *Human-Wildlife Interactions*, 7(1), pp.114-131.

HIGHLIGHTS OF THE RESEARCH ACTIVITY

Human activities directly and indirectly affect the environment by changing land uses, breaking off river continuity, altering flow regime, polluting environmental matrices and affecting biodiversity. Freshwater ecosystem are one of the most threatened ecosystems at global scale.

In this context, beavers represent a Nature-based Solution to increase the resilience of freshwater ecosystem to drivers of change. These animals are known as ecosystem engineers because they deeply modify the environment offering several ecosystem services. However, although beavers represent a sustainable solution, they as other species are often identified as pest where the proximity to human is strong. Human-wildlife interactions and the extent of related conflicts are strictly linked to human vision of

World. Currently, the management of species is a hotly debated topic given the involvement of social community and the different interpretation of the concepts of acceptance, tolerance and coexistence. The challenge is to find a balance between needs and behaviour of species involved implementing management strategies that consider ecosystem approach and socio-economic theories.

To response to this challenge, this PhD research proposed a structured species management approach which considers beavers and biodiversity as a resource, evaluating socio-ecological dynamics linked to human-wildlife interactions. This approach is implemented from a local point of view in the territory of Piedmont region (Italy). Firstly, a top five of the most suitable case study area is created through several socio-ecological criteria, i.e. ecological connectivity, habitat suitability obtained using Species Distribution Models (SDMs), human-beaver conflicts, local community response. Secondly, the management of beaver is simulated in one of the five area by developing a System Dynamics (SD) model. This model describes the complexity of beaver management by focusing on impacts and benefits of beaver presence. The resulting management approach is innovative in the field of human-wildlife interactions because it combines SDMs, often applied for conservation purposes, and SD, mainly used for modelling complex systems in business and management, in a socio-ecological perspective. The results could be used as tool to stimulate community involvement and stewardship supporting the definition of several guidelines for the responsible management of human-wildlife relationship.

XXXVIII CYCLE - 2nd YEAR STUDENTS

NAME **Niccolò AIMO**

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COURSE	XXXVIII cycle - 2nd year
RESEARCH TITLE	Climate Change Response and the Reshaping of Urban Governance
TUTOR(S)	Fabrizio DI MASCIO, Ekaterina DOMORENOK

ACADEMIC CONTEXT

– Adelle C. and Russel D., 2013. Climate Policy Integration: A Case of Déjà Vu? *Environmental Policy and Governance*, 23(1), 1-12. https://doi.org/10.1002/eet.1601.

– Tosun J. and Lang A., 2017. Policy integration: Mapping the different concepts. *Policy Studies*, 38(6), 553-570. https://doi.org/10.1080/01442872.2017.1339239.

– Domorenok E., Graziano P. and Polverari L., 2021. Introduction: Policy integration and institutional capacity: Theoretical, conceptual and empirical challenges, *Policy and Society*, 40(1), 1-18. https://doi.org/10.1080/14494035.2021.1902058.

– Di Mascio F. and Natalini A., 2022. *Pubbliche amministrazioni. Tradizioni, paradigmi e percorsi di ricerca*. Bologna: il Mulino.

HIGHLIGHTS OF THE RESEARCH ACTIVITY

The research project is dedicated to the study of public responses to climate change at the local level, with a particular attention to the integration of different policy domains confronting the intersectoral climate issue.

Cities are nowadays recognized as a fundamental level of government for climate change response. Cities, in fact, are an active player in climate policymaking for a variety of reasons. On the one hand, the effects of climate change are particularly evident at the local level. Cities are ever more frequently interested by climate hazards, making the adverse effects of climate-change more obvious to citizens and policymakers. As a consequence, the issue of climate change has emerged in the local political agenda and is growing in importance. On the other hand, cities are also key players in the ideation and experimentation of solutions for the mitigation of and adaptation to climate change. Under the labels of mitigation and adaptation, we generally indicate all the technical solutions to climate change. As the effects of climate change manifest themselves locally, the available tools (mitigation and adaptation) are also heavily related to local implementation. Despite the richness of such technical solutions, this research identifies a gap in literature related to the procedural aspect of policymaking, focusing on the issue of administrative fragmentation.

The traditional model of public policymaking is characterized by the bureaucratic fragmentation by multiple domains. This approach, however, has proved to be scarcely effective when dealing with cross-boundary issues like climate change. This problem appears particularly relevant in the case of Southern European cities, which are currently tasked with the implementation of sustainable development projects funded by the Next Generation EU program (NGEU). Adopting the theoretical framework of policy integration, this research investigates the implementation of NGEU funded projects at the local level, to analyse the interplay between integration and fragmentation in the dimensions of policy goals, policy tools, and policy actors. The research empirically studies two local cases in Southern Europe: Genoa and Lisbon.

GENOA LISBON

NAME	**Hashem ALSIBAI**
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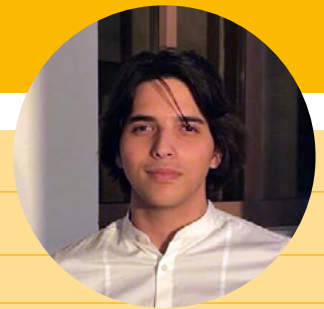
COURSE	XXXVIII cycle - 2nd year
RESEARCH TITLE	Post Carbon Cities and Renewable Energy Communities: Energy and comfort controls towards sustainable uni-campuses using USBEM
TUTOR(S)	Egidio DANSERO

ACADEMIC CONTEXT

– Mutani G., Santantonio S., Usta Y., Beltramino S., Alsibai H., Alehasin M. and Giraudo E., 2022. La Comunità energetica rinnovabile del pinerolese. Un esempio di best practice. In: Contenuti e strumenti della pianificazione urbana e territoriale. Dalla lezione di Giampiero Vigliano alle prospettive del Green New Deal. *Urbanistica Dossier online*, 027, pp. 117-119.
– Oke, T.R. (2017). *Urban climates*. Cambridge: Cambridge University Press.
– Perera A.T.D., Nik V.M., Chen D., Scartezzini J.-L. and Hong T. (2020). Quantifying the impacts of climate change and extreme climate events on energy systems. *Nature Energy*, 5(2), pp.150-159. doi:https://doi.org/10.1038/s41560-020-0558-0.
– Belpoliti V., Altan H., Alsibai H. and Melahfci O., 2020. Shaping the microclimate: CFD-assisted design optimization to enhance the outdoor comfort of a recreational complex in the UAE. *Procedia Manufacturing*, 44, pp. 84-91.

EXTERNAL COLLABORATIONS

– Unito green office: Member of the energy sector and research group
– International Forum on urbanism (IFoU)- young ambassador: The International Forum on Urbanism (IFoU) is a network of universities, research institutes and knowledge centers with the task of strengthening international collaboration in the field of Urbanism. Governmental and professional institutions that are related to the planning and design of the built environment
– Commune di Torino: Internship
– HEPIA Energy, Climate, Environment, Architecture: Mobility period

HIGHLIGHTS OF THE RESEARCH ACTIVITY

The United Nations (UN) and the World Bank predict the percentage increase of the world population living in urban areas in the 21st century (Angel et al., 2005). This change is anticipated due to the rise in the number of cities, migration from rural to urban areas, and transformation of some rural settlements into urban areas (United Nations, 2019) . Recently, making "cities and human settlements climate resilient and sustainable" has been highlighted as one of the sustainable development goals by the UN (UN 2030). Hence, research on sustainable habitats and related topics is becoming the center of attention and will continue to do so in the coming years (Martos et al., 2016).

Cities are rapidly expanding their boundaries and populations, and, as noted, "from a climatological perspective, human history is essentially the history of urbanization." (Santamouris et al., 2001) Recent trends of industrialization and urbanization have significantly increased the number of urban buildings, which in turn has greatly affected energy consumption in this sector. It is projected that 700 million people will migrate to urban areas during the last decade of this century. The urban population has already grown from 600 million in 1920 to 2 billion by 1986 (Santamouris et al., 2001).

However, modeling solar radiation in urban areas is more challenging than in open spaces due to the complex shading created by varying building heights, densities, and roof slopes. To estimate the energy that solar technologies can produce in cities, two key factors must be taken into account: (Compagnon, 2004): the urban solar availability, i.e. the total incident irradiation on building roofs and facades, and the utilization factor that assesses the area suitable for installation as well as technical characteristics.

The research focuses on energy production by sustainable means in the city, specifically public buildings like university campuses and identifies the regions with the greatest capacity for solar energy generation while also examining the connectivity of electric cabins.
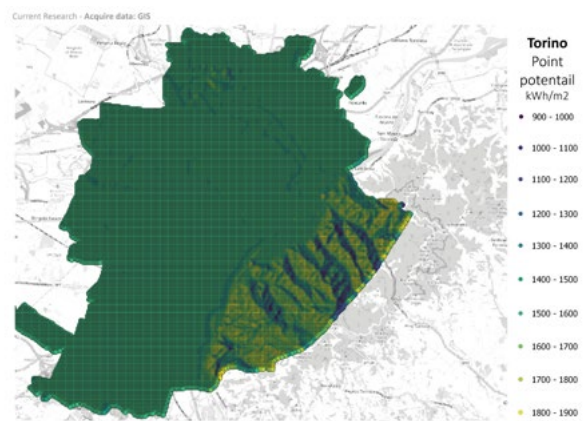
NAME	**Sebastiano ANSELMO**
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COURSE	XXXVIII cycle - 2nd year
RESEARCH TITLE	Urban Energy Modelling for the feasibility analysis of Renewable Energy Communities. An application on the City of Turin
TUTOR(S)	Piero BOCCARDO, Stefano Paolo CORGNATI, Maria FERRARA

ACADEMIC CONTEXT

– Johari F., Shadram F. and Widén J., 2023. Urban building energy modeling from geo-referenced energy performance certificate data: Development, calibration, and validation. *Sustainable Cities and Society*, [e-journal] 96, p. 104664. https://doi.org/10.1016/j.scs.2023.104664.

– Martin M., Chong A., Biljecki F. and Miller C., 2022. Infrared thermography in the built environment: A multi-scale review. *Renewable and Sustainable Energy Reviews*, [e-journal] 165, p. 112540, https://doi.org/10.1016/j.rser.2022.112540.

– Anselmo S., Ferrara M., Corgnati S., Boccardo P., 2023. Aerial urban observation to enhance energy assessment and planning towards climate-neutrality: a pilot application to the city of Turin. *Sustainable Cities and Society*, [e-journal] 99, p. 104938, https://doi.org/10.1016/j.scs.2023.104938.

– Anselmo S. and Ferrara M., 2023. Trends and Evolution of the GIS-Based Photovoltaic Potential Calculation. *Energies*, [e-journal], 16(23), 7760, https://doi.org/10.3390/en16237760.

HIGHLIGHTS OF THE RESEARCH ACTIVITY

Urban areas are crucial to achieve decarbonisation objectives stated at international level, as recognised by the UN 2030 Agenda for Sustainable Development – with SDG11 identifying cities as key areas of intervention in the path towards a post-carbon society – and the fit for 55 package – elaborated at European level. The latter included the revision of Energy Performance of Buildings Directive, which targeted the achievement of minimum performance objectives for all existing buildings, certified by Energy Performance Certificates. Therefore, it emerged the need for an extensive survey on the conditions of the building stock. It is possible to perform such large-scale analyses taking advantage of remotely sensed thermographic pictures and GIS technology.

The principal task of my research consists in the correlation between the surface temperature and the EPCs to model the energy classification of the building stock. It learns its moves from the assumption that – given a constant internal temperature as stated by law – the outer surface temperature (on the right) returns the thermal loss of the building and therefore the energy performance. A three-dimensional model will be used to semantically enrich the buildings with thermal data, as well as to effectively visualise the produced information. EPC data – such as the energy class and energy use intensity – are used as training dataset to input known values in the model. The adoption of standard parameters enables the calculation of the thermal energy demand. On the other hand, the photovoltaic potential is assessed with 2.5D and 3D methods, estimating the solar radiation (on the left) and calculating performance values. By intersecting the previous calculations, it is possible to assess the feasibility of Renewable Energy Communities, which partially self-produce their energy needs. The final goal is to develop – in accordance to the framework agreement between the City of Turin and the Polytechnic for the realisation of a Digital Twin – an energy Digital Twin supporting policymaking. This platform is being implemented starting from District 6, to be then scaled up. As for the technology, the aim is to automate as much as possible the calculation model, so as to improve the algorithm with the addition of new thermographic pictures and EPCs.

NAME	**Elisa BIOLCHINI**
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COURSE	XXXVIII cycle - 2nd year
RESEARCH TITLE	Toward the Healthy City. A model to support planning scenarios' choice for climate justice
TUTOR(S)	Riccardo POLLO, Giuseppe MANDRONE

ACADEMIC CONTEXT

– Meerow S. and Keith L., 2021. Planning for extreme heat. *Journal of the American Planning Association*, 88(3), pp. 319-334.
– Turner V.K., French E.M., Dialesandro J., Middel A., Hondula D.M., Weiss G.B. and Abdellati H., 2022. How are cities planning for heat? Analysis of United States municipal plans. *Environmental Research Letters*, 17(6):064054.
– Ellena M., Melis G., Zengarini N., Di Gangi E., Ricciardi G. K., Mercogliano P. and Costa G., 2023. Micro-scale UHI risk assessment on the heat-health nexus within cities by looking at socio-economic factors and built environment characteristics: The Turin case study (Italy). *Urban Climate*, 49, 101514.
– Pollo R., Biolchini E., Squillacioti G. and Bono R., 2020. Designing the healthy city: an interdisciplinary approach. *SMC*, 12, 150-55.

EXTERNAL COLLABORATIONS

– FONDAZIONE CRT CASSA DI RISPARMIO DI TORINO, Turin, Italy (co-financer of the PhD grant)

HIGHLIGHTS OF THE RESEARCH ACTIVITY

The strong drive for urbanisation of the last decades led to a disorganised cities' development, worsening environmental and microclimatic conditions and today extreme heat phenomena need to be faced. In this context, Healthy City, intended as the process that the city undertakes to achieve the goal of health, programming specific actions, becomes fundamental. The current organisation of cities, though, often tends to exacerbate economic, social and microclimatic vulnerabilities, and generate disadvantaged neighbourhoods.

The focus of the research is oriented towards planning, at the neighbourhood scale, that can mitigate heat risks, promoting the health and well-being with a specific attention to vulnerability factors. The goal is to give decision makers a "model" for project scenarios' choice to facilitate the selection of the "risk areas" and the strategies to implement, especially to address heat-related health risks for vulnerable people. It is believed that, in this context, the use of digital tools such as analysis, mapping, modelling and simulation software to support the planning processes, can help the choice of the best project scenario in the perspective of climate justice.

The first year was focused on a Systematic Literature Review (PRISMA method) selecting, reading and analysing publications to have an overall view of research, projects and plans taking into account the correlation between health, extreme heat and vulnerability factors at the neighbourhood scale. This review was useful to understand research background and gaps.

The second year was based on the "model" development. Specifically, first I focused on identifying, both from a preliminary scoping review and the literature review, some analysis, modelling, simulation and visualisation software already used for these purposes but also new ones and I chose the combination of ENVI-met (CFD software) and QGIS software. At the same time, I selected municipal plans and programs that respond to health risks related to extreme heat to analyse and catalogue them.

The third year will be dedicated to the implementation of the "model" in 3 case studies to evaluate and validate the tool, through the use of qualitative surveys.

This research should enhance the connection between environmental, social and economic variables to promote, in urban planning processes, the use of digital tools, in a systematic way, and to bridge the gap between projects and specific neighbourhoods' conditions.

CFD software — GIS

MICROCLIMATE PLANNING
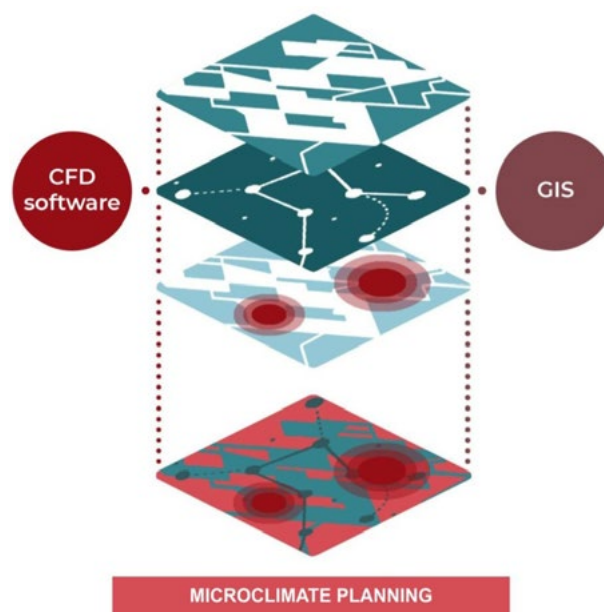
NAME	**Riccardo Giovanni BRUNO**
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COURSE	XXXVIII cycle - 2nd year
RESEARCH TITLE	Urban Food Policies: A New Domain of Public Action. Emplacing innovative governance in Collina Po Man and Biosphere Reserve
TUTOR(S)	Egidio DANSERO, Giacomo PETTENATI, Claudia CASSATELLA

ACADEMIC CONTEXT

— Bruno R.G., 2024. 15-Minute City and Alternative Food Networks. Rethinking food distribution to foster sustainable urban transformation. *Semestrale di Studi e Ricerche di Geografia*, XXXVI, 1, pp. 7-22.

— Moragues-Faus A., Marsden T., 2017. The political ecology of food: Carving 'spaces of possibility' in a new research agenda. *Journal of Rural Studies*, 55, pp. 275-288.

— Sage C., 2013. The interconnected challenges for food security from a food regimes perspective: energy, climate and malconsumption. *Journal of Rural Studies*, 29, pp. 71-80.

EXTERNAL COLLABORATIONS

— As part of PNRR, my PhD program foresees six months of collaboration with an Italian institution and six moths abroad. I collaborated with the Municipality of Turin, where I carried out research in MAB UNESCO Collina Po Biosphere Reserve; then, I have made three visiting periods abroad: in particular, I visited Trinity College, Dublin, Almere University of Applied Sciences, Netherlands, and INRAE, Montpellier.

HIGHLIGHTS OF THE RESEARCH ACTIVITY

The thesis "Urban Food Policies: A New Domain of Public Action Emplacing Innovative Governance in Collina Po Man and Biosphere Reserve" addresses the growing need for expanded Urban Food Policies and the role of innovative governance frameworks in supporting them. By intersecting existing literature on urban food governance with empirical research on regional perspectives, the work highlights how food governance must evolve to meet broader spatial challenges.

The thesis begins by challenging traditional urban-centric views of food policies, emphasizing that limiting these policies to the urban sphere neglects the vital role non-urban areas play. The work explores how the scope of Urban Food Policies must be expanded to regional frameworks to reflect the realities of food systems that operate across multiple geographies. This is explored in-depth through the need to shift away from narrow definitions of "urban food systems" towards an integrated approach that includes peri-urban and regional areas, recognizing the fluid and dynamic relationships that shape food governance.

The thesis then turns its focus to the spatial complexity of food systems, advocating for a territorial perspective that goes beyond traditional governance frameworks. It examines how bioregional connections and territorial interdependencies offer a more nuanced understanding of food systems, acknowledging that food governance must address the fragmentation and overlap of multiple systems within a single territory. This is particularly relevant for policymaking, which should account for these territorial linkages to avoid the limitations of fragmented, city-specific food policies.

Finally, the work examines the contested nature of Urban Food Policies within the broader planning framework, questioning whether these policies should be part of standard planning processes or exist outside of them. By exploring examples like the 100% Valposchiavo case study, the thesis reflects on how territorial branding can be effective but must be integrated into a larger, regional food policy framework to ensure long-term success. It concludes with a critical assessment of existing legal regulations, arguing that shifting from urban to regional food policies is essential for effective governance and the sustainable future of food systems.

NAME	**Ilaria CAZZOLA**
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COURSE	XXXVIII cycle - 2nd year
RESEARCH TITLE	Planning and Design Resilience Actions for overcoming territorial risks. Experimentations in Living Labs
TUTOR(S)	Angioletta VOGHERA, Grazia BRUNETTA

ACADEMIC CONTEXT

– Asadzadeh A., Khavarian-Garmsir A R., Sharifi A., Salehi P. and Kötter T., 2022. Transformative Resilience: An Overview of Its Structure, Evolution, and Trends. *Sustainability*, 14(22), Article 15267.
– Brunetta G., Ceravolo R., Barbieri C.A., Borghini A., de Carlo F., Mela A., Beltramo S., Longhi A., De Lucia G., Ferraris S., Pezzoli A., Quagliolo C., Salata S. and Voghera A., 2019. Territorial Resilience: Toward a Proactive Meaning for Spatial Planning. *Sustainability*, 11(8), pp. 11-19.
– Giovannini E., Benczur P., Campolongo F., Cariboni J. and Manca A., 2020. *Time for transformative resilience: the COVID-19 emergency*. EUR 30179 EN, Publications Office of the European Union, Luxembourg.

HIGHLIGHTS OF THE RESEARCH ACTIVITY

In recent years, resilience has been widely discussed in many different contexts. However, the concept of resilience can be somewhat nebulous and challenging to put into practical use. Despite its complexity, resilience is considered crucial in addressing the contemporary challenges, especially in the context of climate change and urban development (Brunetta et al., 2021). It encompasses the capacity of systems, communities, or individuals not only to withstand and adapt to external shocks and stresses but also to recover and thrive in the face of adversity. Resilience is also seen as a transformative concept with the potential to reshape planning and interventions (Giovannini et al., 2020), turning disruptions into opportunities for positive change and innovation (Asadzadeh et al., 2022).

A major challenge of operationalizing resilience lies in effectively measuring and comprehending its current state within a given context.

This research aims to create a catalogue of progress indicators to evaluate different dimensions and capacities of urban resilience. The goal of this process is to develop a comprehensive set of resilience indicators that are: relevant, informative, spatialisable and calculable. This comprehensive catalogue will enable urban planners, designers, policymakers, and other stakeholders to select and customize indicators for specific urban environments, ensuring a dynamic and adaptable approach to resilience assessment. These indicators will then be applied to a case study in Turin, focusing on the confluence area between the Po River and the Stura di Lanzo, as well as the surrounding areas. This region presents hydrological challenges and socio-economic vulnerabilities, yet it is also undergoing a significant transformation process.

The research will converge in the development of place-based planning and design guidelines and strategies for implementing urban resilience. These strategies will be tested in living labs, with active involvement from relevant stakeholders and territorial institutions. This participatory approach is crucial for developing a shared vision and integrating guidelines into risk management governance.

NAME	**Ioanna CHATZIKONSTANTINOU**
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COURSE	XXXVIII cycle - 2nd year
RESEARCH TITLE	The Political Ecology of Wildfires: The Case Study of The Island of Evia
TUTOR(S)	Marco SANTANGELO, Elia APOSTOLOPOULOU

ACADEMIC CONTEXT

– Apostolopoulou E. and Adams W. M., 2015. Neoliberal capitalism and conservation in the post-crisis era: The dialectics of "Green" and "Un-green" Grabbing in Greece and the UK. *Antipode*, 47(1), pp. 15-35.
– Batterbury S. and Fernando J., 2006. Rescaling Governance and the Impacts of Political and Environmental Decentralization: An Introduction. *World Development*, 34(11), pp. 1851-1863.
– Castree N., 2008. Neoliberalising nature: Processes, effects, and evaluations. *Environment and Planning A*, 40(1), pp. 153-173.
– González-Hidalgo M., Otero I. and Kallis G., 2014. Seeing beyond the smoke: The political ecology of fire in Horta de Sant Joan (Catalonia). *Environment and Planning A*, 46(5), pp. 1014-1031.

HIGHLIGHTS OF THE RESEARCH ACTIVITY

As wildfires are increasing in intensity and severity in the Mediterranean basin and elsewhere in the world, Greece is becoming a particular hot spot during the last decade. Greek wildfires are noteworthy not just because of extended forest areas burnt, but also because of the devastating effects on human lives and livelihoods-both at the urban fringes (Athens fires 2018, 2024) and the rural peripheries (North Evia, 2021).

This thesis aims to look at wildfires, and specifically Evia 2021 wildfires, through a political ecology lens. That is to study them as socio-natural events with political, cultural and economic underpinnings and implications. Revisiting the North Evia wildfires of 2021 it builds upon three main axes/pillars:

– The intersection of fire and rural livelihoods. Exploring rural livelihoods transformations (in labor, sustanance and every-day activities) caused by or accelerated by the fires, grounded on the historical and geographical context of rural areas depopulation and lifestyle changes. This involves a consideration of longer socio-demographic and historical processes of this rural periphery and beyond.

– The intersection of fire and (environmental) governance. Studying the regeneration plan that followed after the fires in North Evia as well as legislative changes that have been launched since then, the thesis aims to shed light into the deepening of neoliberalization processes in spatial planning and environmental governance. These developments are analysed in the context of a wider restructuring of Greek spatial planning and nature conservation/ forest management legislation after the 2008 financial crisis.

– The intersection of fire and changing forest uses, narratives and meanings from the institutional level (forest services, fire services) down to the local level (forest workers and producers). How this is related to state retreat, on the one hand, and market take-over of forest care, on the other hand.

To explore these topics an ethnographic research was conducted in the island of Evia, that lasted 9 months. A broad range of actors (municipal, institutional, local, enterpreneurial, scientific) were interviewed along with a close observation of everyday life and activities in the fire affected areas. The project draws upon three main conceptual and disciplinary frameworks: political ecology of natural disasters, neoliberalization of nature and rural studies in human geography.

NAME	**Sara CIARLANTINI**
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COURSE	XXXVIII cycle - 2nd year
RESEARCH TITLE	Meteorological influences on air pollution and the subsequent health economic impacts in Central and Eastern Europe
TUTOR(S)	Alessandro PEZZOLI, Claudio A. BELIS, Lorenzo MINOLA

ACADEMIC CONTEXT

– Belis C. A., Djatkov D., Lettieri T., Jones A., Wojda P., Banja M., Muntean M., Paunović , M., Niegowska M., Marinov D., Poznanović G., Pozzoli L., Dobricic S., Zdruli P. and Vandyck T., 2022. *Status of environment and climate in the Western Balkans*, EUR 31077 EN, Publications Office of the European Union. https://doi:10.2760/294516.

– Ciarlantini S., Frontuto V., Verri C., Pezzoli A. and Belis C.A., 2023. Econometric models derived from meta-analysis to estimate VSL and VOLY associated to air pollution ata global level: preliminary results. *The European Journal of Public Health*, Vol. 33 Issue Supplement 2. Abstract only. Available through: https://academic.oup.com/eurpub/article/33/Supplement_2/ckad160.160/7327841?login=false.

– Frontuto V., Dalmazzone S., Salcuni F. and Pezzoli A., 2020. Risk Aversion, Inequality and Economic Evaluation of Flood Damages: A Case Study in Ecuador. *Sustainability*, 12. https://doi.org/10.3390/su122310068.

– Minola L., Molina C.A., Guijarro J.A., Zhang G., Son S-W. and Chen D., 2021. Climatology of Near-Surface Daily Peak Wind Gusts Across Scandinavia: Observations and Model Simulations. *Journal of Geophysical Research: Atmospheres*, 126. https://doi.org/10.1029/2020JD033534.

EXTERNAL COLLABORATIONS

– Visiting scientist at JRC (Joint Research Centre) – Ispra

HIGHLIGHTS OF THE RESEARCH ACTIVITY

Air pollution is one of the leading environmental health risks, with over 99% of the global population exposed to unsafe air (UNEP, 2023). In 2021, air pollution ranked as the second-largest global risk factor for death, contributing to 8.1 million fatalities (Health Effects Institute, 2024). The economic cost of premature deaths from ambient and household air pollution is estimated at USD 5.11 trillion in welfare losses (World Bank, 2016). Therefore, quantitative assessments of air pollution's health impacts are crucial to support policymakers in resource allocation and to drive investment in cleaner air through more effective policies.

A preliminary study on the climatic conditions that are more likely to increase the concentration of pollutants is carried out to understand under which meteorological conditions air quality is worse. My research focuses on Türkiye, a country experiencing severe air pollution annually, as a case study to assess how meteorological factors influence pollutant levels. While human activities significantly contribute to air pollution, climatic variables play an essential role in pollutant dispersion. Unfavorable weather conditions can reduce the atmosphere's ability to dilute pollutants, intensifying their concentration. The study examines the relationship between PM10 and SO2 concentrations and meteorological factors, including temperature, precipitation, wind speed and direction, humidity, and pressure, over a five-year period (2015-2019). Following this climate analysis, the health impacts of air pollution are monetized using global estimates of the Value of Statistical Life (VSL) and Value of a Life Year (VOLY). Estimating VSL and VOLY is challenging due to methodological differences across studies and countries. Additionally, many countries lack reliable VSL and VOLY estimates. To address these gaps, a meta-analysis is conducted. VSL and VOLY air pollution-related estimates are transferred from the available literature, serving as inputs for economic quantification. The comprehensive review resulted in a final database with 494 VSL value entries from 32 publications, covering 185 countries across all continents. Since VOLY estimates represent only 2% of the total entries, they are excluded from the regression analysis. Instead, VOLY values for each country are derived using a formula based on VSL values.

NAME	**Jessica COMINO**
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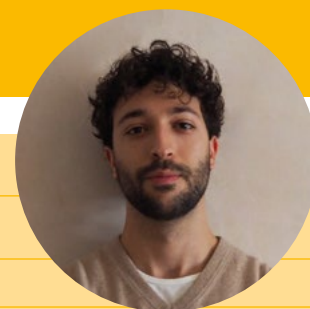| COURSE	XXXVIII cycle - 2nd year
RESEARCH TITLE	Urban Goes Digital: visual tools exploration in the perception of space
TUTOR(S)	Piero BOCCARDO, Marco SANTANGELO

ACADEMIC CONTEXT

– Comino J., 2023. Digital limits and human possibilities. An introduction to urban filmmaking towards SDGs local achievement. *INFOLIO*, Vol. 42, 9-17.
– Sandercock L., Attili G., 2014. Changing the Lens: Film as Action Research and Therapeutic Planning. *Journal of Planning Education and Research*, Vol. 34(1), 19-29.
– Mitchell C., De Lange N. and Moletsane R., 2017. *Participatory Visual Methodologies. Social Change, Community and Policy*. SAGE Publications, London.

HIGHLIGHTS OF THE RESEARCH ACTIVITY

Spatial representation is a concept embedded in all forms of art. Surfing in the area of digitalization, artificial intelligence (AI), multi- and metaverse, visual arts so as architecture and spatial planning are questioning current visual tools in order to create new digital representations of place, in which human perception of place tends to vanish as a secondary aspect. University of British Columbia researcher and urban planner Leonie Sandercock underlines the importance of interdisciplinarity within urban studies, further stating that «planners need to pay more attention to and be more respectful of the emotional impacts of change in order to understand the resulting conflicts, and to design better processes for recognition of and working through these emotions (of loss and grieving)» - intended as a place of attachment that is being undermined by change – and addresses the urge for a change in planning endeavours, introducing the concept of «therapeutic planning». Within this frame, the present research is currently investigating the possibilities of the filmic instrument, particularly documentary and participatory video, in addressing the intangible heritage of the village of Teahupo'o, in the south of Tahiti (French Polynesia), following the surfing competitions of the 2024 Olympic Games and the relative conflicts with the local communities.

NAME	**Marco DEL FIORE**
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COURSE	XXXVIII cycle - 2nd year
RESEARCH TITLE	Left-behind places as drivers of experimentation and innovation within territorial policies
TUTOR(S)	Loris A. SERVILLO, Abdel Illah HAMDOUCH

ACADEMIC CONTEXT

– Dühr S., Colomb C. and Nadin V., 2010. *European Spatial Planning and Territorial Cooperation*. Oxon: Routledge.
– Salet W., ed., 2019. *The Routledge Handbook of Institutions and Planning in Action*. New York: Routledge.
– Fontana M., Del Fiore M., Servillo L. A. and Garelli A., 2024. Rivoluzione silenziosa e incompleta: nuove geografie istituzionali, tra CLLD e altre iniziative d'area vasta. *Territorio*, 104, pp. 86-92.
– Del Fiore M. and Fontana M., 2023. Territori marginali, metromontagna e pianificazione strategica: testimonianze dalle Terre del Monviso. *Atti e rassegna tecnica*, LXXVII-1, pp. 26-33.
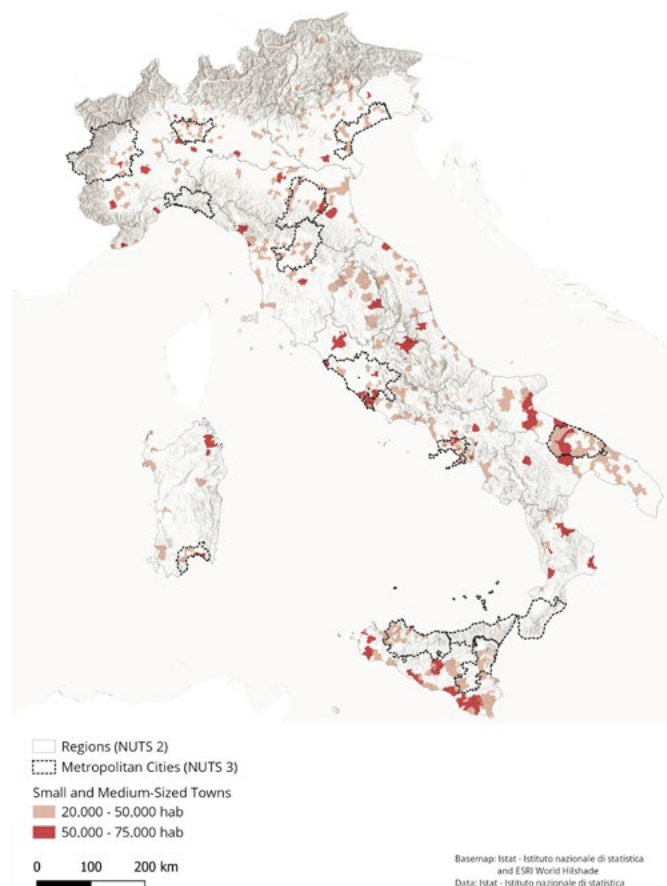
EXTERNAL COLLABORATIONS

– Agenzia per la coesione territoriale (co-financer)
– SciencesPo Paris (host for visiting)

HIGHLIGHTS OF THE RESEARCH ACTIVITY

This research explores the innovative potential of policies targeting left-behind places within the framework of territorial governance. The study's primary focus is on how these policies can serve as catalysts for institutional innovation and experimental governance, particularly in the context of European territorial cohesion policy. The research aims to demonstrate how these areas can inform and transform broader policy strategies by examining left-behind territories as testing grounds for new approaches.

The study adopts the concept of "experimental governance" as a key analytical tool to interpret recent national and European policies devoted to left-behind territories. This approach is rooted in understanding governance as a multi-level, adaptive process where objectives are continuously refined based on implementation experiences. The research hypothesizes that left-behind places offer ideal conditions to examine the institutional factors that enable or hinder social practice transformation through experimental policy approaches.

Theoretical frameworks underpinning this study include multi-level governance, social innovation, and spatial planning innovation. The research integrates these concepts to provide a comprehensive understanding of institutional innovation as both a theoretical concept and a practical endeavour. The study seeks to contribute to the ongoing discourse on innovation in governance structures by exploring the intersection of policy experimentation and territorial development.

Ultimately, this research aims to shed light on how the experiences and challenges of left-behind places can be leveraged to innovate and improve European territorial cohesion policy, potentially leading to more effective and responsive governance models for addressing regional disparities.

Regions (NUTS 2)
Metropolitan Cities (NUTS 3)
Small and Medium-Sized Towns
20.000 - 50.000 hab
50.000 - 75.000 hab

0   100   200 km

Basemap: Istat - Istituto nazionale di statistica
and ESRI World Hilshade
Data: Istat - Istituto nazionale di statistica

NAME	**Andrea DI BERNARDO**
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COURSE	XXXVIII cycle - 2nd year
RESEARCH TITLE	Community and Participation in Local Development
TUTOR(S)	Paolo GIACCARIA, Valentina PORCELLANA

ACADEMIC CONTEXT

− Barca F., Casavola P. and Lucatelli S. 2014. *A strategy for inner areas in Italy: definition, objectives, tools and governance*. Materiali Uval.
− Bosworth G., Annibal I., Carroll T., Price L., Sellick J. & Shepherd J. 2016. Empowering Local Action through Neo-Endogenous Development; The Case of LEADER in England. *Sociologia Ruralis*, 56(3).
− De Rossi A. and Barbera F., 2018. *Riabitare l'Italia le aree interne tra abbandoni e riconquiste*. Roma: Donzelli.

EXTERNAL COLLABORATIONS

− Unité des Communes valdôtaines Grand-Paradis

HIGHLIGHTS OF THE RESEARCH ACTIVITY

The research starts from the evolution of participatory component in local development policies, offering a comparative qualitative analysis of two key approaches: National Strategy of Inner Areas (SNAI), an Italian place-based policy and the European LEADER approach, a tool of Community Led Local Development (CLLD). While these strategies share the common goal of revitalizing rural and marginal areas, they differ in how they engage local communities and stakeholders: SNAI emphasizes co-design with local authorities, stakeholders and communities to tackle socio-economic challenges, whereas the LEADER approach adopts a bottom-up model, engaging local actors through the LAGs' grassroots animation activities. Through this comparative analysis, using qualitative and ethnographic methods, the research evaluates the strengths and limitations of each approach, particularly in terms of participatory mechanisms and stakeholders involvement. Special attention is given to the participatory process in the Grand-Paradis Inner Area in Aosta Valley to engage stakeholders in the co-design of the SNAI Strategy and the Smart Villages strategy, as a form of the LEADER approach implemented by LAG EVV in Piedmont. The findings aims at highlighting the importance of inclusive, well-structured participatory processes in local development policies and how these strategies can be adapted to meet local needs.

| NAME | **Caterina DI LUCCHIO** |
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COURSE	XXXVIII cycle - 2nd year
RESEARCH TITLE	Beyond the pathologisation of the urban, towards a paradigm of care?
	Decoding narratives, instruments and practices of urban regeneration in Italy
TUTOR(S)	Loris Antonio SERVILLO, Carlo SALONE

ACADEMIC CONTEXT

– Baeten G., 2002. Hypochondriac geographies of the city and the new urban dystopia. *City*, 6, pp. 103-115.
– Lovering J., 2007. The Relationship Between Urban Regeneration and Neoliberalism: Two Presumptuous Theories and a Research Agenda, *International Planning Studies*, 12(4), pp. 343-366.
– Porter L., Shaw K., eds., 2009. *Whose urban renaissance? an international comparison of urban regeneration strategies*. London; New York: Routledge (Routledge studies in human geography, 27).
– Power E., Williams M. J., 2020. Cities of care: A platform for urban geographical care research1. *Geography Compass*, 14 (1), e12474.

EXTERNAL COLLABORATIONS

– the Future Urban Legacy Lab (co-financer)

HIGHLIGHTS OF THE RESEARCH ACTIVITY

My research is part of a research project entitled "Urban Regeneration: Institution, Agency, and Tools", proposed by the FULL research centre, which critically examines urban policy in Italy in a European context. Urban planning often overlooks the diversity within cities and presents them as unsafe (Baeten, 2001), although cities today are very heterogeneous and urban regeneration in particular involves the healing of specific urban contexts. However, the criteria for defining these contexts and the implications of this determinism remain largely unexplored due to the vague definition of regeneration itself. Traditional approaches focus too much on economic doctrines (Lovering, 2007) and there is a need to rethink regeneration beyond Anglo-Saxon and American models (Tallon, 2010), especially in under-researched and 'ordinary' contexts such as Italy (Robinson, 2006). This panorama emphasises the urgent need for a new ethical perspective in which care becomes a key element in the redefinition of urban space, as it is understood as a transformative ethos with vital implications for the human and non-human environment (de la Bellacasa, 2011). My analysis follows three main axes: narrative and symbolic, instrumental and performative, and processual-socio-spatial.

The aims of the study are: to integrate the ethics of care in order to challenge the traditional pathologising narratives; to carry out a comprehensive analysis of the discursive and material aspects of urban regeneration in Italy against the background of the PNRR and Next Generation EU; to carry out a comprehensive analysis of the socio-spatial dynamics of urban regeneration in an Italian local context, focusing on the case of Palermo. The methodology consists of qualitative methods and is orientated towards these focal points:

– a systematic literature review will fill gaps in the literature and examine the ethics of care, with the aim of establishing urban care as a critical paradigm
– an institutional analysis of national and European funding initiatives based on case studies and a critical discourse analysis (Wodak & Meyer, 2009) of policy documents will examine how issues and representations are communicated
– a multi-layered methodology including ethnography and document analysis (Crang, 2005) will analyse local socio-spatial dynamics through field observations and interviews with key local actors.

NAME	**Enrico FEDELI**
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COURSE	XXXVIII cycle - 2nd year
RESEARCH TITLE	Perspective visual impairments. Exploration of new enhanced methodologies of policy design in transport planning
TUTOR(S)	Cristina PRONELLO, Yves CROZET

ACADEMIC CONTEXT

– Bardach E., Patashnik E. M., 2019. *A practical guide for policy analysis: The eightfold path to more effective problem-solving*. CQ Press.
– DeLeon P., ed. 2016. *Handbook of public policy analysis: Theory, politics, and methods*. CRC Press.
– Siddiki S., Curley C. 2022. Conceptualising policy design in the policy process. *Policy & Politics*, 50(1), pp. 117-135. DOI: 10.1332/030557321X16346727541396.
– Latour, B, (1993) Aramis, or the Love of Technology. Cambridge, MA: Harvard University Press.

EXTERNAL COLLABORATIONS

– ENS-PLS Paris – Visiting period

HIGHLIGHTS OF THE RESEARCH ACTIVITY

Policy planning and design processes *should* follow the steps of issue identification, policy formulation, enactment, implementation and evaluation. This theoretical expectation, however, crumbles in the face of practice. In the case of transport policies, the main problem is perspective visual impairments, i.e. conscious and unconscious black spots where the policymakers' sight doesn't reach out. This includes diachronic, synchronic, functional, scalar, and normative difficulties of vision. The first ones are about considering the effects of policies in the context of feedbacks amplifying or reducing the impact of choices. The second ones are about evaluating and comparing a plurality of solutions. The third ones refer to the comprehensive examination of technological, economic, and managerial constraints. The fourth ones are about consistency among policy goals at multiple scales. Finally, the fifth ones refer to the very function of policy, that is, whether it should have an adaptive or conversely normative approach to reality. The aim of this research is to explore enhanced methodologies of transport policy design that can respond to the above problems.

The research is built on a first taxonomy of perspective visual impairments (descriptive stage) and a subsequent collection of case studies where fixing the impairments can fix the (failing) policies (prescriptive stage). In this sense it is possible to list:

The methodology of the descriptive stage:

i. Identify, through a literature review and representative benchmarks, the critical issues that exist in adopted policies and understand what proportion of error is attributable to the design process.

ii. visualize perspective errors in policy construction.

iii. qualitatively measure the discrepancy between theory and practice in policy design.

The methodology of the prescriptive stage:

iv. propose policy design methods that go as far as possible to supply tools to address the issues mentioned above.

v. devise ex-ante evaluation models that frame policy and derive the best application strategies in policy communication and execution.

vi. apply these methods to case studies to solve in vitro issues that require policy creation.

vii. evaluate the outcomes of such policies in compliance with superordinate social, environmental and climate goals.
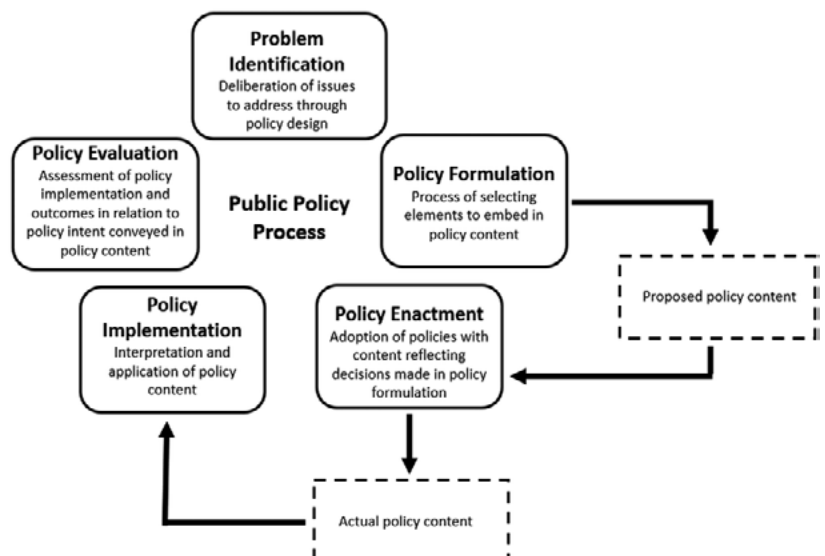
| NAME	**Francesco GRASSO**
E-MAIL	francesco.grasso@polito.it

COURSE	XXXVIII cycle - 2nd year
RESEARCH TITLE	International Contemporary Art Fairs: an Overview of Their Organisational Evolution and Policy Implications in Europe
TUTOR(S)	Sara BONINI BARALDI, Carlo SALONE

ACADEMIC CONTEXT

– Bourdieu P., 1985. The Market of Symbolic Goods. *Poetics*, 14(1-2), pp. 13–44.
– Jay J., 2013. Navigating paradox as a mechanism of change and innovation in hybrid organizations. *Academy of Management Journal*, 56(1), pp. 137-137.
– Lindqvis K., 2017. Art Ventures as Hybrid Organisations: Tensions and Conflicts Relating to Organisational Identity. *International Journal of Entrepreneurial Venturing*, 9(3), pp. 242–259.
– Pache A. C. and Santos F., 2013. Inside the Hybrid Organization: Selective Coupling as a Response to Competing Institutional Logics. *Academy of Management Journal*, 56(4), pp. 972-1001.

HIGHLIGHTS OF THE RESEARCH ACTIVITY

International contemporary art fairs (ICAFs), parallel art fairs, and the dense urban programme of cultural initiatives surrounding them ("art weeks") have steadily increased from the 1990s onwards. Though this trend was certainly put on hold by the pandemic, it is well on track to regain its former pace.

Alongside their commercial nature, this research considers ICAFs' role as gatekeepers of the art market for galleries and artists, as "agents of consecration" (Bourdieu, 1985) often embracing a curatorial attitude to exhibiting contemporary art and developing temporary art-related initiatives on an urban scale. On one hand, the widest body of research on ICAFs has dealt almost exclusively with their role in the art market, disregarding any consideration for their organisational asset. On the other, the literature on hybrid organisations has mainly insisted on their mixed ownership and the competition for and dependency on public resources, rarely examining the role of the "art logic" (Lindqvist, 2017). This thesis looks at ICAFs as market-driven cultural organisations, operating within a hybrid environment that forces them to relate to multiple institutional logics pertaining to the domains of art, the market and the public sector. By adopting a European framework, the study intends to shed light on the institutional evolution of ICAFs as organisations, the benefits of the hybrid asset to meet demands from internal and external public and private stakeholders, the tensions and conflicts arising from the coexistence of different institutional logics, and the managerial and strategic responses put in place to contrast them. This last point is developed through an in-depth analysis of Artissima in Turin, the 30-year-old contemporary art fair with the highest international standing in Italy, organized by a publicly owned limited company. The case study sheds light on how similarly or differently competing demands are faced in ICAFs compared to hybrid organizations in other fields. Parallelly, through the qualitative and quantitative analysis of multiple funds created to subsidy private commercial galleries' participation in ICAFs, the study will focus on the impact of ICAFs on European countries' national public cultural policy.
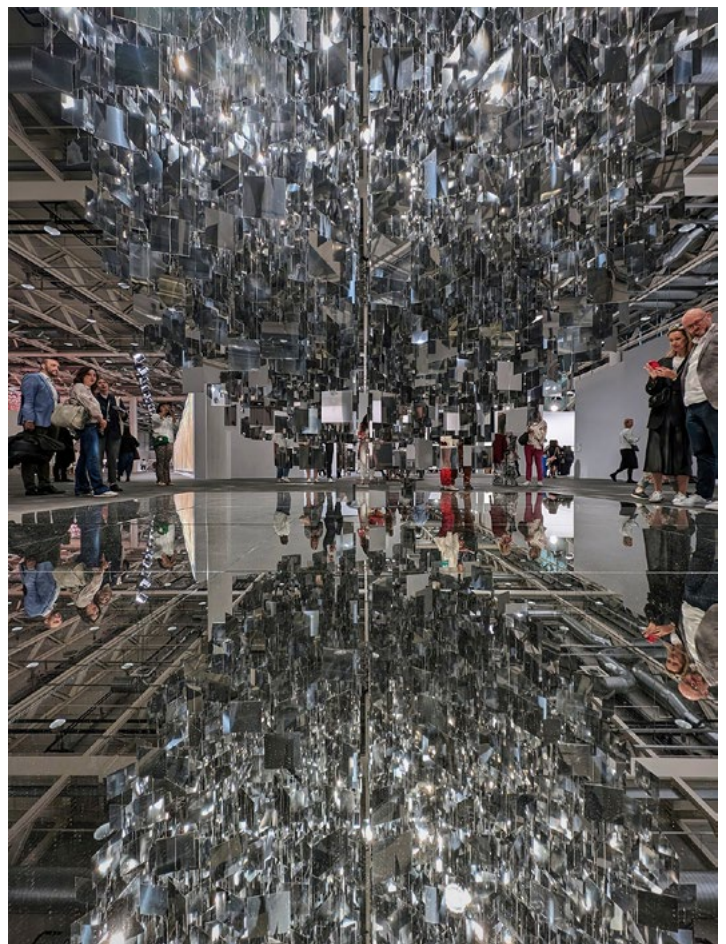
NAME	**Angelina GRELLE**
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COURSE	XXXVIII cycle - 2nd year
RESEARCH TITLE	From Ararat to Rome and Beyond. Migrants' grassroots organization in the autonomous space of Ararat, Rome
TUTOR(S)	Silvia ARU, Francesco CHIODELLI

ACADEMIC CONTEXT

– Bauder H., 2020. Migrant solidarities and the politics of place. *Progress in Human Geography*, 44(6), pp. 1066-1080.
– Chatterton P. & Pickerill J., 2010. Everyday activism and transitions towards post-capitalist worlds. *Transactions of the Institute of British Geographers*, 35(4), pp. 475-490.
– Saleh M. & Landau-Donnelly F., 2024. Reimagining hope through the political: A post-foundational reading of urban alternatives beyond postpolitics. *Urban Studies*, 61(9), pp. 1625-1644.
– Santamarina A., 2024. Racial Capitalism, Political Reproduction, and the Commons: Insights from Migrant Solidarity Politics in Glasgow. *Antipode*, 56(1), pp. 229-248.

EXTERNAL COLLABORATIONS

– Visiting at the CERC (Canada Excellence Research Chair in Migration & Integration) at TMU - Toronto Metropolitan University

HIGHLIGHTS OF THE RESEARCH ACTIVITY

This research investigates the spatialization processes of migration in Europe, drawing upon Santamaría's (2023) concept of "political reproduction." This concept underscores how, in "hostile environments and situations of extreme precarity, reproductive politics not only enable collective survival but also foster the development of a collective political consciousness and a way of being together in struggle."(Santamaria 2023, p 230)

By examining the Kurdish sociocultural center of Ararat as a nexus of various concerns, the study aims to describe the practices of "political reproduction" enacted by migrants at different levels.

Grounded in a Marxian- Hegelian framework of solidarity (Bauder 2020), this research employs a militant approach to confront the status quo and the capitalist hegemony through collective action. Participant observation, semi-structured interviews, document analysis, and visual methods such as photovoice were utilized to explore the various forms of organization and interdimensional ties that create a space of possibility within the context of liminality.

By adopting a post-capitalist framework, this research aims to move beyond a purely oppositional or resistance-based understanding of migrant practices. It recognizes that migrant communities are not only challenging existing power structures but also actively creating and envisioning alternative ways of living and organizing. How do migrant communities enact practices of "political reproduction" at different levels, and how can these practices be understood within a post-capitalist framework that recognizes both resistance to existing power structures and the potential for envisioning alternative ways of living and organizing?

Three Research Directions:

– Examine how migrant communities create and occupy spaces that challenge dominant capitalist norms and promote alternative modes of social change.
– Explore how political solidarity networks overcome the patriarchal division divisions between support and political mobilization.
– Analyze the practices of diasporic infrastructures that challenge the dominant capitalist-centric system of mobility.

This research seeks to contribute to a more nuanced and critical understanding of migration and urban spaces. By focusing on the practices of political reproduction and the role of solidarity networks, the study aims to inspire further research and activism in support of migrant rights and social justice.

NAME	**Sofia Beatriz LEONI**
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COURSE	XXXVIII cycle - 2nd year
RESEARCH TITLE	The Rural Reinvention. Emerging Taobao Villages and the Infrastructural Modification of the Invisible China
TUTOR(S)	Antonio DI CAMPLI, Michele BONINO

ACADEMIC CONTEXT

– Bedir M., 2019. The global village: building a future countryside. *Architectural Review*. [online] Available at: https://www.architectural-review.com/essays/the-global-village-building-a-future-countryside.
– Li A.H.F., 2017. E-commerce and Taobao Villages. *China Perspectives*, 2017(3), pp. 57-62.
– Cuppini N. and Peano I., eds., 2019. *Un mondo logistico. Sguardi critici su lavoro, migrazioni, politica e globalizzazione*. Milano: Ledizioni.
– Tsing A., 2015. *The Mushroom At The End Of The World: On The Possibility Of Life In Capitalist Ruins*. Princeton: Princeton University Press.
– Wei Y.D., Lin J. and Zhang L., 2019. E-Commerce, Taobao Villages and Regional Development in China. *Geographical Review*, (110), pp.1-26.
– Young L., 2019. Machine Landscapes: Architectures of the Post Anthropocene. *Architectural Design*, 89(1), pp. 1-144.
– Zhang, L., 2023. *The Labor of Reinvention. Entrepreneurship in the New Chinese Digital Economy*. New York: Columbia University Press.
– Fei X., 1989. «Kaixian'gong Revisited (1957)». In: Fei X., *Rural development in China. Prospect and retrospect*. Chicago: The University of Chicago Press.
– Simone A., 2022. *The Surrounds: Urban Life Within and Beyond Capture*. Durham: Duke University Press.

EXTERNAL COLLABORATIONS

– CSP/ China Center- Compagnia di San Paolo. Frontier Urbanism: A Chinese Persperctive. / China Room Research Group
– Shenzhen University (visiting period) / GBA Lab

HIGHLIGHTS OF THE RESEARCH ACTIVITY

The present research agenda explores the infrastructural changes occurring in rural China—long theorized as "invisible"—with a specific focus on the emergence of e-commerce villages (i.e., Taobao villages) as a case that highlights the often-overlooked interactions between rurality, platform practices, and logistics. The study is centered around two main questions that, while opposing in some respects, are deeply interconnected. The first one analyzes the transformations of rural spaces resulting from the emergence of digital platforms and logistics, employing a socio-spatial inquiry lens. Conversely, the second examines and challenges the logistics-infrastructure debate in relation to marginalized and fragile contexts, such as rural areas, using the data gathered on the field.

The study is organized following a circular narrative structure. The first section contextualizes the "rural" issue in China, , with a focus on a twenty-year time span, starting in 2003, when Xi Jinping officially announced the "Rural Revival Program." The second section overlooks at the logistics paradigm, platform practices, their debates and impacts in rural areas, understood as projects to control the flow and movement of bodies, materials, goods and finances. After positioning the field of research, the third section finally presents Taobao villages, exploring their growth processes and patterns, presented in the form of infographics, quantitative data (statistics and trends) and mapping. Finally, the fourth section, in the form of an atlas, offers a detailed analysis of three Taobao villages, grounding the phenomena by examining their socio-spatial dynamics and micro-stories: Junpucun (Guangdong province), specialized in clothing and leather products: Wuchuchen (Zhejiang province), specialized in agricultural products, specifically tea and bamboo; Dongfeng (Jiangsu province) specialized in furniture and fake Ikea products, investigated mainly through fieldwork, by employing different techniques (cartographic reading, semi-structured interviews, participant observation).

The conclusion, overall, return to the starting point – but with something different. While it raises question on some of the dynamics occurring with the digital turn in Rural China, specifically exploring what remains rural, what does not, and whether new ruralities are emerging, it proposes the initial hypothesis of reinvention as twofold. On one hand, both rural labor and spaces are being reinvented, merging traditional patterns of socio-spatial organization with new forms of entrepreneurship. At the same time, the concept of infrastructure itself is also being redefined. What is evident here extends beyond the technical domain to encompass various social frictions, and although some processes may appear automated, the underlying structure relies on human infrastructure.
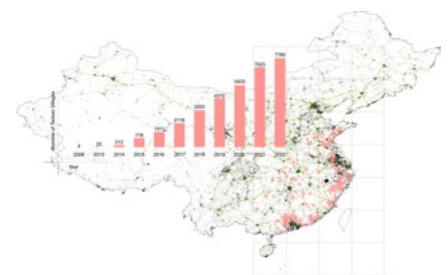
AME	**Eva LICCI**
E-MAIL	eva.licci@polito.it
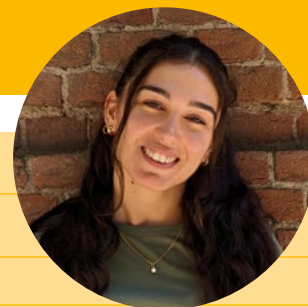
COURSE	XXXVIII cycle - 2nd year
RESEARCH TITLE	The Evaluation of Cultural Heritage Projects in Armed Conflict Areas: the Case of "Heritage for Peace"
TUTOR(S)	Sara BONINI BARALDI, Isber SABRINE

ACADEMIC CONTEXT

– Cicmil S. and Hodgson D., 2006. New possibilities for project management theory: A critical engagement. *Project Management Journal*, 37(3), pp. 111-122.
– Ika L.A., 2009. Project success as a topic in project management journals. *Project Management Journal*, 40(4), pp. 6-19.
– Smith L., 2006. *Uses of Heritage*. London: Routledge.
– Teijgeler R., 2013. Safeguarding cultural heritage in post-conflict environments. *International Journal of Heritage Studies*, 19(5), pp. 449-462.

EXTERNAL COLLABORATIONS

– Research collaboration internship at the NGO "Heritage for Peace", based in Barcelona, Spain.

HIGHLIGHTS OF THE RESEARCH ACTIVITY

International cultural heritage institutions, funding agencies, and international NGOs engaged in managing cultural heritage (CH) in armed conflict zones are becoming increasingly aware of the ethical considerations and debates associated with their activities (Meskell 2018). Above all, the significant reliance of local organizations in these vulnerable areas on Western aid often exacerbates power imbalances, particularly in regions with lingering colonial legacies (Badran et al. 2022). Additionally, top-down approaches traditionally employed by international institutions are being criticized along with the Authorized Heritage Discourse for neglecting the necessity of involving local communities at every stage of heritage management (Smith 2006). As a response, international CH organizations are actively seeking more equitable impacts, considering societal, economic, and environmental factors in their interventions (ICOMOS 2011).

Project evaluation has become an important tool for ensuring that international CH organizations meet their broader objectives. However, while CH project evaluations are increasingly developed and employed in practice, without any common guideline, there remains a noticeable gap in the project management literature, especially within conflict situations (Jewiss and Laven 2021).

The main objective of this thesis is to fill the research gap on CH project evaluations in armed conflict areas, building on the critical project management theory considering project evaluations as social phenomena, subjectively and intersubjectively constructed by individuals, with changing degrees of power relationships (Linde and Linderith 2006). This research employs an embedded case study methodology, analyzing the management and evaluation practices of three CH projects in Syria and Yemen led by the international NGO "Heritage for Peace." The research incorporates qualitative data from evaluation reports, guidelines, activity records, and interviews with funders, project managers, implementers, and stakeholders. Through the analysis, the study aims to contribute to the development of more nuanced, context-sensitive CH project evaluation methodologies in conflict zones.

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COURSE	XXXVIII cycle - 2nd year
RESEARCH TITLE	Transit oriented development (TOD) for multi-level station: taking an example of urban station in Chengdu
TUTOR(S)	Luca STARICCO, Andrea AJMAR

ACADEMIC CONTEXT

– Cervero R. and Kockelman K., 1997. Travel demand and the 3Ds: Density, diversity, and design. *Transportation Research Part D: Transport and Environment*, 2(3), pp. 199-219. https://doi.org/10.1016/S1361-9209(97)00009-6.
– Singh Y.J. et al., 2017. Measuring TOD around transit nodes - Towards TOD policy. *Transport Policy*, 56, pp. 96-111. https://doi.org/10.1016/j.tranpol.2017.03.013.
– Zhou J. et al., 2019. Can TODness improve (expected) performances of TODs? An exploration facilitated by non-traditional data. *Transportation Research Part D: Transport and Environment*, 74, pp. 28-47. https://doi.org/10.1016/j.trd.2019.07.008.

EXTERNAL COLLABORATIONS

HIGHLIGHTS OF THE RESEARCH ACTIVITY

In China, urban growth has converted from incremental development into stock development. For full land resources utilization and redevelopment, urban planning theories such as Transit Oriented Development (TOD) are proposed, and TOD planning put forward new requirements for the coherent development in the underground and ground space of station impacted areas. A good underground plan in TODs binges on the benefits of enlarging the density, enriching the diversity, and improving the design. Thus, the underground development in station areas becomes pinpoints to satisfy this new demand.

However, many studies only consider the urban underground space as an auxiliary extension of the urban ground space in TODs. It is few to formulate and concentrate on the role of underground development in TOD planning and how the underground space affects TODs. Furthermore, the underground space is usually overlooked in TOD performance assessments. Thus, this study endeavours to clarify the relationships between the underground and ground spatial development in TODs and offer a new TOD evaluation including underground space.

In the beginning, this thesis illustrated the importance of researching underground space in the TOD areas and recalled the development of the relative theories. Then, the meaning of TOD to develop underground space coherently was explained. Taking the TOD cases which had well-established underground systems as an example, the relationships between underground development and TOD were revealed. Afterward, combining the criteria of TOD performance and underground built environment, a new evaluation system for both ground and underground space of TOD was established. Furthermore, to verify the new evaluation system, the database of TODs in Chengdu was constructed with two categories: TODs without coherent underground development and TODs with complete underground systems. To conclude, it was found that the coherent underground development in TOD areas can improve TODness through the new assessment system.

NAME	**Giulia MASSENZ**
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COURSE	XXXVIII cycle - 2nd year
RESEARCH TITLE	(Dis)encounters around places of worship: law, planning and everyday racism in Italian cities
TUTOR(S)	Francesco CHIODELLI, Mariachiara GIORDA

ACADEMIC CONTEXT

– Allievi S., 2010. Immigration and Cultural Pluralism in Italy: Multiculturalism as a Missing Model. *Italian Culture*, 28(2), pp. 85-103.
– Butticci A. and Pace E., 2010. *Le religioni pentecostali*. Roma: Carocci editore.
– Saint-Blancat C. and Schmidt di Friedberg O., 2005. Why are mosques a problem? Local politics and fear of Islam in northern Italy. *Journal of Ethnic and Migration Studies*, 31(6), pp. 1083-1104.
– Vertovec S., 2007. Super-diversity and Its Implications. *Ethnic and Racial Studies*, 30 (6), pp. 1024-1054.

HIGHLIGHTS OF THE RESEARCH ACTIVITY

Stemming from the broader framework of everyday multiculturalism, the research project "(Dis)encounters around places of worship: law, planning and everyday racism in Italian cities" addresses the theme of the accommodation of ethno-religious diversity in Italian urban contexts. Although Italy has experienced unprecedented immigration flows within its political territory over the past decades, the country fails to recognize itself as multicultural and there is a general lack of policies and practices in that direction, according to sociologist Stefano Allievi (2010, 2018, 2023).

While this seem to have no counterfactual evidence, a continuous flux of new and diverse groups that are reaching the country for multiple reasons: what Steven Vertovec depicted as a super-diversity (Vertovec, 2007) manifests within the territory. In this framework, the research aims to excavate into everyday practices of negotiating diversity in Italian cities focusing on places of worship to better grasp current dynamics at stake in the encounters between new and old inhabitants.

Contributing to the stream of Italian scholarship that focuses on the new confessional pluralism's place of worship as a result of spatial regulation (Saint-Blancat & Schmidt di Friedberg, 2005; Chiodelli & Moroni, 2017; Morpurgo, 2023), the research asks: *How is the intertwining relationship between law, planning, and everyday encounters entangled with the accommodation of religious (super)diversity?* In Italy, while mosques seem to be the primary target for politicians in order to spread islamophobia in the public debate, the complex legal framework around places of worship affects in different degrees all religious minorities. What are the consequences for new groups? To answer those questions, the research focuses on a specific ethno-religious segment, namely African Pentecostalism, due to its interstitial condition in the country – accepted because of its Christian essence, yet viewed with suspicion due to racial issues (Pace & Butticci, 2010; Butticci, 2016).

NAME	**Virginia PELLEREY**
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COURSE	XXXVIII cycle - 2nd year
RESEARCH TITLE	Inclusive Climate Actions for the Climate Resilience Transition: Assessing and Envisioning Nature-based Solutions in European Cities
TUTOR(S)	Sara TORABI, Giancarlo COTELLA, Patrizia LOMBARDI

ACADEMIC CONTEXT

– Amorim-Maia A. T., Anguelovski I., Chu E. and Connolly J., 2022. Intersectional climate justice: A conceptual pathway for bridging adaptation planning, transformative action, and social equity. *Urban Climate*, 41, 101053.
– Anguelovski I. and Connolly J. J., 2021. *The green city and social injustice: 21 tales from North America and Europe*. London: Routledge.
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EXTERNAL COLLABORATIONS

– GREEN-INC consortium (University of Amsterdam, Vrije Universiteit Brussel, Université libre de Bruxelles, University of Bucharest, Luleå University of Technology)

HIGHLIGHTS OF THE RESEARCH ACTIVITY

Climate change exposes cities and citizens to unprecedented threats and exacerbates existent inequalities. The resilience approach is often proposed as a framework for facing changing climate conditions, but it is also criticized for ignoring the inherently power-related connotations of vulnerability to climate change. Therefore, developing a comprehensive framework that integrates environmental justice and climate resilience is crucial. Nature-based Solutions (NbS) are recognised as an important strategy for achieving climate resilience by acting as mitigation and adaptation measures for climate change. However, citizens and ecosystems benefit differently from the wider functions that NbS can provide, and NbS can even exacerbate existing inequalities between communities or create new ones. To address this, Inclusive Climate Actions (ICAs) are proposed as tools that enable a structural and systemic implementation of NbS, thus fitting within a comprehensive just resilience framework. This research project proposes an innovative interdisciplinary approach to complement the study of climate resilience in the urban context with a focus on justice and inclusivity. Specifically, the research aims to study the efficiency of ICAs on NbS for the achievement of justice and climate resilience in the urban context. This systematic and holistic analysis will result in the identification of planning principles under which ICAs can flourish, helping the uptake of NbS, and promoting transitions towards inclusive and resilient future cities. The research project is subdivided in three phases: (i) a systematic literature review for the identification of research gaps and future research trajectories, (ii) an empirical analysis which combines quantitative, qualitative and spatial methodologies for assessing the efficiency of NbS as ICAs in enhancing climate resilience as well as social inclusion and well-being, and (iii) the co-development, digital visualization and assessment of future scenarios for the implementation of ICAs in future cities. This PhD research falls within the European project GREEN-INC: GRowing Effective & Equitable Nature-based Solutions through INClusive Climate Actions, funded by the European Driving Urban Transition Partnership (DUT). The project aims to assess the performance of ICAs in European cities and to define institutional conditions and design principles under which ICAs can flourish to deliver the full potential of NbS.

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COURSE	XXXVIII cycle - 2nd year
RESEARCH TITLE	Nomadlands: Digital Nomadism, Geoarbitrage and Infrastructural Transformations
TUTOR(S)	Francesca GOVERNA, Sonia ARBACI SALLAZZARO, Andrea POLLIO

ACADEMIC CONTEXT

– Hannonen O., 2020. In search of a digital nomad: defining the phenomenon. *Information Technology & Tourism*, 22, pp. 335-353.
– Holleran M., 2022. Pandemics and geoarbitrage: digital nomadism before and after COVID-19. *City*, 26(5-6), pp. 831-847.
– Müller A., 2016. The digital nomad: Buzzword or research category?. *Transnational Social Review*, 6(3), pp. 344-348.
– Thompson B. Y., 2018. Digital nomads: Employment in the online gig economy. *Glocalism: Journal of Culture, Politics and Innovation*, 1, pp. 1-26.

EXTERNAL COLLABORATIONS

– Visiting Research at University College London (UCL)
– Institute of Social Sciences, University of Lisbon (ICS-UL)

HIGHLIGHTS OF THE RESEARCH ACTIVITY

This dissertation investigates how the process of "infrastructuring" (Wiig et al., 2023) digital nomadism is unfolding in Lisbon. It explores multiple dimensions of this transformation. First, it examines the tailored state policies and tax programs designed to attract and support these mobile workers, contributing to the development of an ad-hoc migration infrastructure (Lin et al., 2017). Second, it analyzes the rise of platform-mediated rental markets, such as Airbnb, Uniplaces, Spotahome, Idealista, and Flatio (Cocola-Gant & Malet Calvo, 2023), which offer a wide range of medium-term rental options tailored to digital nomads and temporary residents (Brollo & Celata, 2023). Lastly, the research explores the creation of a new working infrastructure driven by digital nomadism, encompassing formal coworking spaces (Orel, 2019) and informal spaces such as coffee shops (Woldoff & Litchfield, 2021)

By investigating these various facets of "infrastructuring," this thesis examines the potential for reinvention within digital work. It highlights how Lisbon's "Digital Nomad Infrastructure" (Toivanen, 2023) is shaped by a complex interplay of factors, stakeholders, and agendas that transform the urban environment and influence future trajectories.

The research is grounded in a case study analysis, focusing specifically on Lisbon due to its prominence within the digital nomad community and its advanced stage of development in this context. The study employs a mixed-method approach, incorporating descriptive data, global and local movement patterns of digital nomads, digital ethnography, and interviews to construct a comprehensive profile of digital nomads and to gain deeper insights into the process of "infrastructuring" of digital nomadism.

NAME	**Yahya Yasser Mohamed SHAKER**
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COURSE	XXXVIII cycle - 2nd year
RESEARCH TITLE	The Multi-Level Meta-Governance of the Just Green Transitions of the European Union
TUTOR(S)	Giancarlo COTELLA, John MOODIE, Zora ŽIVANOVIĆ

ACADEMIC CONTEXT

– Jessop B., 2004. Multi-level Governance and Multi-level Metagovernance: Changes in the European Union as Integral Moments in the Transformation and Reorientation of Contemporary Statehood, in Bache I. and Flinders M., eds., *Multi-level Governance*. Oxford: Oxford University Press, pp. 49-74. https://doi.org/10.1093/0199259259.003.0004.

– European Commission, 2021. *Commission Staff Working Document on the Territorial Just Transition Plans*. Brussels, 23.9.2021 SWD (2021) 275 final. https://ec.europa.eu/regional_policy/sources/funding/just-transition-fund/swd_territ_just_trans_plan_en.pdf.

– Cedergren E., Tapia C., Gassen N. S. and Lundgren A., 2022. *Just Green Transition – key concepts and implications in the Nordic Region*. Nordregio discussion paper 2022:2. Stokholm: Nordregio. http://doi.org/10.6027/WP2022:2.1403-2511.

– Tavares M., 2022. *A Just Green Transition: concepts and practice so far. United Nations Department of Economic and Social Affairs*. Future of the World. Policy Brief No. 141. https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/publication/PB_141.pdf.

EXTERNAL COLLABORATIONS

– European HORIZON- WIDERA-2021-ACCESS-02-01. GreenFORCE Western Balkans Twinning - Foster Research Excellence for Green Transition in the Western Balkans

HIGHLIGHTS OF THE RESEARCH ACTIVITY

In perspective to the European Green Deal and contributing to the growing debate on the European Union's "Green Transition" and "Just Transition" (European Commission, 2020), this doctoral research is scrutinizing the Multi-level Meta-Governance of the so-called Just Green Transitions (JGT); investigating how these transitions are conceptualized and operationalized both at the EU level and that of the Member States (MS), across levels, actors, sectors, policies and levels of decision-making, while putting into question: how far the JGT are truly just.

This interdisciplinary exploratory research recognizes JGT as context-dependent, socially constructed realities, exposed to high level of geopolitical and economic uncertainties, that are subject to ideological, political, philosophical, societal, environmental interpretations; meaning that, what is considered just is relative, intangible, and arguable according to different geographies, cultures, and institutions, and is an antagonism of the commons (Žižek, 2009). Based on the nature of this research JGT are viewed from a bounded relativism ontological perspective (Moon & Blackman, 2014).

The research design strategy is based on multimethodology and explorative methods which are to be combined accordingly across the different research articles of this PhD thesis, including a critical interpretive literature review, discourse analysis, case studies, qualitative comparative analysis, policy analysis, interviews, and social media analysis. As a reason of the uncertainty and plurality regarding the so-called JGT, abductive reasoning has been found suitable.

A theoretical framework (Shaker & Berisha, 2024) supported by social media analysis (Shaker & Persico, 2024 forthcoming) is informing a Twofold Pan-European Analytical Grid and currently being applied to two MS (Sweden & Poland), to analyze the various models of JGT governance.

The expected results are: (a) a Socio-Spatial Conceptual framework to investigate how socially and spatially just are the JGT at the EU level and in the MS, (b) a Pan-European matrix of the actual state of the conceptualization and operationalization of JGT across the MS, (c) critical analysis on the role of ML-MG in actualizing JGT across levels, sectors, and actors across different MS and the EU.

The thesis is directed mainly to policy-makers active at the EU and the Member States levels, the main domains of interest are political and social. The thesis is expected to inform the development of policy recommendations aimed at advancing JGT in the EU.

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COURSE	XXXVIII cycle - 2ⁿᵈ year
RESEARCH TITLE	Beyond automobility. Investigating the potential of the 15-minute city model as a catalyst for reducing car dependency
TUTOR(S)	Luca STARICCO, Federico CAVALLARO

ACADEMIC CONTEXT

– Alfonzo M.A., 2005. To Walk or Not to Walk? The Hierarchy of Walking Needs. *Environment and Behavior*, 37, pp. 808-836. https://doi.org/10.1177/0013916504274016.
– Boisjoly G., Wasfi R., El-Geneidy A., 2018. How much is enough? Assessing the influence of neighborhood walkability on undertaking 10-minute walks. *Journal of Transport and Land Use*, 11, pp. 143-151. https://doi.org/10.5198/jtlu.2018.1059.
– Guzman L.A., Oviedo D., Cantillo-Garcia V.A., 2024. Is proximity enough? A critical analysis of a 15-minute city considering individual perceptions. *Cities*, 148. https://doi.org/10.1016/j.cities.2024.104882.
– Steg L., 2005. Car use: lust and must. Instrumental, symbolic and affective motives for car use. *Transportation Research Part A*, 39(2-3), pp. 147-162.
– Yu A., Higgins C.D., 2024. Travel behaviour and the 15-min City: Access intensity, sufficiency, and non-work car use in Toronto. *Travel Behaviour and Society*, 36, 100786. https://doi.org/10.1016/j.tbs.2024.100786.

HIGHLIGHTS OF THE RESEARCH ACTIVITY

The 15-minute city (15MC) model is proposed as a promising spatial planning concept aimed at creating sustainable, liveable, and inclusive urban environments. Central to this model is the idea of proximity, where essential services and amenities are accessible within a 15-minute walk or cycling from home. While the 15MC model holds potential for promoting active mobility and spatial justice, its effectiveness in addressing car dependence remains a topic of debate. The literature review investigates the relationship between the 15MC model and car dependence, focusing on the extent to which the model considers the various factors influencing car use and ownership. Building upon the review of academic literature and of grey literature the first paper examines methodologies, planning tools and strategies to underscore if and how the mitigation of car dependence is considered. The review highlights common characteristics across both academic and grey literature. Four analytical categories were identified and used as lenses through which perform the review focusing on if and how various documents address push measures.

The findings reveal a need for a more comprehensive approach to realise the full potential of the 15MC model that accounts for the multifaceted nature of car dependence. Since the concept relies on active mobility for accessing destinations, rather than if residents will naturally choose walking over driving, factors such as attractiveness of distant services and amenities, the nature of goods, and residents' driving preferences must be considered to address the limitations of promoting walkability effectively.

Further research will investigate the optimal combination of push and pull measures to reduce car use and encourage alternative transportation. A case study will also be conducted to forecast the effects derived from the implementation of the 15MC combined with push measures.

NAME	**Gianvito Marino VENTURA**
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COURSE	XXXVIII cycle - 2nd year
RESEARCH TITLE	Resilience Models for Large-Scale Hydropower Derivatives: A Case Study of Calcinere (CN)
TUTOR(S)	Anna OSELLO, Francesca Maria UGLIOTTI

ACADEMIC CONTEXT

– Ruggeri G., Adami S., 2011. Lo sviluppo dell'energia idroelettrica in Italia. *L'acqua*, 6, pp. 69-78.
– Barbera F., De Rossi A., eds., 2021. *Metromontagna. Un progetto per riabitare l'Italia*. Roma: Donzelli.
– Mehvar S., Wijnberg K., Borsje B., Kerle N., Schraagen J. M., Vinke-de Kruijf J., Geurs K., Hartmann A., Hogeboom R. and Hulscher S., 2021. Review article: Towards resilient vital infrastructure systems – challenges, opportunities, and future research agenda. *Nat. Hazards Earth Syst. Sci.*, 21, pp. 1383-1407.
– Osello A., Fonsati A., Semeraro F. and Rapetti N., 2019. *InfraBIM: Il BIM per le infrastrutture*. Roma: Gangemi Editore.

EXTERNAL COLLABORATIONS

– The PhD grant is co-funded by the PNRR under DM no. 352 and Calcinere (the project's case study), a hydropower plant in Piedmont that is part of the SIED group, which owns 24 hydropower plants across northern Italy and Chile. Currently, an exchange period is being undertaken at KTH Royal Institute of Technology in Stockholm under the supervision of Professor Kjartan Gudmundsson.

HIGHLIGHTS OF THE RESEARCH ACTIVITY

Against the backdrop of the growth of renewables, the research proposal is geared towards the study of resilience models for large hydroelectric generation systems. The history and characteristics of this type of plant, mainly built in the early 1900s, and their management concerning climate change requires specific attention to the potential and feasibility of revamping interventions, as well as the complex regulatory framework. The challenge is to achieve production, energy and environmental efficiency objectives through an integrated approach aimed not only at modernisation interventions with a green perspective but also at promoting resilient development of the local territory with social and economic spin-offs. The redevelopment strategy of the Italian power plant park therefore requires the evaluation of a systemic approach to the reference ecosystem to activate actions that can generate a value chain oriented towards sustainable development. The increasingly complex management of networks will also have to exploit the possibilities offered by digital technologies through digitalization, interconnectivity, and interconnection.

In this context and with these ambitions, one would like to test advanced methods and tools to support the digitizing Calcinere hydropower plant located in the western Piedmont Pre-Alps in the homonymous fraction of the municipality of Paesana (CN) and deepening innovative solutions to support the creation of a resilience model that aims to aspire to become a virtuous example scalable to other similar contexts.

In the first years, the pilot case BIM-GIS models is being implemented in Facility Management operations and as a digital foundational basis for the Digital Twin, supporting versatile applications across diverse use cases. In the last year, the main local actors will be involved in a participatory design to establish possible development strategies from environmental and social perspectives. The proposed methodology will be used to develop guidelines and best practices for improving the hydropower system resilience to achieve sustainable implications for the mountain territory, its permanent and temporary hosts.
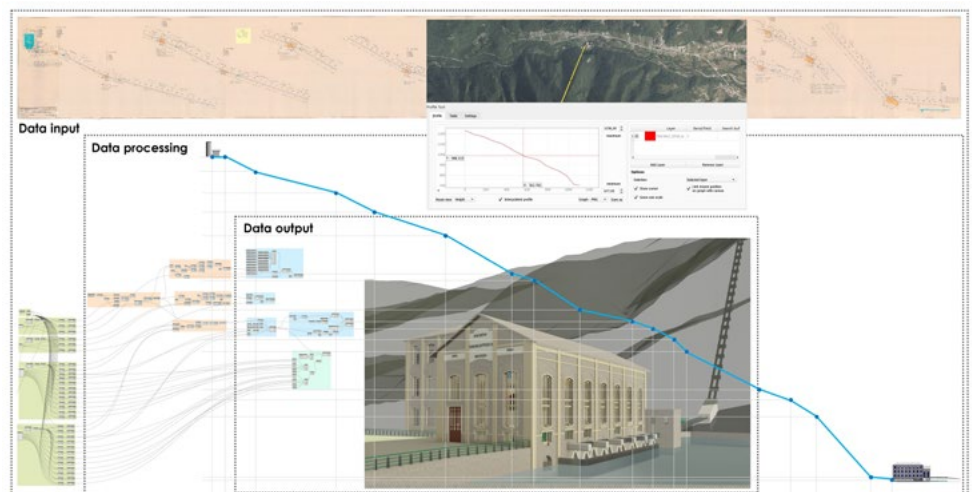
NAME	**Marco VOLPATTI**
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COURSE	XXXVIII cycle - 2nd year
RESEARCH TITLE	Integrated evaluation for supporting the new concept of urban sustainable districts and communities. A focus on Positive Energy Districts and Climate Positive Circular Communities
TUTOR(S)	Marta Carla BOTTERO, Adriano BISELLO

ACADEMIC CONTEXT

– Bisello A., 2020. Assessing Multiple Benefits of Housing Regeneration and Smart City Development: The European Project SINFONIA. *Sustainability*, 12(19). https://doi.org/10.3390/su12198038.

– Bisello A., Vettorato D., 2018. 3.5 - Multiple Benefits of Smart Urban Energy Transition. In P. Droege, ed. *Urban Energy Transition* (Second Edition). Elsevier, pp. 467-490. https://doi.org/https://doi.org/10.1016/B978-0-08-102074-6.00037-1.

– Bottero M., Mondini G. and Oppio A., 2016. Decision Support Systems for Evaluating Urban Regeneration. *Procedia - Social and Behavioral Sciences*, 223, pp. 923-928. https://doi.org/https://doi.org/10.1016/j.sbspro.2016.05.319.

– Guarino F. et al., 2022. State of the Art on Sustainability Assessment of Positive Energy Districts: Methodologies, Indicators and Future Perspectives.In J.R. Littlewood, R.J. Howlett, and L.C. Jain, eds. *Sustainability in Energy and Buildings 2021*. Singapore: Springer Nature Singapore, pp. 479-492.

EXTERNAL COLLABORATIONS

– EURAC RESEARCH: The research institute EURAC is co-founder of the PhD scholarship. The institute is located in the city of Bolzano and develops research activities in different domains such as sustainable energy and social systems. Part of the PhD research activities is developed in Bolzano collaborating with Eurac researchers

HIGHLIGHTS OF THE RESEARCH ACTIVITY

The research work presented here focuses on integrated assessments of the urban district, which represents the smallest form of community, but at the same time the most complex due to the multitude of components that characterize it. We know that by 2050 more than 70 % of the world's population will live in cities, resulting in a massive growth in demand for urban energy infrastructure (European Commission, 2021). To support the urban energy transition, the concept becomes even more ambitious, moving from highly efficient buildings to zero-emission buildings. Subsequently, by including energy sharing,

waste heat recovery, electric mobility, and energy storage, the scope has been broadened to include the implementation of zero-emission neighbourhoods or better still PEDs (Guarino et al., 2022). PEDs represent a new approach towards a sustainable and efficient, positive-energy city and urbanization model combining the built environment, mobility, sustainable production and consumption to increase energy efficiency reduce greenhouse gas emissions and create added value for citizens. Although the transformation of a district is beneficial for many stakeholders, points of agreement are not always found that make all projects sustainable and feasible. My research is part of a European project called ARV. ARV is a H2020 EU-funded project aiming at creating Climate Positive Circular Communities in Europe and increasing the building renovation rate in the continent. In this sense, my research project aims to identify

decision support systems that can evaluate as well as define common strengths to identify shared lines of development and be able to implement the energy transition in the best possible way. The research has opened 2 strategies that run together but with a single objective, which are:

1. Multiple benefits analysis applied to the European ARV project and the 6 case studies in collaboration with the different living labs of each demo case, and to the PEDs in the International Energy Agency ANNEX 83 research group in order to address and evaluate the urban district development proposals shared with all stakeholders involved.

A proposal for a new certification protocol for PEDs and CPCCs to promote their sustainable development.

NAME	**Yogender YADAV**
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COURSE	XXXVIII cycle - 2nd year
RESEARCH TITLE	Landscape goes Digital: 3D model Production and Implementation of Energy Digital Twins (EDT) for Innovative Landscape Management
TUTOR(S)	Piero BOCCARDO, Sisi ZLATANOVA

ACADEMIC CONTEXT

– Albano R., 2019. Investigation on Roof Segmentation for 3D Building Reconstruction from Aerial LIDAR Point Clouds. *Applied Sciences*, 9(21), p. 4674. doi:https://doi.org/10.3390/app9214674.

– Boccardo P., La Riccia L. and Yadav Y., 2024. Urban Echoes: Exploring the Dynamic Realities of Cities through Digital Twins. *Land*, 13(5), pp. 635-635. doi:https://doi.org/10.3390/land13050635.

– Lu Q., Parlikad A.K., Woodall P., Don Ranasinghe G., Xie X., Liang Z., Konstantinou E., Heaton J. and Schooling J., 2020. Developing a Digital Twin at Building and City Levels: Case Study of West Cambridge Campus. *Journal of Management in Engineering*, 36(3), p. 05020004. doi:https://doi.org/10.1061/(asce)me.1943-5479.0000763.

EXTERNAL COLLABORATIONS

– University of New South Wales (UNSW), Sydney, Australia (Research Visiting Period)
– Indian Institute of Technology (IIT), Roorkee, India (Research Visiting Period)
– Delhi Technological University, New Delhi, India (Teaching Assistant and Research Visiting Period)

HIGHLIGHTS OF THE RESEARCH ACTIVITY

The emergence of Energy Digital Twins (EDTs) utilizing rooftop and windows features extracted from photogrammetry and MMS point cloud data has opened new opportunities in Remote Sensing (RS) and digital 3D modeling. Advanced RS techniques like LiDAR, SLAM, and aerial photogrammetry, when integrated, expand the possibilities for the development and update of EDTs. EDTs not only comprehend 3D modeling but also incorporate the fourth dimension, time, dynamically altering data and semantic information associated with 3D city models. This environment offers users a simplified, interactive web interface to analyze 3D viewpoints of the physical world and associated features, particularly in urban settings with applications like energy planning.

This doctoral research focuses on the ongoing endeavour to develop an EDT for the city of Torino, ensuring its continual update over time to derive actionable insights for a smart energy management system.

Numerous challenges accompany this research, particularly regarding technical aspects such as processing large datasets, managing the rapid urban development of Torino, and dealing with the details of existing commercial solutions for 3D model updates. The primary challenge lies in efficiently creating and updating a comprehensive 3D model of the entire city, addressing issues of processing time, dataset storage, and capturing complex details.

While commercial solutions exist for integrating 3D models from various sources into EDTs, the key hurdle remains in developing an operational and user-friendly product that municipalities and local authorities can readily implement for decision-making in Torino.

The proposed outcome of this doctoral research is the development of an easily accessible web-based Digital Twins platform that offers a comprehensive depiction of the real world's energy consumption behaviour and dynamics. It will allow stakeholders to visualize the impacts of current energy scenarios of the city for the future urban developments from the digital representation of reality, aiding informed decision-making processes for the city of Torino.

NAME	**Michele ZUCCO**
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COURSE	XXXVIII cycle - 2nd year
RESEARCH TITLE	New strategies for Building Information Modelling (BIM) to Facility Management (FM) training and integration in public administration
TUTOR(S)	Anna OSELLO, Matteo DEL GIUDICE

ACADEMIC CONTEXT

– Salzano A., Parisi C. M., Acampa G. and Nicolella M., 2023. Existing assets maintenance management: Optimizing maintenance procedures and costs through BIM tools. *Automation in Construction*, 149. https://doi.org/10.1016/j.autcon.2023.104788.

– Zucco M., Del Giudice M., Osello A., 2024. Digital Twin for BIM-FM Data Comparison: A Decision Support System Based on Graphical Interfaces. In: A. Giordano, M. Russo, R. Spallone, eds. *Advances in Representation. New AI- and XR-Driven Transdisciplinarity*. Cham (CH): Springer. https://doi.org/10.1007/978-3-031-62963-1_36.

– Pinti L., Codinhoto R. and Bonelli S., 2022. A Review of Building Information Modelling (BIM) for Facility Management (FM): Implementation in Public Organisations. *Applied Sciences*, 12(3). https://doi.org/10.3390/app12031540.

– Succar B., Sher W., 2014. A Competency knowledge-base for BIM learning. *Australasian Journal of Construction Economics and Building Conference Series*, 2(2), pp. 1-10. https://doi.org/10.13140/2.1.2439.6481.

HIGHLIGHTS OF THE RESEARCH ACTIVITY

Society 5.0 is an anthropocentric societal paradigm that emphasizes the use of Information-Technology systems such as the Internet of Things (IoT), Artificial Intelligence (AI), and Virtual and Augmented Reality (VAR) to improve human living circumstances.

Research, innovation, and technology are critical for achieving a Smart-city that is sustainable, adaptive, and human-centered. Building Information Modelling (BIM) methodology offers significant advantages in building operation and maintenance (O&M), but its implementation at the building scale has mainly focused on the design and construction phases. Innovative approaches and technologies for building maintenance research can assist public administrations in transitioning to the BIM-world and digitizing data for the establishment of the Digital Twin. Italy is one of the countries that has adopted BIM for public projects. The application of this methodology in public building management activities is currently in an embryonic state due to the absence of reference standards and operational research at this stage of the management process.

This research aims to explore the use of Building Information Modelling (BIM) in Italian public administration. But also develop operational and training strategies for digitizing real estate assets, specifically Palazzo Unico Regionale. For this purpose, 3D BIM-based models integrated with facility management and Virtual Augmented Reality tools are used.

In particular, the research focuses on:

i. Develop and carry out training activities with public officials to generate a Record Model BIM-based for FM activities;

ii. Visualize, extract and implement information from the BIM Model to the Integrated Workplace Management System software;

iii. Inspect the BIM model with VAR for FM activities and define Guidelines for the BIM use in public administration.

By comparing the traditional approach with innovative tools, new BIM-FM integration standards can be defined for transferring data from the construction phase to the operational phase. This process creates a digital model of a building, including: equipment, facilities, systems, maintenance, and operational requirements. The research combines expertise from various disciplines in digital modelling, plant engineering, and management to streamline operations and maintenance administration tasks. The main result is the development of guidelines for controlling, simplifying, updating, and managing maintenance information.

XXXIX CYCLE – 1st YEAR STUDENTS

NAME	**Irene ARDITO**
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COURSE	XXXIX cycle - 1st year
RESEARCH TITLE	Analysing sense of place on participation in collaborative place-making processes in flood-prone territories. A comparative analysis between Brazil, Netherlands and Italy
TUTOR(S)	Angioletta VOGHERA, Camilo Vladimir DE LIMA AMARAL

ACADEMIC CONTEXT

— Ardaya A.B., Evers M. and Ribbe L., 2017. What influences disaster risk perception? Intervention measures, flood and landslide risk perception of the population living in flood risk areas in Rio de Janeiro state, Brazil. *International journal of disaster risk reduction*, 25, pp. 227-237.

— Manzo L.C. and Perkins D.D., 2006. Finding common ground: The importance of place attachment to community participation and planning. *Journal of planning literature*, 20(4), pp. 335-350.

— Meetiyagoda L., Mahamana P.K.S., Amarawickrama S. and Ley A., 2023. Collaborative Place-making: Some Theoretical Perspectives on. *Journal of Urban Culture Research*, p. 89.

— van Heel B.F. and van den Born R.J., 2020. Studying residents' flood risk perceptions and sense of place to inform public participation in a Dutch river restoration project. *Journal of Integrative Environmental Sciences*, 17(1), pp. 35-55.

EXTERNAL COLLABORATIONS

— Full, Future Urban Legacy lab of Politecnico di Torino
— EGAP (Ente Gestione Aree Protette) del Parco del Po Piemontese

HIGHLIGHTS OF THE RESEARCH ACTIVITY

The concept of sense of place has been the subject of academic analysis in a number of disciplines, including cultural geography, anthropology, sociology and urban planning. However, as is evident from an examination of the relevant literature, there is a paucity of studies that address the measurement of sense of place in relation to place-making processes in collaborative planning. This thesis aims to analyse the relationship between collaborative processes and the sense of place in particularly sensitive areas, such as flood-prone riverine areas within urban settings. Such areas are particularly susceptible to the effects of climate change, which has resulted in a significant increase in flooding incidents worldwide, including in Europe. These events have the potential to alter the landscape and exert considerable influence on the urban infrastructure and the demographic, social and economic aspects of the communities that reside in these regions. The extent to which stakeholders should be involved in the restoration project of areas along rivers is a topic of ongoing debate. There is currently no consensus on the most effective way to involve stakeholders, with questions being raised about the effectiveness and fairness of the processes involved. It is therefore important to encourage active participation by communities in these areas and to analyse the sense of place in relation to the place-making processes of communities in such a way that the latter becomes an enduring factor over time, despite the changing nature of the area due to external phenomena subject to climate change. The objective of this research is to examine how the concept of place is transformed within the context of collaborative planning processes for the redevelopment of flood-prone territories in diverse geographical locations. This approach allows for a comprehensive examination of the interrelationship between these factors. The thesis specifically aims to compare three case studies in different parts of the world that present varying degrees of challenges due to flooding. These case studies, which include Brazil, the Netherlands, and Italy, respectively, will be analysed in order to gain insights into the relationship between sense of place and collaborative processes. The objective is to strengthen the resilience of river territories.

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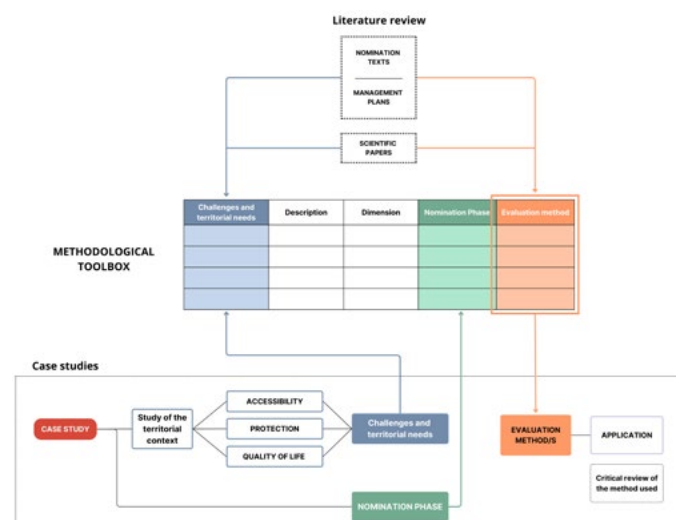| COURSE	XXXIX cycle - 1st year
RESEARCH TITLE	New paradigms and tools for the management of the bio-cultural landscapes
TUTOR(S)	Marta BOTTERO, Marco VALLE

ACADEMIC CONTEXT

– Assumma V., Bottero M., Monaco R. and Mondini G., 2019. *Assessing the Landscape Value: An Integrated Approach to Measure the Attractiveness and Pressures of the Vineyard Landscape of Piedmont (Italy)*. Cham: Springer International Publishing AG, part of Springer Nature 2019, 251-259. https://doi.org/10.1007/978-3-319-92102-0_27.
– Assumma V., Barbieri S., Bottero M. nd Caprioli C., 2024. Supporting the Planning Management of UNESCO Sites: A Literature Review Between Urban Showcase and Gentrification. In: Gervasi O., Murgante B., Garau C., Taniar D., C. Rocha, A.M.A., Faginas Lago, M.N., eds., *Computational Science and Its Applications – ICCSA 2024 Workshops*. Lecture Notes in Computer Science, vol 14821. Cham: Springer, pp. 147-162. https://doi.org/10.1007/978-3-031-65308-7_11.
– Barbieri S., Bottero M., Caprioli C. and Mondini G., 2023. Supporting the Management Plan of a World Heritage Site Nomination Through a Multi-step Evaluation Approach. In: Gervasi O. et al. *Computational Science and Its Applications – ICCSA 2023 Workshops*. Lecture Notes in Computer Science, vol 14108. Cham: Springer, pp. 498-511. https://doi.org/10.1007/978-3-031-37117-2_34.
– Stellin G., Rosato P., 1998. *La valutazione economica dei beni ambientali: metodologia e casi di studio*. Torino: CittàStudi Edizioni.

EXTERNAL COLLABORATIONS

– Fondazione LINKS, Turin (co-financer of the PhD grant)

HIGHLIGHTS OF THE RESEARCH ACTIVITY

The cultural landscape inscribed on the UNESCO World Heritage List represents an extraordinary and priceless value, evidence of the cultural and natural diversity of our planet. The preservation and management of this heritage is essential to preserve not only the past, but also to promote intercultural understanding, social cohesion, and sustainable development. Moreover, these elements can be drivers for the social and economic development of an entire territory. Therefore, evaluations that can support decision-making regarding the management of cultural and environmental assets are of great importance (Stellin & Rosato, 1998). The different types of valuation must be able to consider not only economic but also social and environmental aspects (United Nations General Assembly, 2015) that allow a cultural landscape to develop sustainably while protecting the exceptional value it represents.

The research aims to propose a methodological framework for the selection of evaluation methods best suited to capture the complexity of World Heritage List candidates and inscribed cultural property management. To identify the challenges that these territories are about to face, it is necessary to conduct a study of existing literature and an analysis of the spatial context of existing cases. This will enable the selection of the most appropriate evaluation method to address the complex issues that characterize the Sites on the World Heritage List. The study of sites inscribed on the WHL has identified some positive and negative impacts derived from the inscription itself, which will be investigated further to propose management guidelines. The research undertakes the analysis and investigation of what in the existing literature is carried out in a systematic and non-methodical approach, such that traditional evaluation methods are often considered. Another purpose is to research innovative methods, integrated with GIS, that can be used in the field of cultural heritage management.

The result of the research aims to be a digital tool that could be used by academics, professionals, and public administrators who are responsible for managing these extraordinary territories, offering them decision support.

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COURSE	XXXIX cycle - 1st year
RESEARCH TITLE	Urbanisation in the Middle East: Transnational Development and the Belt and Road Initiative as Urban Questions
TUTOR(S)	Carlo SALONE, Francesco CHIODELLI

ACADEMIC CONTEXT

– -Williams J., Robinson C. and Bouzarovski S., 2020. China's Belt and Road Initiative and the emerging geographies of global urbanisation. *The Geographical Journal*, 186(1), pp. 128-140.
– -Brenner N. and Schmid C., 2015. Towards a new epistemology of the urban?. *City*, 19(2-3), pp. 151-182.
– -Apostolopoulou E., 2021. Tracing the links between infrastructure-led development, urban transformation, and inequality in China's belt and road initiative. *Antipode*, 53(3), pp. 831-858.
– -McFarlane C., 2006. Transnational development networks: bringing development and postcolonial approaches into dialogue. *Geographical Journal*, 172(1), pp. 35-49.

HIGHLIGHTS OF THE RESEARCH ACTIVITY

This thesis seeks to investigate the role of transnational development in the urbanisation of the "Middle East", starting from the point of understanding of the rural-urban transition and rapid urbanisation of the region in recent decades. Transnational development theories are inevitably and critically intertwined with the postcolonial reflections that constitute the backdrop against which this research is carried out in a region that is shaped by colonial legacies.

Shedding light on the most recent urbanisation processes in the region that accompanied the announcement of the Belt and Road Initiative in 2013 is the focus of this thesis. Being the subject of numerous neoliberal economic programmes led by international monetary institutions over the past three decades, the Middle East is no stranger to international strategic policy reaching to the core of its urban centres. Nevertheless,

China's Belt and Road Initiative. Sources: Xinhua, MERICS

the 'peripheries' have been largely neglected in analyses of neoliberalization processes in the cities of the region. Adopting an ex-centric analysis that aims to investigate urbanization beyond traditional city boundaries towards the rural-urban transition addresses this gap in the literature, which so far predominantly focused on mega-projects targeting central urban areas, seeking to highlight, on one hand, those processual components that are outlined in the international literature on global urbanism and on the other, the distinct elements that connote the middle-eastern region specifically.

The BRI in literature is often viewed through a geopolitical lens, emphasising its strategic importance for China. However, this perspective may overlook the urban dimension and spatial articulations of the plan. The thesis employs an analytical framework of planetary urbanisation, incorporating critiques such as Schindler's Southern Urbanism and the concept of international development regimes, to address analytical limitations. This analytical paradigm seeks to address the BRI as an urban question that is transforming territories while simultaneously challenging existing understandings of how urban restructuring and development take place within the current global order. Through these themes, this thesis builds on theories and theses that call for a new epistemology of the urban, as the intersection of these frameworks reveals a reality that is yet to be theorized and explored.
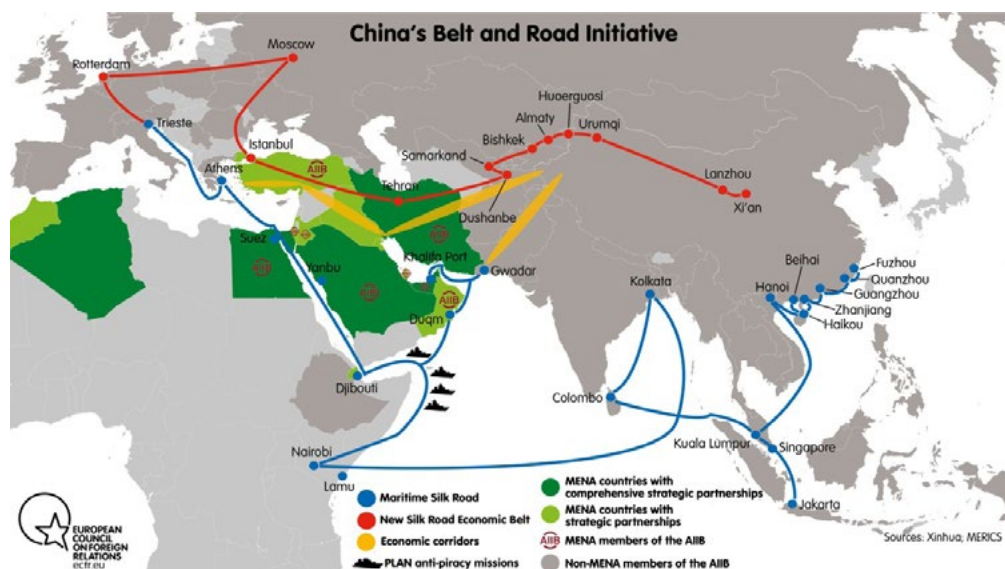
NAME	**Sarah Elizabeth BRAUN**
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COURSE	XXXIX cycle - 1st year
RESEARCH TITLE	Assessing Participatory Practice and Innovative Action for Sustainable Development at the Community Level
TUTOR(S)	Patrizia LOMBARDI

ACADEMIC CONTEXT

– Braun S.E., 2023. The Power of local government policy for building resilient cities and communities: the city of Edgerton, Wisconsin as a case study. In: Ripp M., Gustafsson C., eds. *Climate Change Related Urban Transformation and the Role of Cultural Heritage*. Lago (CS), Italy: Il Sileno Edizioni, pp. 39-55.
– Fayad S., Kendal L., 2020. Local values driven change management and leadership from the regions: Ballarat and UNESCO's HUL approach. In: Edmondson B., Campbell A., Duffy M., eds. *Located research: regional places, transitions and challenges*. London: Palgrave Macmillan, pp. 71-88.
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EXTERNAL COLLABORATIONS

– Visiting researcher and facilitator, Sant'Anna Institute, Sorrento,(IT)

HIGHLIGHTS OF THE RESEARCH ACTIVITY

In recent years, there has been increasing recognition of the importance of local participation and community engagement to address complex urban challenges for sustainable development. However, there has not been a single, widely recognized comprehensive review or assessment of participatory practice frameworks for collective action. Furthermore, there is a limited understanding of how problem ownership, motivation, and execution of innovative, collective action manifests within the context of smaller cities. The localization of participatory practices in settings other than major metropolitan areas remains underexplored. Understanding how best to build resilient communities through institutional innovation is not only reliant on policy development in sizeable urban cities, but also those of medium and small cities.

This research looks specifically at the history and role of participatory practices employed in contexts across various disciplines for project development and problem solving when working with people. These sectors include, education, health, business management, marketing, software design, cultural heritage, economics, as well as urban planning among others. As we continue moving toward the Agenda 2030 deadline, achieving the SDGs remains a fundamental challenge across the globe. Participation and engagement have continuously demonstrated the effective power they play in sustainable development projects, namely influencing the implementation of SDG 11 and 17. This research seeks to fill gaps by assessing existing participatory frameworks and examining the dynamics of problem ownership, motivation, and execution of innovative calls to action in small cities, with a particular focus on the localization of participatory practices through selected case studies. Furthermore, there is a lack of research that sufficiently illustrates and optimizes the frameworks and methodologies for participatory practice approaches. Providing a comprehensive data set of existing literature will allow for process optimization in the developed methodology that communities and local governments, namely in small or rural cities, may utilize to develop effective strategies for sustainable urban development and innovative action. This research also seeks to offer valuable insights for policymakers, practitioners, and scholars interested in enhancing local governance and grassroots participation in urban decision-making processes.
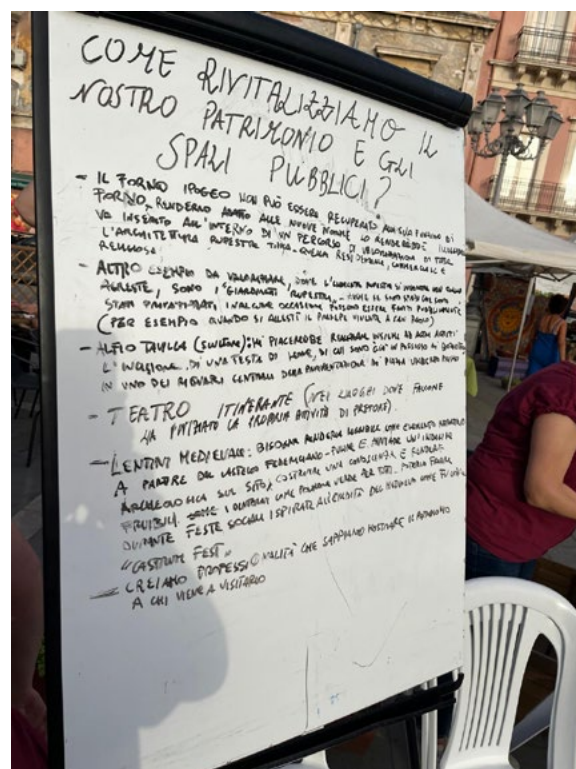
NAME	**Martina CAPUTO**
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COURSE	XXXIX cycle - 1st year
RESEARCH TITLE	Towards a Functional Understanding of Climate Change Adaptation: Exploring Multi-Level Governance and Urban-Rural Synergies
TUTOR(S)	Grazia BRUNETTA; Giancarlo COTELLA

ACADEMIC CONTEXT

– Brunetta G., Caldarice O., Tollin N., Rosas-Casals M. and Morató J., eds., 2019. *Urban resilience for risk and adaptation governance: Theory and practice*. Cham: Springer. https://doi.org/10.1007/978-3-319-76944-8.
– Brunetta G., Caldarice O., 2017. Governare l'adattamento al cambiamento climatico: Approcci e sfide per un progetto di città resiliente. *Urbanistica*, 160, pp. 72-76.
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– Tollin N., Gragnani P., Grafakos S. and Shammugam S., eds., 2024. *Urban climate action: Policy brief series (GGGI Insight Brief No. 9)*. Seoul: Global Green Growth Institute (GGGI).

EXTERNAL COLLABORATIONS

– Responsible Risk Resilience Centre (R3C)
– University of Southern Denmark (SDU) - In 2024, a research period of about two months is planned at the University of Southern Denmark to further research topics

HIGHLIGHTS OF THE RESEARCH ACTIVITY

Temperatures in Europe are rising faster than the global average and the direct impacts of this phenomenon can be potentially devastating for the environment and the quality of life of European citizens (EEA, 2024). The European Parliament, Member States and more than 300 European cities have recognised the climate emergency (European Commission, 2021), underlining the importance of their involvement in addressing this issue. Although the importance of adaptation is increasingly recognised, many reports point to a lack of preparedness. The European Environment Agency (EEA) reports that in 2024, Europe is not well advanced in building a truly climate-resilient society that is prepared for the impacts of climate change. Adapting to climate change requires a high degree of coordination between different administrative levels and sectors (Braunschweiger, 2022). However, to increase the geographical scale of institutional arrangements is not enough to address the issues of climate adaptation and urban-rural cooperation (Moss, 2012). More flexible, integrative and context-sensitive solutions that reflect the complexity of climate change adaptation are needed.

Acknowledging the above, the research addresses the urgency of multi-level climate adaptation strategies through a functional perspective that aims at strengthening cooperation between urban and rural territories, in so doing overcoming the rigidity of existing administrative hierarchies. Going beyond traditional administrative boundaries makes it possible to adapt to changing situations through more flexible, place-based development approaches (Cotella, 2023). At the same time, the establishment of urban-rural synergies may lead to development outcomes and trajectories that are more socially and spatially 'just'. Overall, the proposed functional understanding of climate change adaptation strategies and policies relates tightly to policy objective 5 of the European Union's 2021-2027 Cohesion Policy, 'Bringing Europe closer to its citizens', which aims to promote the sustainable and integrated development of all types of territories, urban and rural, and shall contribute to operationalise the European 'just resilience' approach and to achieve the goal of 'leaving no one behind'.
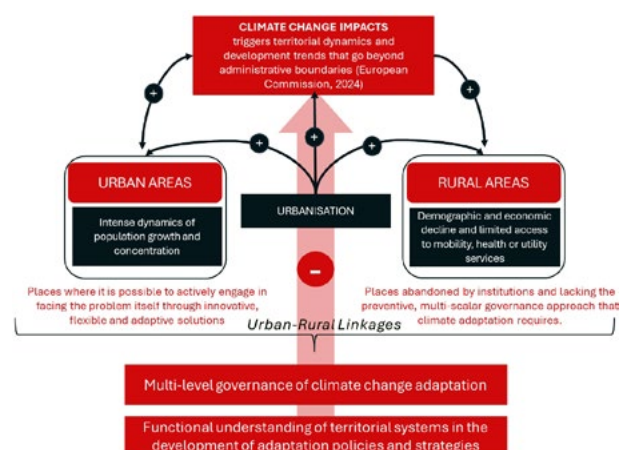
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COURSE	XXXIX cycle - 1st year
RESEARCH TITLE	Worlding Athens: neo-colonial urban experiments in the Attica region
TUTOR(S)	Francesca GOVERNA

ACADEMIC CONTEXT

– Lancione M., McFarlane C., eds., 2021. *Global urbanism: Knowledge, power and the city*. Abingdon: Taylor & Francis.
– Roy A., Ong A., eds., 2011. Worlding Cities: Asian Experiments and the Art of being Global. Malden, Mass: Wiley-Blackwell (Studies in urban and social change).
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– Souliotis N., Kandylis G., 2013. Athens and the politics of the sovereign debt crisis. In Fujita K., *Cities and Crisis: New Critical Urban Theory*, pp. 236-269.

HIGHLIGHTS OF THE RESEARCH ACTIVITY

This research project aims to investigate the structures of global capital and their neocolonial dimensions at work in The Ellinikon urban regeneration project, along the Athenian Riviera.

The Ellinikon is currently the largest urban development project in Greece, aimed at promoting the city of Athens as a global destination through the privatization of the former Hellinikon airport, now disused since 2001. As many other state-owned properties in the context of the 2008 economic crisis, and thanks to the implementation of the Hellenic Republic Asset Development Fund (a financial institution for the management and privatization of state-owned real estate), the space of the former airport has been sold in 2014 to the Greek company

LAMBDA Development S. A., with the aim of building the first gated and financial community of the country, following the now proven Singapore model, developed in the Asian city-state.

Currently under construction along the Athenian Riviera, The Ellinikon is structured as a smart and green gated community, consisting of residential complexes, shopping centers, hotels, offices and green areas.

In analyzing The Ellinikon and dialoguing with the literature on global urbanisms (Lancione & McFarlane, 2021), this thesis has three main goals:

1. contribute to the literature and debate interested in the problem of knowledge production on the urban phenomenon between the Global North and South, challenging the possibility of using the Singapore model and the concept of "worlding" (Roy & Ong, 2011) in reading urban transformation in the European context;

2. analyze the ways in which the movement and mutation of rapidly changing policies through globalizing networks and translocal contexts (Peck, 2011) impact Greece.

3. produce a politically positioned reading of debt policies' implementation in Greece (Souliotis & Kandylis, 2013), unraveling their neocolonial nature and observing their spatial effects in terms of urban development.

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COURSE	XXXIX cycle - 1st year
RESEARCH TITLE	'Where people live matters'. Challenging post-apartheid spatial injustice through insurgent home-making practices in Cape Town's Cissie Gool House occupation
TUTOR(S)	Elisa BIGNANTE, Mara FERRERI

ACADEMIC CONTEXT

– Levenson Z., 2021. Post-apartheid Housing Delivery as a (Failed) Project of Remediation. In: Home R., ed. *Land Issues for Urban Governance in Sub-Saharan Africa*. Cham: Springer International Publishing, pp. 189-206.

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HIGHLIGHTS OF THE RESEARCH ACTIVITY

This research project is concerned with the role played by housing occupations and housing movements in challenging the reproduction of spatial segregation and spatial injustice that keeps shaping post-Apartheid South African cities. In this context, aggressive real estate market dynamics and the neoliberal turn of housing policies make the access to dignified, well-located housing extremely difficult. In addition to their material impact on people's lives, homelessness and segregation of historically dispossessed people seriously affect people's sense of home and belonging in the city. This project therefore focusses on how the articulation of insurgent home-making practices and claims to well-located affordable housing by racialized and impoverished people

attempt to counter historical and current forms of dispossession, displacement, and racial segregation inherited from centuries of colonial and apartheid spatial planning and race-based manufacturing of the urban fabric. It does so by looking at the work and collective organizing performed by residents, leaders and allies of a large housing occupation in Cape Town's inner-city called Cissie Gool House (CGH), part of the Reclaim The City (RTC) movement for housing and spatial justice. This research specifically focusses on the work of the 'CGH Co-Design' project, a self-organized 'invented space' of participation that aims to collaboratively imagine and plan long-term, inclusive housing solutions that do not involve the eviction of CGH residents. By using a mixed qualitative methods approach as well as Participatory Action

Research, this research project aims to explore how poor black urbanites in South Africa fight to make a home despite and against the forms of oppression they experience. It also aims to study how the collective actions of CGH residents gesture towards alternative ideas of home – and city – than those informing the state's housing policies and approach to homelessness. Finally, this study sets out to support CGH residents' struggle for well-located affordable housing by exploring collaborative, action-oriented knowledge-making practices that can feed into the ongoing work of the CGH Co-Design project and its members' struggle for racial and spatial justice.

NAME	**Sofia DARBESIO**
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COURSE	XXXIX cycle - 1st year
RESEARCH TITLE	Contemporary Architecture Construction Site in the Historic City: Interactive Multimedia Solutions to Make and Share the History of Sites in Transition
TUTOR(S)	Rosa TAMBORRINO, Alessandro IPPOLITI

ACADEMIC CONTEXT

– Castagnaro A., 2014. Infrastructural Systems toward the Valorisation of the History of Architecture: the Case of the Metro-Art in Naples. *Advanced Engineering Forum*, 11, pp. 508-513.
– Esposito A., Leoni G. and Rispoli M., 2023. La Stazione Municipio della metropolitana di Napoli. Rifondare l'immagine e la materia della città. *U+D, Urbanform and Design*, X, pp. 108-115.
– Falotico A., 2003. *Cantiere e costruzione: le strategie esecutive nella formazione del progetto di architettura*. Naples: Liguori.
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EXTERNAL COLLABORATIONS

– IT company Inmatica SpA – co-financer of the PhD grant
– Faculty of Architecture of the University of Porto (FAUP) – hosting for research period

HIGHLIGHTS OF THE RESEARCH ACTIVITY

The research aims to investigate large-scale contemporary architectural construction sites in historic cities. Through a Digital Urban History approach, the research explores inherent complexities such as decision-making processes, the interaction of various stakeholders, and contextualises its relation with the contemporary-historic city. The demonstrator chosen is the Municipio Metro Station in Naples, a large-scale infrastructural and architectural worksite spanning over twenty years, in the core of the historic city centre. Designed by Álvaro Siza and Eduardo Souto de Moura, the architecture project dealt with multiple historical heritage segments, making the process even more challenging and multifaceted.

The research will consider all various aspects linked to the construction site development, including architectural design and phases, documentation and archives, interactions among interdisciplinary expertise, and the spatial-heritage relations of the new architectural work with the urban context and history. Furthermore, data, tools, and information related to building sites are complex and challenging to access or communicate. However, they embody inventive capabilities, innovations, and processes, representing relevant information in the history of architecture and the city. By intersecting Digital Humanities methodologies with the Digital Urban History approach, all these dynamics can become more transparent, understandable and accessible. As an outcome, the new digital solution could provide an analytical framework to capture the complexity of the building site and extract relevant best practices, making the research approach replicable to other case studies. This presents challenges and opportunities for a deeper understanding of urban development processes within historic cities, tackling the study of large-scale urban transformations while enhancing awareness of their relationship with urban history.

Funded by MUR D.M. 117/2023, this research aligns with the objectives of the National Recovery and Resilience Plan (PNRR), financed by the European Union – NextGenerationEU programme, working on promoting the transfer of research to the enterprise sector and fostering fruitful synergies for interdisciplinary research in the field of Digital Transition and the societal impact of research.

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COURSE	XXXIX cycle - 1st year
RESEARCH TITLE	Real estate market and housing accessibility. Valuation tools and regulation paradigms
TUTOR(S)	Marta Carla BOTTERO

ACADEMIC CONTEXT

– Blanco H., Neri L., 2023. Knocking it Down and Mixing it Up: The Impact of Public Housing Regenerations. *IZA Discussion Papers*, 15855. https://doi.org/10.2139/ssrn.4319009.
– Bottero M., Caprioli C., Datola G. and Caruso N., 2022. Assessing the Impacts of a Social Housing Project Through the Community Impact Evaluation (CIE) Methodology. In: Gervasi O., Murgante B., Misra S., Rocha,A.M.A.C., Garau C., eds. *Computational Science and Its Applications – ICCSA 2022 Workshops, Lecture Notes in Computer Science*. Cham: Springer International Publishing, pp. 183-194. https://doi.org/10.1007/978-3-031-10542-5_13.
– Costa G., Cucca R., Torri R., 2016. Milan: A City Lost in the Transition from the Growth Machine Paradigm Towards a Social Innovation Approach. In: Brandsen T., Cattacin S., Evers A. and Zimmer A., eds. *Social Innovations in the Urban Context, Nonprofit and Civil Society Studies*. Cham: Springer International Publishing, pp. 125-142. https://doi.org/10.1007/978-3-319-21551-8_7.
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EXTERNAL COLLABORATIONS

– PoliS-Lombardia – Istituto di ricerca e supporto alle politiche della regione Lombardia (financer of the PhD grant – Dottorato Executive)

HIGHLIGHTS OF THE RESEARCH ACTIVITY

The research explores the relationship between real estate market regulation and housing accessibility, particularly in contexts characterized by high housing pressure. Valuation tools will play a crucial role not only in assessing the economic aspects of real estate assets but also in analyzing the value appreciation of redevelopment areas influenced by planning regulations. The research aims to examine how values generated from urban transformations impact housing access.

As former industrial areas are redeveloped for new uses, land values can significantly increase. These areas often start with low or even negative asset values (e.g., polluted sites) and rise sharply due to market dynamics, benefiting from positive externalities such as high accessibility, abundant services, and proximity to other public and private entities within urban settings.

In Italy, developers involved in typical urban transformations must pay fees related to the costs that municipalities incur to provide essential services to new developments. In large-scale real estate projects within cities, substantial increases in land value often result from redeveloping central areas, especially when municipalities agree to land use changes. This increased value is manifested as urban land rent.

The regulation of urban land rent involves legal mechanisms designed to capture a share of this generated wealth to achieve broader community goals. The research will investigate how these regulatory frameworks can be leveraged to enhance housing accessibility in urban contexts with the focus on Milan as a case-study.

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COURSE	XXXIX cycle - 1st year
RESEARCH TITLE	Storytelling 2D and 3D visualisation of the city of Torino
TUTOR(S)	Piero BOCCARDO, Alessandra CIMADOM

ACADEMIC CONTEXT

− Sharma A., Kosasih E., Zhang J., Brintrup A. and Calinescu A., 2022. Digital Twins: State of the art theory and practice, challenges, and open research questions. *Journal of Industrial Information Integration*, 30, 100383. https://doi.org/10.1016/j.jii.2022.100383.
− Soininen V., Hyyppä E., Muhojoki J., Luoma V., Kaartinen H., Lehtomäki M., Kukko A. and Hyyppä J., 2024. Accuracy comparison of terrestrial and airborne laser scanning and manual measurements for stem curve-based growth measurements of individual trees. *Science of Remote Sensing*, 9, 100125. https://doi.org/10.1016/j.srs.2024.100125.
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HIGHLIGHTS OF THE RESEARCH ACTIVITY

Digital Twins (DT) have rapidly evolved into crucial technology that is enabling many industries. Today, DTs enhance efficiency, reduce costs, and improve decision-making across manufacturing, healthcare, urban planning, and energy sectors. They enable predictive maintenance, reducing downtime and extending the lifespan of equipment. The growing importance of digital twins lies in their ability to bridge the physical and digital worlds, driving innovation, sustainability, and transformative growth in the modern era.

The growth of DT is developing in many areas to create virtual replicas. In planning, virtual copies of cities are being developed in real-time to analyze what is happening in urban spaces, not only for the urban field but also for areas such as vegetation, sustainability, and mobility, among others. Remote sensing (RS) and geographical information systems (GIS) are used to develop this process.

The techniques used in RS have developed new approaches in the research and creation of DT based on LiDAR, high-resolution satellite imagery and photogrammetry, among others. Not only have RS techniques made progress in creating DTs, but artificial intelligence (AI) development has also eaten and analyzed DTs.

In this doctoral research, we work on creating a DT for the city of Turin. In our case, the study focuses on mobility in the city, figuring out the weak points of the streets and roads and their condition, solving conflict points in the city, and acting to improve them. The idea is to visualize all the information in open GIS software so that the population can see and understand what is happening in the city and what improvements are being made.

There are diverse ways of approaching the research to do this analysis and object detection. Still, in our case, we have focused on using an artificial intelligence algorithm called YOLO. To train this algorithm, we use satellite images and frontal images made by drones. These images have a high resolution to obtain better object detection results.

NAME	**Sona GULIYEVA**
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| COURSE	XXXIX cycle - 1st year
RESEARCH TITLE	New geodata for innovative urban environmental management
TUTOR(S)	Piero BOCCARDO, Andrea AJMAR

ACADEMIC CONTEXT

– Guliyeva S., Alaskarov E., 2024. SAR technology for urban coastal resilience: Mitigating accidental oil spills in the Caspian Sea. In: *IGARSS 2024 - 2024 IEEE International Geoscience and Remote Sensing Symposium*, pp. 3199-3202. doi:10.1109/igarss53475.2024.10641402.

– Guliyeva S., Boccardo P. and Alaskarov E., 2024. Spatiotemporal Analysis of Drought Vulnerability in Azerbaijan through Satellite Data Integration. In: *IAC 2024 – congress proceedings*, 75th International Astronautical Congress (IAC), Milan, Italy, IAF Digital Library - https://dl.iafastro.directory/event/IAC-2024/paper/83000/.

– Riaz K., McAfee M. & Gharbia S.S., 2023. Management of Climate Resilience: Exploring the Potential of Digital Twin Technology, 3D City Modelling, and Early Warning Systems. *Sensors*, 23(5), 2659. https://doi.org/10.3390/s23052659.

HIGHLIGHTS OF THE RESEARCH ACTIVITY

Urban areas are increasingly vulnerable to climate change, making sustainable urban development and environmental management critical. Cities face rising threats from natural hazards such as droughts and floods, which significantly impact urban environments. Effective urban environmental management is essential for overcoming these challenges and achieving sustainable development. It aims to guide development in ways that capitalize on opportunities, avoid hazards, mitigate problems, and prepare people for unavoidable difficulties by improving adaptability and resilience. This approach integrates the natural, built, and socio-economic environments to create sustainable urban ecosystems.

The increased risk of natural disasters due to urban development and climate change underscores the need for effective emergency response. Managing urban environments during emergencies is complex and further complicated by cities' inherent vulnerabilities. A comprehensive approach to urban emergency management, including prevention and all-hazards strategies, is crucial. Integrating environmental and emergency management during reconstruction is also vital for addressing environmental justice and equity issues. According to the Centre for Research on the Epidemiology of Disasters and the UN Office for Disaster Risk Reduction, from 2000 to 2019, 41% of people affected by natural disasters were impacted by floods (1.75 billion individuals), while 35% were affected by droughts (1.43 billion people).
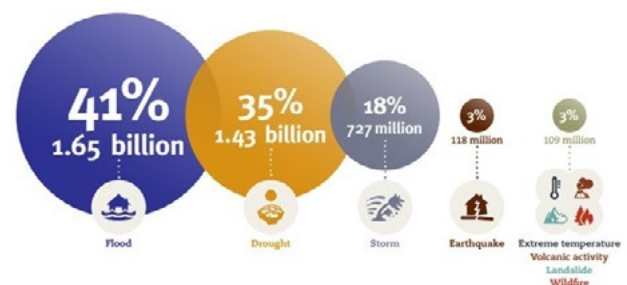
This research focuses on applying high-resolution geospatial data and digital twin technology to enhance urban resilience and environmental management in Turin, Italy. It explores how digital twins, combined with advanced geospatial data, 3D modeling, and artificial intelligence, can address climate change challenges.

A key objective is to develop a dynamic, real-time dashboard to provide insights into climate-related risks and support decision-making for urban planners, policymakers, emergency responders, and community organizations. This dashboard will use AI for risk mapping, offering early warnings and actionable data to mitigate the impacts of natural hazards. It will enable stakeholders to visualize climate change impacts and predict future risks, promoting proactive urban management.

The methodology includes acquiring high-resolution 3D models, real-time sensor data, and historical environmental data to create a comprehensive digital twin of Turin. This model will simulate real-time conditions and future scenarios, focusing on urban drought analysis. Existing drought indices will be adapted to Turin's characteristics to identify vulnerable areas, simulate drought scenarios, and assess impacts on water resources, infrastructure, and public health. The final output will be a user-friendly dashboard visualizing environmental monitoring data and future climate risks.

Integrating geospatial data, AI, and 3D modeling within the digital twin framework aims to provide an advanced tool for urban planners and policymakers to better manage environmental risks. This research aligns with UN Sustainable Development Goals (SDGs) 11 (sustainable cities), 13 (climate action), and 15 (life on land). Additionally, the results will serve as a communication tool to engage the public and raise awareness about local climate change impacts, contributing to more resilient cities and offering a valuable case study on digital twin technology for urban management.

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COURSE	XXXIX cycle - 1st year
RESEARCH TITLE	Urban Regeneration through Creative Valorisation of Industrial Heritage: From Abandonment and Degradation to Aspiration and solution for Socio-Territorial Reconstruction in the Banat Mountains
TUTOR(S)	Nicolae POPA, Egidio DANSERO

ACADEMIC CONTEXT

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HIGHLIGHTS OF THE RESEARCH ACTIVITY

Deindustrialization, shifting industrial needs, and urban expansion have left many industrial structures abandoned in city centers, disrupting the urban fabric and degrading surrounding areas. Despite these challenges, industrial heritage offers a valuable link to the past, with historical and cultural significance that can be leveraged for present and future use (Alfrey & Putnam, 2003; Dansero & Spaziante, 2016). The Banat Mountains region of Romania, the country's first classic industrial zone (Chebuţiu, 2010), exemplifies these issues, particularly in its mono-industrial cities, which were heavily impacted by deindustrialization.

This research focuses on repurposing industrial heritage to foster socio-territorial reconstruction in deindustrialized cities. The project aims to evaluate the potential of creative industries as catalysts for urban regeneration and socio-economic redevelopment in small and medium-sized mono-industrial cities.

Aligned with Romania's 2022 National Circular Economy Strategy and the circular economy's principles of Reduction, Reuse, and Recycling (Ghisellini et al., 2016), this study emphasizes the reuse of industrial heritage over greenfield development. Such an approach mitigates urban sprawl while revitalizing disused industrial sites. Historically, industrial sectors not only drove economic growth but also fostered social cohesion and a strong local identity. Leveraging creative industries and embracing cultural openness and sustainability can transform deindustrialized cities into vibrant, regenerated spaces.

The study employs a mixed-method approach, combining qualitative and quantitative methods, including observation, questionnaires, interviews, and geospatial analysis. By providing a geographical perspective, the research aims to inform strategies for repurposing industrial heritage through creative industries. It also explores how these reconversion projects can drive economic growth, strengthen community ties, and support sustainable urban regeneration in the medium term.

NAME	**Valeria LONGHI**
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COURSE	XXXIX cycle - 1st year
RESEARCH TITLE	Geomatics to support knowledge, monitoring and conservation of the marine ecosystem in the Mediterranean basin
TUTOR(S)	Andrea Maria LINGUA, Filiberto CHIABRANDO

ACADEMIC CONTEXT

– Burguera A., Bonin-Font F. and Garcia-Fidalgo E., 2017. Building large-scale coverage maps of posidonia oceanica using an autonomous underwater vehicle. In: *OCEANS 2017 - Aberdeen*. Aberdeen, UK: IEEE, pp. 1-6. https://doi.org/10.1109/OCEANSE.2017.8084607.

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EXTERNAL COLLABORATIONS

– Biru srl Agricola - co-financer of the PhD grant
– University of California, San Diego - host for research period abroad

HIGHLIGHTS OF THE RESEARCH ACTIVITY

The ocean covers about 70% of Earth's surface, making it the largest livable space on our planet. Yet, a significant portion of it remains unexplored. As of 2023, only 30% of the world's seafloor has been mapped, highlighting the unknown beneath the waves.

Marine ecosystems play an essential role in our world. These complex systems, rich in biodiversity, are responsible for producing over half of the world's oxygen and absorbing a significant portion of atmospheric carbon dioxide. They also provide food and livelihoods for millions of people and other organisms.

However, increasing climate change and human impacts are modifying marine biodiversity and the stability of marine ecosystems. As a result, there is a growing demand for high and very high-resolution 3D metric products capable of documenting these changes. Geomatics, with its array of tools and methodologies, offers a promising way to address these challenges. However, for the underwater environment, geomatics techniques are not yet as mature and consolidated as those already available for aerial and terrestrial surveys. Therefore, one of the aims of my project is to try to bridge this gap, at least in part, with innovative geomatics methods.

My area of study is the sea surrounding Culuccia Island, in the north of Sardinia. It is my testbed and headquarter of Biru, the company that co-funds my scholarship. I will focus on the underwater scale of study of these ecosystems using underwater photogrammetry. I will explore innovative underwater techniques using RGB cameras and hyperspectral cameras enclosed in waterproof cases. The main challenges in an underwater environment like this will be obtaining accurate positioning and dealing with geometric and radiometric distortions of the images, caused by different light paths through the camera lens system for each wavelength. One future development could be the creation of a Digital Twin (DT), a 3D replica of the marine area of study that could provide comprehensive knowledge of the ecosystem and its processes and health status. It could also offer the possibility of modeling forecasts and supporting policymakers in making informed decisions.

NAME	**Alessio MAZZARO**
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COURSE	XXXIX cycle - 1st year
RESEARCH TITLE	The wetness of knowledge: Arts-based methodologies, participation, agonism and failure in water governance
TUTOR(S)	Antonio DI CAMPLI, Paul RAMIREZ JONAS, Elisa BIGNANTE

ACADEMIC CONTEXT

– Bueno J., de Campos L., Mazzaro A. and Granceri Bradaschi M., 2024. Rediscovering Rivers in the Brazilian megacity of San Paolo: Leveraging Water Sensitivity in the urban governance. In: M. Granceri Bradaschia, F. Magni and F. Musco, eds. *Climate Change Adaptation, Flood Risk, and Beyond. Planning for Climate Proof Cities*. Cham: Springer, pp. 259-283.
– Da Cunha D., 2019. *The invention of rivers*. Philadelphia: University of Pennsylvania Press.
– Duranti A., Brenneis D., 1986. The Audience as Co-Author. *Text: An interdisciplinary journal for the study of discourse*, 6(3), pp. 239-248.
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EXTERNAL COLLABORATIONS

– Lab Itaim Paulista & Universidade Mackenzie (visiting period in São Paulo)

HIGHLIGHTS OF THE RESEARCH ACTIVITY

The research project establishes links between two fields: the production of knowledge through participatory artistic practices and the ecological crisis investigated in Water Urbanism through the concept of Wetness -the elusiveness of water (Da Cunha 2019). It is chosen to focus on two Latin American megacities built through the displacement of water, Sao Paulo and Mexico City, as advantageous sites to observe how water re-manifests in the space not assigned to it, disputing its pure technical and managerial governance. While in this situation the decision making arena opens up to the participation of other forms of knowledge -as the ones brought by collectives of inhabitants- the neoliberal governance of water happens in an agonistic and conflictual condition in which multiple views, desires and imaginaries coexists.

Acknowledging the complexity of these cities, the Phd research hypothesizes that citizen participation produces new ecologies of knowledge crossed by failures, fractures and conflicts, and that it serves to define conditions of coexistence rather than definitive forms of government. In addition, it is sustained that participatory art methodologies have the potential to favor the study and initiation of these ecologies in which knowledge manifests as a product of the conflict and interaction, between the competing hopes and imaginaries, that inhabitants, technicians, lobbies and politicians pour onto water bodies. Doing so, the research posits a new model of knowledge production about water and a rewriting of citizen participation through the lenses of failure, agonism (Mouffe, 2013) and cognitive justice (de Sousa Santos 2014).

The actions for governing water in Sao Paulo and Mexico City, as well as the state of the art of the case studies, are reconstructed using literature, conversation with local subjects and microhistories. Issues of participation fatigue, clashes of different paradigms on how to inhabit with water and ways to expand the urban design imaginary are addressed in the investigation to innovate the role of inhabitants and understanding how to use artistic methodologies operatively in planning and the study of agonistic arenas. Finally, the research studies how new ecologies of knowledge could help us learning to negotiate with the possibility of continuous failure, inhabiting the ruins of previous water management paradigms.

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COURSE	XXXIX cycle - 1st year
RESEARCH TITLE	Shaping a Sustainable, Inclusive, and Digitally Enabled Greener Future: Evaluation of Affordable Positive Energy Districts
TUTOR(S)	Sara TORABI MOGHADAM, Patrizia LOMBARDI, Adriano BISELLO

ACADEMIC CONTEXT

– Benoît Norris C., Traverso M. eds., 2020. *Guidelines for Social Life Cycle Assessment of Products and Organizations 2020*. Paris: United Nations Environment Programme (UNEP).
– Torabi Moghadam S., Delmastro C., Corgnati S. P. and Lombardi P., 2017. Urban Energy Planning Procedure for Sustainable Development in the Built Environment: A Review of Available Spatial Approaches. *Journal of Cleaner Production*, 165, pp. 811-827. https://doi.org/10.1016/j.jclepro.2017.07.142.
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EXTERNAL COLLABORATIONS

– EURAC research, Bolzano

HIGHLIGHTS OF THE RESEARCH ACTIVITY

Urban areas contribute 60% of greenhouse emissions. From 1990-2019, global energy consumption climbed by 38% and global CO_2 emissions from buildings increased by 50%. An important aspect of any research is the "Background Problem." In this case, the problem is "Climate Change" which has "led to the need for Near Zero-Energy Buildings (NZEB) and now Positive Energy districts (PEDs)." These alterations need heavy investments, and it is currently unclear how the "vulnerable class" of society will be involved in this process, presenting another problem.

The ProLight project was developed to solve these problems. It focuses on social inclusion, lifestyle betterment, reduction of GHGs and sustainable development. This will help in fostering dialogue between diverse cultures and ages.

The three sustainability pillars – economic, environmental, and social – are very essential to assess in any development project. However, the social aspect is often omitted or is not paid much heed, a postulation which was upheld in the literature review as well. Therefore, this research principally focuses on the social aspects of the European Union's ProLight Project and seeks to understand how social housing for vulnerable people can be made better and more effectively assessed.

Among the available social assessment techniques, Social Life Cycle Assessment (S-LCA) was selected to evaluate the social housing in the ProLight demo districts. Reference values will be taken from the respective country where the demo site is located, and both qualitative and quantitative data will be used. Qualitative data will be gathered through questionnaires, workshops and interviews, while the quantitative data will be collected directly from the site and city's databases.

S-LCA will assess impact categories and subcategories that affect the stakeholders, both positively and negatively across different life cycle stages. The results of this S-LCA study will help in understanding if the refurbishments help in enhancing the stakeholder's well-being and social inclusion. This research will support the decision makers to determine whether the refurbishments are worth replicating at other places. Finally, a reference guide and a digital tool will be developed for this methodology.
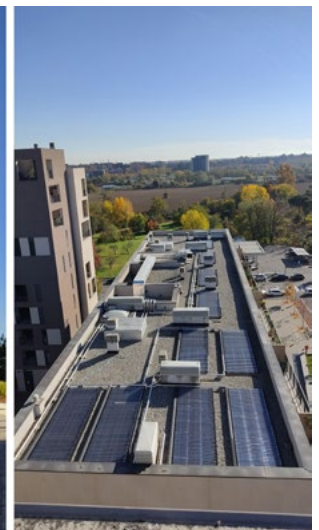
NAME	**Giulio Gabriele PANTALONI**
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COURSE	XXXIX cycle - 1st year
RESEARCH TITLE	Paperless Urbanism. Urban planning innovation and the digital transition of spatial government
TUTOR(S)	Carolina GIAIMO, Andrea AJMAR

ACADEMIC CONTEXT

– Arena A. 2017. I GIS per l'implementazione e la gestione dei dati nei Piani Urbanistici Comunali. In: *Atti della 21° conferenza nazionale ASITA*, Salerno, 21-23 November 2017.
– Danese M., Lanza V. and Manzione N., 2008. Un modello di dati spaziali con interfaccia web per la pianificazione urbanistica comunale: il caso del comune di Laurenzana. In: *Atti della 12° conferenza nazionale ASITA*, L'aquila, 21-23 Ottobre 2008.
– Giaimo C., Pantaloni G.G., 2021. Note metodologiche per un Atlante delle dotazioni Territoriali. *Urbanistica informazioni*, 296, pp 80-84.
– Regione Piemonte, 2020. *Urbanistica Senza Carta. Sistema informativo per la gestione dematerializzata dei procedimenti urbanistici*. https://www.regione.piemonte.it/web/sites/default/files/media/documenti/2018-10/usc_presentazione.pdf.

EXTERNAL COLLABORATIONS

– Host for research period in Italy: Città di Torino, Divisione Urbanistica e Qualità dello spazio costruito

HIGHLIGHTS OF THE RESEARCH ACTIVITY

Since the 1990s, the growing availability of data, information and open-source software capable of managing spatial information has made Geographic Information Systems (GIS) and Spatial Data Infrastructure (SDI) increasingly important in planning processes at various scales. Historically, since the 1970s, GIS have evolved from basic databases for cataloguing technical and thematic cartography to advanced tools for the analysis and geo-statistical processing of spatial data.

Nowadays, some Italian regions such as Piedmont, Tuscany and Emilia-Romagna, equipped with their own Geoportals and SDI, are experimenting with projects aimed at simplifying urban planning processes involving different administrative levels and supporting strategic environmental assessment or land consumption monitoring, through the dematerialization of processes and the provision of shared databases.

However, despite regional efforts to address issues related to shared databases and the efficiency of urban planning through common digital data protocols, there remain open questions about how to effectively use digital tools and technologies to monitor the implementation and day-to-day management of general urban planning tools at the local level. These challenges need to be addressed locally, in line with regional initiatives and in compliance with international standards such as the INSPIRE Directive of 2007.

TOWARDS A GEOSPATIAL INFRASTRUCTURE FOR TURIN'S URBAN PLAN

In this context, the research explores strategies, addresses and operational proposals for innovating urban planning procedures, integrating service management and facilitating the digital transition of urban planning in the City of Turin. In order to achieve that, the research investigates methods and tools for organizing, distributing, and rationalizing urban planning data related to the General Municipal Regulatory Plan (PRG) of Turin and its implementing measures, from the basic building permits to the more complex implementation tools. The research, starting with the application of the IT specifications provided by the Piedmont region's Urbanistica Senza Carta (USC) project, intends to experiment with the creation of an urban planning database and digital interface to facilitate the management of the plan and the monitoring of its implementation status.

The research also aims to explore a second case study, either Italian or European, where the application of such methodologies and tools is already an established practice, analyzing its characteristics and functionalities.

NAME	**Anja PEJOVIC**
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COURSE	XXXIX cycle - 1st year
RESEARCH TITLE	Street redesign for pedestrian comfort and active mobility
TUTOR(S)	Riccardo POLLO, Luca STARICCO

ACADEMIC CONTEXT

— Nieuwenhuijsen M., 2021. New urban models for more sustainable, liveable and healthier cities post covid19; reducing air pollution, noise and heat island effects and increasing green space and physical activity. *Environment International*, 157, 106850.
— Aumann S., Kinigadner J., Duran-Rodas D., Büttner B., 2023. Driving Towards Car-Independent Neighborhoods in Europe: A Typology and Systematic Literature Review. *Urban Planning*, 8(3), pp. 84-98.
— Gössling S., 2020. Why cities need to take road space from cars - and how this could be done. *Journal of Urban Design*, 25(4), pp. 443-448.

HIGHLIGHTS OF THE RESEARCH ACTIVITY

The research addresses the connection between the two topics of high importance in the framework of climate change mitigation and adaptation in urban areas – redesigning streets as open healthy spaces that foster and promote active mobility, and thermal comfort as an essential requirement for the usability of public spaces and heat-related health risk mitigation.

The majority of urban open areas are designed for motorised vehicles, emphasising the role of the street as a means for maximising car efficiency and space for transportation, stripping it of its social dimension and placing people in the margins of public spaces. This car-centric city planning has caused various problems related to health, environmental pollution and increased vulnerability to climate change effects. To address these issues, cities have been developing different policies and strategies to promote active mobility modes, due to their benefits for health, safety, climate change mitigation, lower costs and spatial requirements. Reallocation of portions or entire streets to active transport, to transform the neighbourhoods into more liveable and human-centred spaces, requires a comprehensive approach that considers their social, economic, behavioural, cultural, health and environmental aspects. These transformations must address the issues of environmental exposure, especially to extreme heat and air pollution as major health risks in the urban open spaces. However, while there is growing research both in the domain of microclimate and thermal comfort improvement and street redesign for active mobility, these two topics are rarely researched together. The preliminary investigation of the literature indicated a lack of contributions connecting the two issues and highlighted the need for further research. The systematic literature review aimed to understand the impacts of street transformations to promote active mobility on different aspects of public spaces. Analysis of the scientific literature on the implemented strategies indicated the consideration for microclimatic conditions mainly in a qualitative manner, highlighting the lack of quantitative methods application.

The aim of the research is to fill the gap between thermal comfort analysis and its application in urban planning strategies that promote active mobility, enhance sustainable street redesign and public space quality improvement.

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COURSE	XXXIX cycle - 1st year
RESEARCH TITLE	Students, Cities, and Housing Commodification: urban challenges and policies and examples of resistance in the Turin university context
TUTOR(S)	Loris A. SERVILLO

ACADEMIC CONTEXT

– Bossuyt D., Notermans L., 2022. Housing policies by young people, not for young people. Experiences from a co-creation project in Amsterdam. *Journal of Housing and the Built Environment*, 37(3), pp. 747-762.
– Chatterton P., 2010. The student city: an ongoing story of neoliberalism, gentrification, and commodification. *Environment and Planning A*, 42(3), pp. 509-514.
– Hubbard P., 2009. Geographies of studentification and purpose-built student accommodation: leading separate lives?. *Environment and Planning A*, 41(8), pp. 1903-1923.
– Smith D. P., Holt L., 2007. Housing advantage? The role of student renting in the constitution of housing biographies in the United Kingdom. *Environment and Planning A*, 39(6), pp. 1428-1444.

EXTERNAL COLLABORATIONS

– FULL – the Future Urban Legacy Lab (co-financer)
– PRIN LINUS - LIviNg the UniverSity city: student housing as driver of changes

HIGHLIGHTS OF THE RESEARCH ACTIVITY

Universities implement policies to attract large numbers of students without taking into consideration the hosting capacity of colleges. This leads to a phenomenon known as studentification, in which neighbourhoods previously inhabited by families and local residents are invaded by college students. The rapid transformation of neighbourhoods creates social tensions and a rift between the student and local communities. This phenomenon is aggravated by the lack of an adequate public housing plan. Increased student demand for housing pushes up rental prices, making it difficult for local residents, especially low-income residents, to find affordable housing. This leads to increased economic and social inequality and the marginalization of local communities.

Against this backdrop, the free market operates, exploiting the growing demand for housing by students to profit from it. Real estate investors -but also small scale investors, such as small property owners, families seeking extra income- speculate on the purchase of houses or apartments for use as student housing, often disregarding the quality and welfare of students in order to maximize their profits. This speculation leads to higher housing costs for students, who often find themselves forced to pay high rents for poor-quality

housing. Precarious housing contributes to greater financial instability and can negatively affect students' academic performance and mental health.

Added to this is the growth of the student population, which has had major effects in both urban dynamics (physical, social, economic and cultural). This impact does not always have positive effects; in fact, there is talk of studentification and conflicts between students and residents and students and tourists in reference to both in the sphere of distribution in the urban plot and in the restructuring of the housing market and the commercial sector. In response to the capitalization of student housing, some students have found alternative self-managed solutions. They created activism groups to defend housing affordability, establishing support and solidarity networks to share information and help each other in their search for housing.

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COURSE	XXXIX cycle - 1st year
RESEARCH TITLE	Analysis of Urban Green Infrastructures for Improving Pedestrian Thermal Comfort and Walkability
TUTOR(S)	Andrea AJMAR, Fabio Giulio TONOLO, Luca STARICCO

ACADEMIC CONTEXT

– Shooshtarian S., Rajagopalan P. and Wakefield R., 2018. Effect of seasonal changes on usage patterns and behaviours in educational precinct in Melbourne. *Urban Climate*, 26, pp. 133-148.

– Elnabawi M.H., Hamza N. and Dudek S., 2016. Thermal perception of outdoor urban spaces in the hot arid region of Cairo, Egypt. *Sustainable Cities and Society*, 22, pp.136-145.

– de Quadros B.M., Mizgier M.G., 2023. Urban Green infrastructures to improve pedestrian thermal comfort: A systematic review. *Urban Forestry & Urban Greening*, 88, p. 128091.

HIGHLIGHTS OF THE RESEARCH ACTIVITY

My research has two aspects: The impact of Urban green infrastructures on microclimatic conditions and secondly the impact of microclimatic conditions on use of space as well as on thermal sensation and pedestrian comfort. The considerable complexity and unpredictability of the outside thermal environment, spatially and temporally, that I have been studying lately indicates that the indoor-developed theoretical thermoregulatory models fall short of accurately describing outdoor comfort scenarios. Air temperature, wind speed, humidity, and thermal radiation are the environmental factors that affect thermal comfort and provide thermal satisfaction. The amount of clothing worn and metabolic processes have an additional impact on the heat produced and released by the human body. Thus, a small range encompasses the entire thermal comfort zone.

It has become increasingly challenging to compare and comprehend the efficacy of the factors most influencing pedestrian behavior to outdoor climate adaptation due to a lack of research on psychological and behavioral adaptation in outdoor areas. Instead of focusing on accurate and localized predictions, outdoor thermal comfort is usually evaluated using large-scale complex models that consider entire cities, neighborhoods, or districts. The determination of the acceptable range of thermal comfort for pedestrians in outdoor environments is influenced by a number of factors, including the kind of activities they engage in, how often they visit, how long they spend outside, their cultural background, the type of clothing they wear, and their gender and age.

The impact on pedestrian usage patterns and behaviors varies with changes in the seasonal climate. Any attempt to encourage people to stay outside may not be successful if the true usage patterns of the visitors are unknown. The understanding of the usage pattern of outdoor spaces in any chosen context depends on the thermal comfort level of that context. My research explores the effects of heat conditions on usage patterns and behaviors of pedestrians and their walking count.

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COURSE	XXXIX cycle - 1st year
RESEARCH TITLE	Rethinking the accessibility and configuration of Urban Green Areas under the impact of summer heat waves. An application to South-European cities
TUTOR(S)	Luca STARICCO, Riccardo POLLO

ACADEMIC CONTEXT

– Li M., Gu S., Bi P., Yang J. & Liu Q., 2015. Heat waves and morbidity: Current knowledge and further direction-a comprehensive literature review. *International Journal of Environmental Research and Public Health*, 12(5), pp. 5256-5283. https://doi.org/10.3390/ijerph120505256.

– Aram F., Higueras García E., Solgi E., Mansournia S. & García E. H., 2019. Urban green space cooling effect in cities. *Heliyon*, 5, 1339. https://doi.org/10.1016/j.heliyon.2019.e01339.

– Schüle S. A., Hilz L. K., Dreger S. & Bolte G., 2019. Social inequalities in environmental resources of green and blue spaces: A review of evidence in the WHO European region. *International Journal of Environmental Research and Public Health*, 16(7). https://doi.org/10.3390/ijerph16071216.

– Cucca R., Thaler T., 2023. Social Justice in the Green City. *Urban Planning*, 8(1), pp. 279-282. https://doi.org/10.17645/up.v8i1.6850.

HIGHLIGHTS OF THE RESEARCH ACTIVITY

In the context of always increasing frequency of extreme heat events, especially attenuated in the urban context given the presence of the Urban Heat Island effect, it emerges the necessity to mitigate and adapt our cities to these phenomena in order to provide higher liveability and quality of life and decrease the morbidity and mortality associated with these events.

One of the most effective strategies to counteract these phenomena is vegetation and green spaces, which in the actual state of a lot of cities, are characterised by limited accessibility, especially when taking into consideration the most vulnerable and in-need population, resulting in strong spatial inequalities. Another issue of many urban areas is given by the dense urban fabric and the scarcity of available space. From these considerations emerges the necessity to study how to increase the provision and accessibility of the urban green spaces and their associated cooling effect in the most feasible way, by maximising the coverage with minimal land use transformations, and through the lens of the spatial justice.

The specific objective of the current work is two-folded.

Firstly, it is aimed to redefine the accessibility model by incorporating components that would reflect the impacts of the thermal environment on the pedestrian behaviour. On one hand, it will be studied the cooling effect of the green areas (as part of the attractiveness component), on the other hand the pedestrian thermal discomfort experienced along the routes of access (as part of the generalised cost of travel). This refined model would be of an extreme importance for the future planning of cities and for the more accurate evaluation of underprovided areas.

The second objective of the current work is to develop an optimisation tool that will support the urban green spaces regeneration and planning, by implementing two parameters, which have never been taken into account together until the current moment, and indeed the accessibility and the cooling effect of the green areas. This tool would be very useful in contexts characterised by dense urban fabric since it is planned to be able to maximise the accessibility and the cooling effect by minimum land use change.

With this research, it is believed that an important support will be given to the local authorities for the planning of more just and healthy cities.

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COURSE	XXXIX cycle - 1st year
RESEARCH TITLE	Climate change impacts on winter proximity tourism in the north-west Italian Alps
TUTOR(S)	Alessandro PEZZOLI, Francesca Silvia ROTA

ACADEMIC CONTEXT

– Steiger R., Knowles N., Pöll K. and Rutty M., 2022. Impacts of climate change on mountain tourism: a review. *Journal of Sustainable Tourism*. https://doi.org/10.1080/09669582.2022.2112204.
– Scott D., Rutty M., Amelung B. and Tang M., 2016. An inter-comparison of the Holiday Climate Index (HCI) and the Tourism Climate Index (TCI) in Europe. *Atmosphere*, 7(6), p. 80. https://doi.org/10.3390/atmos7060080.
– Salmela T., Nevala H., Nousiainen M. and Rantala O., 2021. Proximity tourism: A thematic literature review. *Matkailututkimus*, 17(1), pp. 46-63. https://doi.org/10.33351/mt.107997.

HIGHLIGHTS OF THE RESEARCH ACTIVITY

As is well known, proximity tourism is gaining ground as an emerging trend in the post pandemic era, with an increasing number of people choosing destinations within easy reach of urban areas. In this context, mountain and alpine areas become favoured locations for those seeking refuge from the city, prompting practitioners to carefully evaluate the impact of such flows on the local economic and environmental fabric. At the same time, climate change presents new challenges for mountain tourism, particularly winter tourism, negatively affecting the reliability of seasons and the availability of natural resources. These changes require a strategic response from mountain destinations, which must reconsider and adapt their tourism offerings to the new climatic conditions. Prominent in this context is the importance of measurement tools such as the Holiday Climate Index (HCI) and the Climate Index for Tourism (CIT) used to assess a specific location's climatic propensity for tourism. These indices consider variables such as temperature, rainfall, and wind to determine the ideal periodicity of tourist visits, orienting proximity flows accordingly. To implement this research, a comprehensive methodology has been devised. It consists of (1) Climate Analysis: The study utilises climate data from both model and station. This data, combined with tourist information, forms the basis for developing two questionnaires to understand tourist preferences. (2) Questionnaire Development: The first questionnaire is designed to capture the preferences of skiers, focusing on both climatic factors and the tourist service offerings. The second one explores alternative preferences among tourists, considering both skiers and non-skiers, and considers the presence or absence of snow. (3) Creation of the Winter Tourist Index (WTI): By averaging the results from both questionnaires, the study will construct the WTI, which reflects the overall preferences of winter tourists in the mountains and is expected to serve as a valuable tool for assessing and adapting tourism offerings to the evolving climatic conditions. The research aims to offer an integrated approach to sustainably enhancing tourism in mountain regions. By combining climate data with tourist preferences, the study seeks to provide a comprehensive assessment of the appeal of mountain destinations during the winter season.
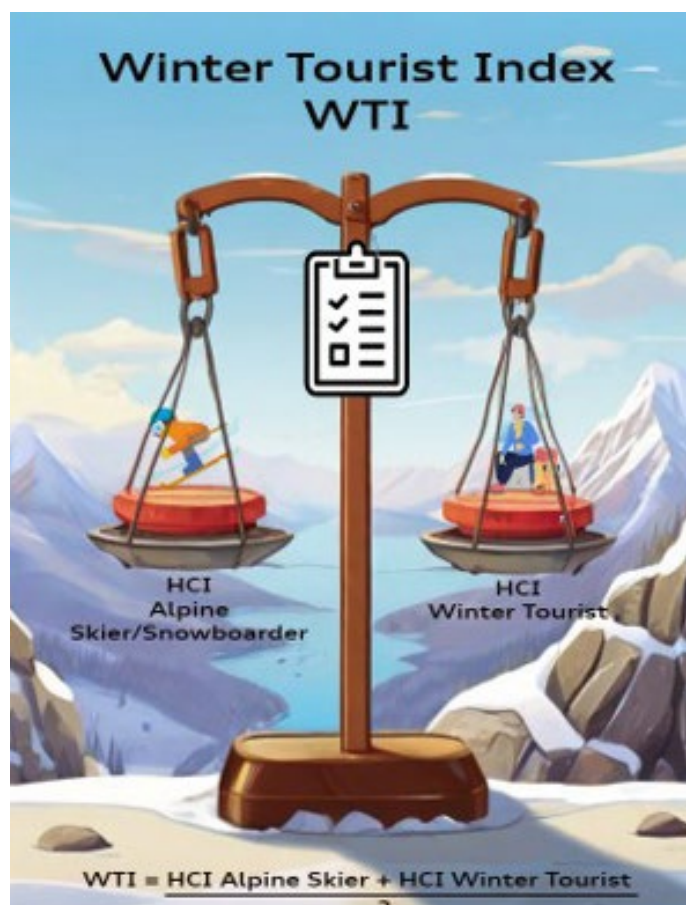
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COURSE	XXXIX cycle - 1st year
RESEARCH TITLE	Understanding student residential dynamics in a university city: An agent-based modelling approach in the city of Turin
TUTOR(S)	Marco SANTANGELO, Giovanna SEGRE, Roberto LEOMBRUNI

ACADEMIC CONTEXT

– Smith D., 2005. "Studentification": the gentrification factory?. In: Atkinson R., Bridge G., eds., *Gentrification in a Global Context: The New Urban Colonialism*. London: Routledge, pp. 72-89.

– Cenere S., Mangione E., Santangelo M. and Servillo L., 2023. Setting up a University City. Geographies of Exclusion in North Turin. *Tijdschrift voor Economische en Sociale Geografie*, 114, pp. 400-414.

– Boeing G., Waddell P., 2017. New Insights into Rental Housing Markets across the United States: Web Scraping and Analyzing Craigslist Rental Listings. *Journal of Planning Education and Research*, 37, pp. 457-476.

– Ahmed M.S. Mohammed, Ukai T., 2023. Understanding students' residential dynamics around university campuses: A computational agent-based modelling approach. *Proceedings of International Exchange and Innovation Conference on Engineering & Sciences (IEICES)*, 9, pp. 101-108.

HIGHLIGHTS OF THE RESEARCH ACTIVITY

The research offers a new perspective on the transformation of urban spaces through the phenomenon of studentification. Using statistical methods, modelling and simulation of market supply evolution, student dynamics and spatial geographies, the study aims to develop a tool to support both policy makers and investors. The rapid development of neighbourhoods around universities requires advanced, rapid and predictive methods to complement existing research and provide insights that can be acted upon in real time.

Investment strategies are often more adaptable to change, while policymakers must navigate complex political processes and manage pressure from multiple stakeholders. These include providing appropriate spaces for citizens, ensuring an attractive environment for investment, and attracting students and tourists from around the world, many of whom will hope to stay in the city after completing their studies. In this challenging context, the research aims to improve the responsiveness of policy-makers by providing ex-ante predictive assessments, enabling more informed and timely decision-making that takes into account both local and external demands. The research uses data obtained through continuous monitoring and web scraping of advertising portals on the web. This database provides comprehensive information on the private rental housing market, which is used to create a real-time map of private student housing supply. In addition, anonymised and geocoded data on students enrolled at the Polytechnic University of Turin and the University of Turin are another valuable source of data. This feature allows a detailed mapping of the student population across the city, a particularly relevant insight for students living off-campus.

The analysis ranges from traditional quantitative approaches, such as assessing economic impacts such as changes in housing prices, to qualitative methods that explore socio-cultural issues. The integration of agent-based modelling (ABM) represents a significant methodological advancement, offering a deeper understanding of the complex, dynamic interactions within student-dominated housing markets.

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COURSE	XXXIX cycle - 1st year
RESEARCH TITLE	River Sensitive City. Sensible Gaze to Reassemble Entanglements within Urban Water
TUTOR(S)	Loris Antonio SERVILLO, Daniel Julien FLORENTIN

ACADEMIC CONTEXT

– Barchetta L., 2021. *La Rivolta del Verde. Nature e Rovine a Torino* (I). Milano: Agenzia X.
– Latour B., 2004. Why Has Critique Run out of Steam? From Matters of Fact to Matters of Concern. *Critical Inquiry*, 30.
– Swyngedouw E., 2004. *Social Power and the Urbanization of Water*. Oxford: Oxford University Press.
– Wong T. H. F., Brown R. R., 2009. The water sensitive city: Principles for practice. *Water Science and Technology*, 60(3), pp. 673-682.

EXTERNAL COLLABORATIONS

– Financiers / Associated Entities: Compagnia di San Paolo, Città di Torino
– Associated research lab: Future Urban Legacy Lab at Politecnico di Torino

HIGHLIGHTS OF THE RESEARCH ACTIVITY

In recent decades, the growing and evolving awareness of urban water has heightened the sensitivity of various disciplines to the role of urban rivers in contemporary cities. As discussions on urban water, once dominated by technical sectors, have expanded to include broader social, environmental, and governance perspectives, calls for a paradigm shift have become increasingly prominent. Criticisms of traditional urban water systems have emerged not only in theoretical discourse but also from practical fields such as urban planning, leading to a recent proliferation of innovative strategies, projects, and political frameworks. The need for more integrative approaches—socially and politically engaged—to managing urban water is increasingly recognized as essential to addressing urban uncertainties.

This research aims to contribute to this ongoing discussion by exploring the opportunities presented by novel, water sensitive strategies, with a focus on the city of Turin. Like many other European cities, Turin historically intertwined its urbanization with water, particularly during its industrial era. However, this connection has since faded, leaving behind neglected and abandoned spaces. The research seeks to understand how the newfound sensitivity to urban water can generate operational responses that promote river-concerned urban development.


Initially, the study seeks to qualify the recent paradigm shift in how urban waters are conceptualized, drawing valuable conclusions for the regeneration of urban rivers. Following an inductive approach, it deepens into areas of water concern, studying references and exploring how water-sensitive approaches materialize in practice. It also examines the social, economic, and institutional frameworks these approaches rely on. Ultimately, the research asks what an appropriate operational response to this new water awareness might look like, particularly in relation to river-concerned development in Turin.

Through this study, the research aims not only to address the challenges of urban water systems but also to explore the broader relationship between the river and the city, considering the role rivers might play in Turin's future development. By following these emerging trajectories, the thesis seeks to engage stakeholders, urban communities, and scholars in river-concerned thinking and to propose new approaches to urban planning that center on the needs and potential of urban rivers.
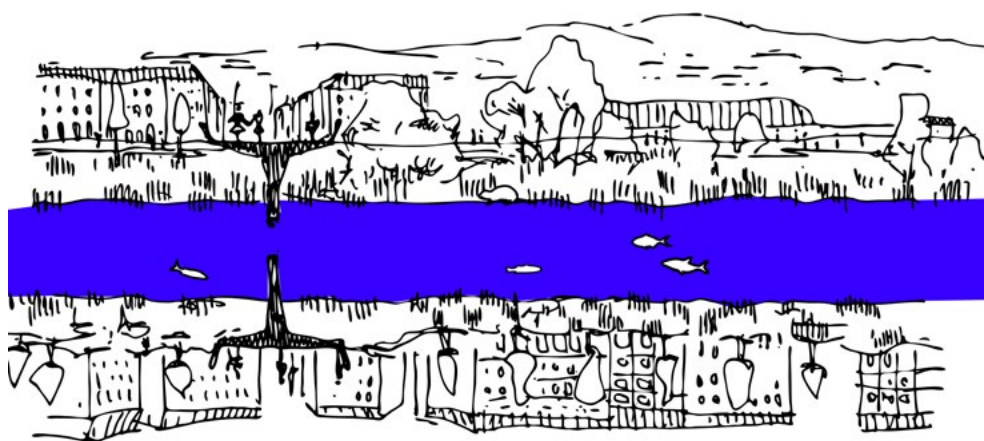
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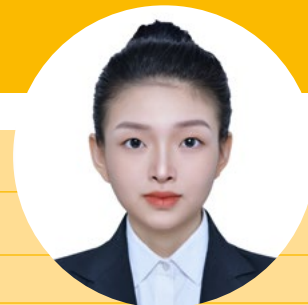
COURSE	XXXIX cycle - 1st year
RESEARCH TITLE	Sensor-based data collection (IoT) for network condition monitoring and emergency management
TUTOR(S)	Cristina PRONELLO, Shlomo BEKHOR

ACADEMIC CONTEXT

– Liu B., Lam C.T., Ng B.K., Yuan X. and Im S.K., 2024. *A graph-based framework for traffic forecasting and congestion detection using online images from multiple cameras*. IEEE Access.

– Liu C., Yang H., Ke R., Sun W., Wang J. and Wang Y., 2023. Cooperative and comprehensive multi-task surveillance sensing and interaction system empowered by edge artificial intelligence. *Transportation Research Record*, 2677(9), pp. 652-668.

EXTERNAL COLLABORATIONS

– MOVYON SPA: the company with which there is a continuous collaboration within the PNRR project and to which the research is addressed. MOVYON is a company controlled by ASPI (Autostrade per l'Italia).

HIGHLIGHTS OF THE RESEARCH ACTIVITY

The research focused on developing a comprehensive framework for collecting data on environmental and traffic monitoring, particularly for the Tangenziale di Napoli, case study of the PNRR project. This framework assesses various aspects of traffic and environmental conditions through a layered prototype, ensuring multi-dimensional data collection. A four-step methodological approach was adopted to achieve the research objectives. The first activity is the definition of Indicators and KPIs; this initial step involved determining critical metrics for monitoring key factors like air pollution, noise levels, and traffic flows. The second step is the data collection. A comprehensive review of existing literature and market analysis was conducted to identify the most appropriate sensors to collect selected data. This led to the selection of sensor types capable of capturing essential environmental data. Followed by data analysis design, a robust data analysis framework was developed to ensure that the incoming information will be structured and analysed appropriately. The last task is the prediction and benchmarking, to meet European Union and Italian regulations on infrastructure noise and environmental pollution standards; a comprehensive review of relevant legislative frameworks was undertaken. Data on permissible pollution limits were collected and compiled into a database, serving as an essential reference for ongoing monitoring activities. In parallel with IoT-based research on network monitoring, the team wrote a paper titled A Review and Classification of Multi-Criteria Decision-Making Methods for Highway Asset Management, submitted to the Transportation Research Board (TRB). The paper examines the effectiveness of multi-criteria decision analysis (MCDA) strategies in highway asset management, a critical aspect for extending the service life and improving the efficiency of transport infrastructure. Despite the frequent use of MCDA methods, there remains a lack of comprehensive evaluation for specific asset management applications. To address this gap, the research included an extensive literature review to identify key terms associated with road assets, and to make a comparative analysis of various MCDA approaches. The findings revealed that, despite some limitations, the Analytic Hierarchy Process (AHP) remains popular due to its simplicity and effectiveness in decision-making. The paper provides both theoretical insights and practical recommendations, guiding decision-makers based on the strengths and limitations of different methodologies.

PAST CYCLES

XXXVI CYCLE

Marco ALIONI
Gravitational Geometries of Exclusion: Infrastructuring injustice in Brescia (Italy) and Newark (New Jersey, US)

Deepan ANBARASAN
ICT in Public Transport: Exploring the Potential of IoT and Machine Learning in the context of Automatic Passenger Counting Systems

Simone BELTRAMINO
Spatial Planning for Energy-Resilient Territories and Cities

Luca BERTOCCI
The Archipelago. Envisioning the Urban Revolution amid the Planetary Flood

Francesco BRUZZONE
A methodological framework for evaluating the equity impacts of High-Speed Rail

Donato CASAVOLA
Characters in Search of an Author. Unfolding the territorial governance of Italian Metropolitan Cities

Jhon Ricardo ESCORCIA HERNANDEZ
A Digital Spatial Assessment Framework for Sustainable Social Housing in the Post-Pandemic Era - A Case Study of Bogotá, Colombia

Allegra EUSEBIO
When the plan is not enough. Civil Protection Emergency planning for effective Disaster Risk Reduction

Mauro FONTANA
Beyond marginality: welfare, governance and institutions, spatial imaginaries and policies. Insights from 'Terres Monviso'

Ximena Rocio GARZON RUIZ
From Data to Decisions: A Comparative Study of Machine Learning and Statistical Approaches in Estimating Passenger Counts

Alessio GENTILE
Understanding hydrological processes at different scales through stable water isotopes: a focus on alpine ecosystems

Lorenzo MAULONI
From the border to the street: migrants' inhabitation and politics of life in the surroundings of Tiburtina station, Rome

Beatrice MECCA
Fostering value creation in architecture

Michele MONDANI
Cryosphere processes and hydrogeological systems: analysis and interactions

Richard Lee PERAGINE
The project of emptiness Sovereignty, the weaponization of space and architecture in the Bosnian krajina

Maria Cristina PINTO
Opportunities and challenges of green hydrogen in the energy transition framework: analysis of potential cross-border cooperations through a multi-dimensional approach

Caterina POZZOBON
Bodies of water: an intersectional geography of waters in rural Tanzania

Mattia SCALAS
Framing the local resilience unit as a post pandemic planning paradigm. A case study in the city of Turin, Italy

Agostino STRINA
How Food Logistics Is Changing Our Cities. Large-Scale Retail Trade Distribution Centers in Italy

Cristina Maria Dorina VIANO
Blockchain for civic initiatives in the urban space

Valeria VITULANO
Spatial Planning & Ecological Transition. How to integrate Green Infrastructure into the Urban Plan

XXXV CYCLE

Martina BOCCI

Rehabilitation of traditional heritage and local development. The role of the transmission of traditional construction knowledge and the empowerment of local communities in the reactivation of marginal places. A case-study approach

Daniela DE LUCA

Digital, Interactive and Sensory Experiences exploiting VAR technologies for the Cultural Sector in Society 5.0

Karl Benjamin KRAEHMER

Degrowth at a Global Scale? Geographies of Chile¿s Fruit Production and Export between Extractivism and Socio-Ecological Transformation

Marco MASSANO

GIS-based model-coupling platform for smart energy and renewable technologies integration in Energy Communities

Cecilia MEREGHETTI

Analyzing cultural initiatives: effects on subjective wellbeing in urban areas. Capitals of Culture compared through textual analysis and Machine Learning

Francesco NURRA

The diversity of retail trade in contemporary cities: a geographical perspective. From informal street vending to halal landscapes

Carlotta QUAGLIOLO

Spatial biophysical-economic impact assessment of Nature-Based Solutions (NBS) for Urban Climate Change Adaptation

Manuela RONCI

Designing coexistence. European strategies to plan and design biodiverse urban landscapes

Federica ROTONDO

Reinterpreting Urban Transitions. Spatial conditions, actors and implications in energy renovation of public housing neighbourhoods. Insights from Italy and France

Ornella SALIMBENE

Participatory Approach for the Monitoring of Air Pollution in urban environments (PA-MAP)

Kibrom TESFAY

Urban-rural linkages for food: related opportunities and challenges in both municipal planning and governance of the food system; in case of Addis Ababa City and its hinterland, Ethiopia

Ingrid VIGNA

Wildfire risk: a participatory approach in an alpine socio-ecological system

XXXIV CYCLE

Fabrizio AIMAR

Social Resilience and UNESCO Cultural Landscapes. The Relation between Social Resilience

Velia BIGI

Vulnerability to Natural Resilience and the Lanscape Identity

Francesca BLANC

Testing Comparative Spatial Planning Studies in Latin America. Case Studies from Ecuador and Bolivia

Francesca Caterina BRAGAGLIA

Ruling the Unruled? The Institutionalisation of Social Innovation in Spatial Planning

Alessandra BUFFA

Integrating Resilience Concept and Urban Form: the Pandemic Crisis Experience of Covid 19

Caterina CAPRIOLI

Agent-Based Model and Geographic Information System (GIS): an Integrated Approach to Test Sustainable Policies and Urban Transformation Scenarios

Elisabetta COLUCCI

Development of a Geo-Spatial Ontology to Support the Documentation of Minor and Abandoned Historical Centres

Giulia DATOLA

Toward Resilient Cities: Assessing Urban Resilience Performance Using a System Dynamics Approach

Valerio DELLA SALA

The Olympic Villages and Olympic urban planning. Analysis and evaluation of the impact on territorial and urban planning (XX-XXI centuries)

Arianna FONSATI

InfraBIM Tools and Methods Applied to Organizations' Implementation Process

Chiara GENTA

Exploring Assessment Frameworks and SDGs Interlinkages for Implementing Circular Economy Strategies in European Urban Contexts

Elena GIGLIO

The Future of Energy Transition between Critical Materials and Geopolitics. Lithium and the South American Context

Martina GIZZI

Geothermal Resources Exploitation from Disused Hydrocarbon Wells: an Investigation Tool for the Reuse Strategies Analysis

Pinky KUMAWAT

Using Attitudes and Green Consciousness as a Determinant of Travel Behaviour and Market Segmentation

Erica MANGIONE

Housing the Student Population in the Post-Industrial University City

Danial MOHABAT DOOST

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Stefano QUAGLIA

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Carlotta SCIOLDO

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Francesca TAORMINA

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Urban Metabolisms of the Green Transition. The Commodity Chain of Lithium-Ion Batteries from the Atacama Plateau to Zero-Emission Cities

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Leonardo RAMONDETTI

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Niccolò RAPETTI

BIM implementation for infrastrucutre projects. Methods and tools for information modeling and management.

Pablo Angel RUFFINO

Digital built heritage: use cases of existing building through BIM-based approach

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Beyond globalized visions .Problematizing urban theory through spatial readings of the Pearl River Delta

Francesco SEMERARO

The Building Information Modelling and Management approach for Public Contracting Authorities of infrastructure projects

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Merve DEMIRÖZ

Conservation of Izmir Historical City from Traditional Plans to Entrepreneurial Governance

Vincenzo DI PIETRA

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Urban/rural co-productions. Planning and governance approaches for improving the relationships among city and countryside in Italy and England

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Mobility as a Service (MaaS) in suburban and rural areas: concept design and challenges

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Valerio OPERTI

Travellers' Preferences and Attitudes to understand Travel Behaviour and define Market Segmentation

Constantin SANDU

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Diego Danilo VITELLO

Planning for the New Geography of Manufacturing

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