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Manfred SCHRENK, Vasily V. POPOVICH, Peter ZEILE,
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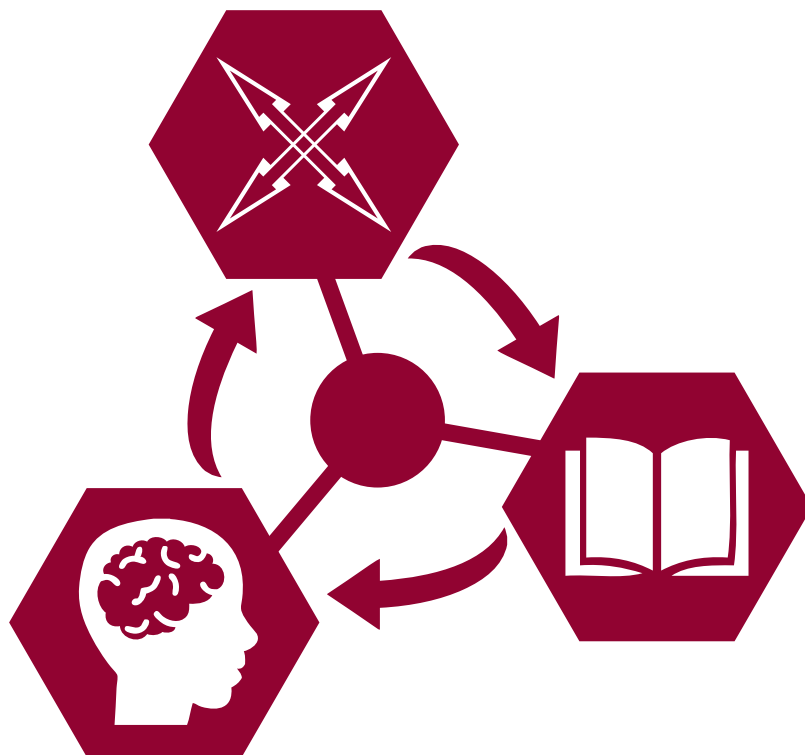
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MOBILITY, KNOWLEDGE AND INNOVATION HUBS IN URBAN AND REGIONAL DEVELOPMENT

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**REAL CORP 2022:
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in Urban and Regional Development**

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Beiträge zur

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Edited by

**Manfred SCHRENK, Vasily V. POPOVICH, Peter ZEILE,
Pietro ELISEI, Clemens BEYER, Judith RYSER**

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PREFACE

Manfred SCHRENK,

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President CORP – Competence Center of Urban and Regional Planning*

WELCOME to REAL CORP 2022, the 27th International Conference on Urban & Regional Development and Spatial Planning in the Information Society at Airport City Space in Vienna!

The overall topic of this year's conference is "Mobility, Knowledge and Innovation Hubs in Urban and Regional Development".

Mobility hubs are far from being limited to their function as transport hubs. They are multifunctional and versatile places of encounter. In places where many people come together, information and knowledge are exchanged and new ideas are developed. Since mankind has become sedentary, such hubs have formed where the exchange of people, goods, but also ideas and knowledge takes place. With the rise of cities, this process has intensified and today, when almost 60 % of the world's population lives in cities, dealing with this centre function is more important than ever.

New challenges keep emerging that keep us busy maintaining and developing the functions of such hubs:

- Societal transformation and changes in population and ageing structures require adjustments to both urban structures and rural areas.
- The climate crisis simply does not allow us to continue as before. Ecological footprint, energy performance certificate and climate governance are not mere buzzwords, but important fields of action to steer future developments.
- The increasingly easy access to all forms of mobility on land, water and in the air is not only changing our settlement and social structure. The construction and operation of mobility infrastructure is often resource-intensive.
- Above all this hovers the sphere of digitisation. Much is already possible without having to physically move for it – data, information and knowledge move instead.
- In recent years, the pandemic has shown how quickly our structures can be shaken to their foundations even without "conventional" natural disasters. The diverse reactions and the struggle to return to normality, which continues to this day, have produced some remarkable results.

REAL CORP 2022 addresses the links between society's innovative achievements and the confronting demands of our environment, cities and settlements. In order to achieve acceptable sustainable development, spatial planning and related disciplines need to carefully address current trends and influence them with appropriate governance mechanisms to maintain and improve the quality of life, but also to decisively address the concerns of our ecosystem. We therefore invite contributions from all disciplines involved in urban development in order to analyse the challenges for the future of urban spaces in a holistic manner. In addition to science-based contributions, we also welcome practice-based reports on short-term measures and/or long-term strategies for urban and regional development.

This year we brought together some 200 participants from more than 30 countries worldwide. The main goal of the REAL CORP conference series is to bring together leading experts in the field of spatial planning, geoinformation and related disciplines to exchange their knowledge, share their ideas, discuss current developments and get together for face to face networking leading to the development of new thoughts, partnerships and projects.

The success of the REAL CORP conferences is – clearly without doubt – the result of the efforts of participants, reviewers, and the conference organising team. We would like to acknowledge the Reviewer Team and Programme Committee members for their valuable voluntary help with the review process. Our thanks go to all participants and authors of the submitted papers as well. The proceedings of this year's conference contain around 120 scientific papers; some 90 of them were selected after a double-blind, double-stage (for both abstracts and full papers) peer-review process for publication and presentation at REAL CORP 2022. The non-reviewed papers were accepted by the programme committee after a double-blind abstract review.

Welcome to Vienna! Have a great conference!

Manfred SCHRENK, Clemens BEYER & the REAL CORP Team

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Die Arbeiten geben die Erkenntnisse und Ansichten des jeweiligen Autors wieder
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Keynote: Metropolitan Integrated Planning Co-Construction of the Meta-Logistics District

Antonella Contin, Valentina Galiulo

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1 ABSTRACT

Accelerating the ecological transition and access to sustainable mobility through a partnership between metropolises, cities and districts fostering the dialogue on science, technology and innovation to contribute to a global strategy tackling climate change problems is fundamental. In the contemporary city, due to the conflict of scales, we must understand how to relate metropolitan scale to the local one. Starting from the metropolitan dynamics connected to the logistics sector, one of the main territory negative impact makers, the paper introduces the Metropolitan Cartography tool to obtain a meta-project necessary to achieve sustainable development by dealing with SDGs applications and bringing together different disciplinary knowledge. The research field of action is two transects of metropolitan landscape, which identify two possible logistics *meta-districts*. The first is in the Città Metropolitana di Milano a West-East transect from Milan to Melzo, which is intersected by the second, South-North, which starts in the Piacenza, Emilia Romagna Region intermediate city. The research project first aim is to produce a cartography tool able to define the circumstances of sustainable plan and design of the entire logistics meta-district transects studying the mobility's impacts. The second research's aim argues about the necessary condition to produce a sustainable local archipelago system's design project linked to the logistics meta-district's transect "last mile" that can be directly managed by the local communities. Nevertheless, it must be designed to be connected to the metropolitan grid.

Keywords: metropolitan grid, meta-district, sustainability, logistics, integrated planning

2 THE DIFFERENT SCALES OF INTERVENTION

2.1 Metropolitan approach to complexity's perspectives

If sustainable mobility is considered only a technical fact for economy or law (laws and decrees), the disciplinary field concerned will be very narrow. Our metropolitan approach to complexity also induces the perspective of the physical and geographical components of the territory and the city.

To be able to think of a project on the use of sustainable mobility as a regional and metropolitan process up to the archipelago scale of local net-grids, we must reflect upon the relationship between metropolitan cities, medium, small towns and neighbourhoods. Moreover, the research deals with how to go down from the regional and metropolitan scale to the hyper-local scale. We imagine an integrated system of sustainable mobility, pinned in precise hinge points working in synergy at the different scales, up to the definition of the smart grid for the urban-rurban-rural-natural linkage patterns.

The issues we can/should cover with our studies are many:

1) Innovation is one of the keys to enabling the development of local communities. Existing innovative solutions and technologies grown for big city markets must be adapted and proven effective for Italy and Europe's multifaceted context to bring economic, environmental, and health benefits. Can we think of evolutionary innovation? That is, a systemisation of technologies that today in the country work not in unison.

2) The proposal will be concerned with demonstrating innovative climate adaptation, mitigation and sustainable energy solutions in the social, economic and environmental spheres. In addition, the project will have to explain the benefits of the proposed solutions with particular regard to Sustainable Development Goals 4, 5, 7, 8, 11, 12, 13 through the use and implementation of local Metropolitan Cartography data (Contin, Giordano, and Nacke, 2021). The significant engagement of civil society in implementing research proposals is also key to the success of possible technological solutions. Attracting private investors to sustainable mobility solutions will contribute to sustainable economic development for the benefit of the metropolitan area, intermediate cities and neighbourhoods.

3) R&I policies must be coupled with capacity building and appropriate financing solutions to facilitate market uptake and technology diffusion. Sustainable local economic development should also include identifying the workforce's technical, professional and educational needs and proposing relevant training and qualification activities for policymakers. In our proposals, we have developed capacity building and tools teaching the approach to metropolitan complexity in its four components: physical, social, economic and governance from policymakers, civil servants, and local leaders to practitioners.

4) Demonstrations of the value of these solutions are still needed by observing the impacts of the proposed solutions on the environment, climate change objectives and the social and economic dimensions. Monitoring the results at the different scales through a set of indicators and the open-source Metropolitan Cartography maps will be an essential outcome of the proposal.

5) Developing and implementing a customised and local approach to the sustainability process from manufacturing to education and recreation capable of improving a value chain at different scales and identifying the most harmonious relationships based on the local context, the local material supply chain, the local workforce, the green economy but also the new horizons of online commerce. The goal is to ensure sustainable local economic development through sustainable mobility. The value chain applies at different scales, and what is variable at the local scale becomes invariable at the global scale.

2.2 Specific Local Scale Project Issues

In the intermediate areas between logistics and the urban fabric, entire areas often remain abandoned and cannot find an opportunity for conversion to new uses. On the other hand, a large amount of land is urbanised and intended for parking lots and areas dedicated to loading/unloading and storage. In many cases, these areas are used only for a few hours of the day, while for the remaining time, they remain deserted. These areas are completely devoid of common and public spaces, often protected by gates and walls that do not allow any exchange with the city. Still, that produces degradation at their borders, also generating in the citizens a sense of insecurity and hostility towards this productive function of the city, highly polluting, not resolved by the promise of new employment possibilities threatened by the increasingly intensive use of the automation of the logistics activities in the future.

2.2.1 Metropolitan Urbanity and Public Realm

Moreover, the Covid-19 pandemic is a catalyst to reflect on the public space' structures, organisations and habits. It provides an opportunity to create sustainable and positive change in our cities with an impact that will be felt well beyond the crisis.

The specific project's research question is how to maintain the quality of life in metropolitan areas and address climate change and eco-problems by implementing precisely in these areas where the impact on citizens due to metropolitan infrastructural projects is most perceptible. It aims to produce a pattern model together with the practices it allows to interconnect the two city fabrics generating a new urban-industrial-rural ecosystem. At the same time, the location of production units can be the basis for social innovation policies integrated with district regeneration policies (Gouverneur, 2014).

The local space design project, first, must introduce the metropolitan urbanity perspective arguing about what will be the role of sustainable mobility in the construction of the metropolitan city culture.

This fact is strictly related to the perspective of the governance question. We are all aware of the need to change our mentality. Still, at the same time, local governments are not implementing any tools for designing sustainable mobility' structural plan along the entire transect and, in very few cases, at the last mile scale. Moreover, involving the different authorities to work together in synergy is a crucial result. It will be a co-construction between the Academy and other metropolitan agents to formulate legislation that can strengthen this vision and technology, moving from decrees on experimentation to regulating actual city transformation.

Then, we must introduce the data perspective to manage the mobility data production fostering a good city lifestyle. Moreover, the data governance that allows local communities to be masters of their data is fundamental.

The finance perspective deals with the physical infrastructural investment that the project requires forcing us to consider how a project can be used to leverage other assets for the city. Considering existing projects future implementation by investing part of the budget introduces the technological issue perspective and the

proposal replicability perspective. The proposal is about technology, planning, design and policy, which can give a more systemic angle to the project, looking at the enabling environment (the conditions) for achieving sustainability today; and considering the morphological, regulatory, institutional, governance and community engagement aspect. Nevertheless, the sustainable mobility perspective demonstrates that the transition to clean energy has begun: it is planned for 2040 in France, Germany in 2030, and Norway in 2025. However, it is uncertain in Italy. Suppose we want to have a green and digital transitions' impact that means a transformation. In that case, we must consider a project as a resource to build shareholders capital research (Nasi, 2021) to achieve its realisation on the ground.

2.3 General Metropolitan Project issues

The metropolitan architecture project aims to determine an inter-scalar pattern of urban-rurban-rural-natural linkage deriving local strategy from a metropolitan reading.

The project's field of action is where the vast logistics area meets the residential city fabric and the peri-urban agricultural field, determining the risk of abandonment in the first urban crown. The spread of large logistics areas is becoming significant in many cities, which must rapidly learn how to order their territory facing metropolitan dynamics. Large portions of agricultural land are occupied in logistics areas, from buildings destined for freight warehouses and distribution centres. The impact of road handling of goods is also highly polluting for air and water and perceived as a threat by citizens, generating conflict.

2.3.1 The Logistics Meta-District

The issue of poor coordination between transport and spatial planning is explored not only at the local level in each individual country but is also a problem at the central level and thus at the level of the European Union – even going so far as to challenge the fact that some metropolitan agency's decisions lack this vision. Metropolitan planning is a needed keyword and intends to highlight the complementarity and the need to integrate logistics planning with the metropolitan and regional territory. The proposal is to build quality indicators through a data platform capable of defining a spatial quality gradient of places from the perspective of sustainability at different scales. Looking at planning differently involves what we can now call a Logistics Meta-District (OECD, 2006) that poses a series of challenges typical of planning. In theory, the definition of transect linked to the Logistics Meta-District goes beyond the administrative boundaries of municipalities, provinces, regions, and states. The Logistics Meta-District thus becomes a territorial entity to which no administrative entity of reference corresponds. So, the idea is to develop a planning and governance model and a project decision-making tool.

3 THE RESEARCH'S PRODUCT

3.1 A decision support system oriented to the public administration

It is a decision support system oriented to the public administration or public entities to govern the Meta-district transect. It could also be a platform offered to private parties to calculate possible mitigation actions (white certificates). Therefore, it is a question of implementing a tool called Metropolitan Cartography that, through keywords and critical concepts tuned to the principles and targets of the SDGs, can provide a decision-making tool through quality indicators for planning metropolitan logistics caring territories and landscapes. Our proposal envisages the production of Metropolitan Cartography open-source maps able to produce a platform that allows decisions on the entire logistics chain about the planning of the logistics meta-district as metropolitan landscape. Instead of existing software products, which only control the last mile' sustainability, the proposal aims to monitor the impact of logistics on the entire transect and then use quality indicators to plan and design a sustainable territory (Contin, Galiulo, Sánchez Fuentes, 2022). That assesses the land use's inferences through environmental impact data and delivers to policymakers and administrators the tool for the policies' conceptual operators to become territorial operations. Policymakers and administrators can use these maps and then the software to obtain white certificates, first, decide, then, which policies to implement and in which sectors to plan and design a sustainable territory.

3.1.1 The twin transition option

The project interprets the theme of digitisation required by the EU twin transition mission in two ways:

- a) Prototype technology digitisation. This vision should involve the development of a new software studying the Logistics Meta-District sustainability;
- b) Digitization as an enabling technology. In this sense, we can understand digitisation as the identification of opportunities of existing digital tools that impact the planning of the Logistics Meta-District. In this case, the technological component of the project is less disruptive; therefore, we would have a project contained in the transport planning part of the optimisation.

3.1.2 Co-construction of interaction areas toward integrated planning

The issue is that logistical activities are rapidly developing along the transect and need to be observed to monitor their impact. Often, this observation is impossible due to a lack of data, and producing the platform mapping tool's contents that must be fed with the data is unthinkable. Then, the governance project can be developed according to two approaches that can encourage the involvement of the actors in the transect to make data available:

- a) A participatory approach that relies on pricing leverage sees logistics players entering the ecosystem of this platform by inserting the data in their possession and participating in planning decisions. It is a question of devising an objective incentive that monetises the sharing of data (3% discount on IRAP or permission to enter the TL zone without paying);
- b) A coercive carrot-and-stick approach.

In second hypothesis, observation takes place without the involvement of data producers. In this case, the project would produce data using, for example, trajectories only.

The proposal should provide also a platform that observations of passive data and operational data provided by companies can feed.

3.1.3 The need for a metropolitan scale vision and the dimension of the landscape boundary. The areas of interaction

The transect of the Logistics Meta-District is a strip of land with variable width. Concerning this strip, the sustainability of logistics is based on the CO₂ emission, which has to be evaluated in its impact according to the bio-potentiality of the area. The platform allowing the co-construction of planning rules for the logistics district considers how transport (grey infrastructure) can also be an element of territorial conservation. It helps the policymakers identify the most sustainable trajectory, allowing them to make decisions about environmental and social policies (for example, reforestation is needed where there is a need to absorb CO₂). The issue of logistics landscapes, perhaps one of the most impactful on the territory, must be placed in a metropolitan dimension. The metropolitan vision is crucial as it allows for decisions on environmental and social operations at a large scale, which becomes necessary precisely through observation and collaboration with the logistics transport sector. The issue of logistics is essential on a metropolitan scale because it concerns the whole point of large-scale transnational projects.

Metropolitan areas have become distribution nodes for global supply chains. As the distances involved in sustaining global supply chains have increased, the distribution function has taken on new significance, particularly with the creation of extensive terminal facilities such as ports, airports, rail yards and distribution centres. These facilities handle movements coming from, going to, or simply passing through a metropolitan area, an interface for the global distribution of goods. With containerisation as the tool that supports most international trade, intermodal terminals have become notable features of metropolitan landscapes at different scales. The theme of the scale of the intervention leads us to define the physical, social, economics and governance's dimensions of the boundary, so the project is necessarily multidisciplinary.

4 THE METROPOLITAN PROJECT

4.1 The macroscopic level

Thinking about logistics, in theory, means looking at supply chain techniques. Therefore, there is a macroscopic level of metropolitan planning, i.e. a level that needs to be understood because, in the logic of the decision support system, it is necessary to provide information to enable the public decision-maker to modify the behaviour of the actors involved. According to a definition typical of the discipline of transport, it

is necessary to reproduce the playing field in which logistics actors play. Therefore, it is essential to have a territory that, case by case, is organised according to the structure of the distribution networks serving that region. Moreover, though, reaching the sustainability what is vital to observe are the strategic geographical positions where the facilities of the distribution networks are located and, therefore, where warehouses and distribution centres serving metropolitan areas are located. In the case of Milan, for example, today, warehouses are almost at the city's gates.

4.2 The microscopic level

Today, it is possible in very central areas of the city to see the location of large logistics distribution centres, which should also be part of a definition of geographical and not just supply chain support points.

In the light of the SDGs principles of sustainability (UN-Habitat, 2022), it is necessary to find a point of synthesis between the geographical and economic vision. The mediation point can be related to the micro-level.

According to the Italian Law: n.84-1994, and AC 1259 of 2020 (Parlamento Italiano, 2020), the strategic system planning document presents the definition of the inter-port and city interaction areas saying the municipalities in which they are located have planning sovereignty over their territory, and the inter-port system authority has planning sovereignty over the logistics domain. However, if there are areas where the two planning systems overlap, the two authorities must confront each other and agree on their objectives, which are often very different. That has historically never been the case, however.

If carried forward, this reasoning of the interaction areas between inter-port and city needs a tool that allows the co-construction of decisions on the planning of logistics forecasts starting from a macro metropolitan dimension. At that scale, the list of supply chains indicates how broad the analysis must be because the local flows are part of large over regional flows system. Still, when we enter the microscopic, it is fundamental to define the question of the logistics-city interaction.



Fig. 1: Map of dynamic in Melzo Case study according to Metropolitan Cartography Methodology.

5 THE CARTOGRAPHY TOOL

5.1 Metropolitan Cartography and Quality of Metro-Space indicators

The proposal is to experiment with an implementation of the tool called Metropolitan Cartography generated from a Glossary (TELLme MGIP Software Glossary http://www.tellme.polimi.it/tellme_apps/tellme/login) that allows us to create connections between concepts and keywords (the structural elements of the metropolitan territory) creating a new taxonomy from their relationship. The relations between concepts and keywords harmonised concerning the principles and targets of the SDGs allow us to navigate through the complexity of the data in a controlled manner according to the Metropolitan Discipline. The Glossary, together with the Metropolitan Cartography, serves to help us in the data mining phase to select precisely those data that in the representation between the different scales can help us represent an impact condition on the existing state of territory. The tool conceived by the Tellme co-financed European project has allowed us to generate a set of maps called Protocol Maps, in which information (data) and concepts are packaged through a structure that declines on different scales and themes. These maps are not thematic but synthetic because we have tried to cross-reference data that are not only data relating to the city, i.e. the urban core, but also large-scale spatial data and economic and social data. So, in addition to the global open-source data, we have selected Istat statistical information that we have tried to refine concerning the needs of the Glossary. The maps give us the possibility to understand the structure of the territory. However, our data have not been generated to remain only in a paper space; they can determine Maps of Dynamics within an IT Hub (TELLme Hub <http://tellmehub.get-it.it/>). The project tests how open source data can also have visualisation and validity at the local scale.

The idea is to systemise the open-source data that structure the Protocol Maps through inter-scalar spatial applications that already give a planning vision as a reaction to the metropolitan dynamics that cause the territory's vulnerability. The metropolitan dynamics map allow us to analyse the impact phenomena on the metropolitan transects of the Logistics Meta-District. We thus investigate the spatial, social and economical components that determine degrees of Rural Neglection due to the expansion of unconnected logistics centres. It is a qualitative indicator of Urban-Rural Linkage that interprets the state of care of a rural space that can no longer be described only as such. Rural Neglection is an indicator of the quality of the urban-rural landscape between the interstitial spaces of infrastructured rurality, i.e. areas contained in the system of infrastructural networks between small and medium-sized cities, dependent on the Metropolis for the flows of economic and social capital and territorial regulation. It is an analytical device to establish progressions of spatial quality through Metropolitan Cartography. It is an indicator constructed through the interpolation of open-source data, the same used to build the Protocol maps, aimed at determining and reporting a scale of synthetic values to analyse spatial relations between the multiple physical components of the rural-rurban-urban space under study. The Rural Neglection Indicator is necessary to handle care conditions in metropolitan rural landscapes. The Rural Neglection Indicator aims to determine a value gradient of neglect, abandonment, disorder and lack of care of the place of original agricultural vocation that is now subject to new metropolitan metabolic dynamics and projects.

This indicator is then linked to a second indicator, the Green-Grey Continuity Breakdown, which indicates the break in the continuity of the metropolitan structure constituted by the green-grey infrastructure that does not correspond to generic ecological corridors but also relates to mobility, the existing infrastructure system and the public realm. It is a tool to determine structural sensitivity in specific urban-rurban-rural locations in the metropolitan city at the urban scale. The continuity of the Green-Grey Infrastructure (Contin, Giordano, Nacke, 2021) has not yet been achieved and determined at the project scale. Green-Grey Infrastructure Breakdown is a qualitative indicator that allows representing the fragmented character of metropolitan landscapes, in specific urban-rurban-rural contexts, through a design reading aimed at marking forms of discontinuity, heterogeneity and structural hybridisation between the spatial categories belonging to Green Infrastructure (London City Hall, 2018) and those belonging to Grey Infrastructure. These are places where the existing architecture and urban fabric often do not cooperate with the formal matrix of the metropolitan landscape units to determine unitary interventions that intend to give new shape and new meaning to the places of the city.

Quality indicators are capable of defining a range of quality gradations at different scales, which, starting from the open-source data, will make it possible to systemise and interpolate the various concepts and thus

the multiple levels of information which we deduce from the Protocol Maps (Contin, Galiulo, Sanchez, 2021). To create quality indicators, the study from the macro metropolitan scale focuses on specific landscape units determining a research frame capable of identifying a unit of action within the broader field of action of the Metropolitan territory. Seeking and often constructing data at a shallow scale that is always open and related to the Metropolitan Green and Grey infrastructure means not considering transport planning as unrelated to achieving sustainability. We have a geographical base determined by a blue infrastructure and a green infrastructure and precisely logistics issues whose relationships are conceptualised through the choice of some Key Words and Related Concepts integrated with information levels contained in the semantic packages of our Glossary.

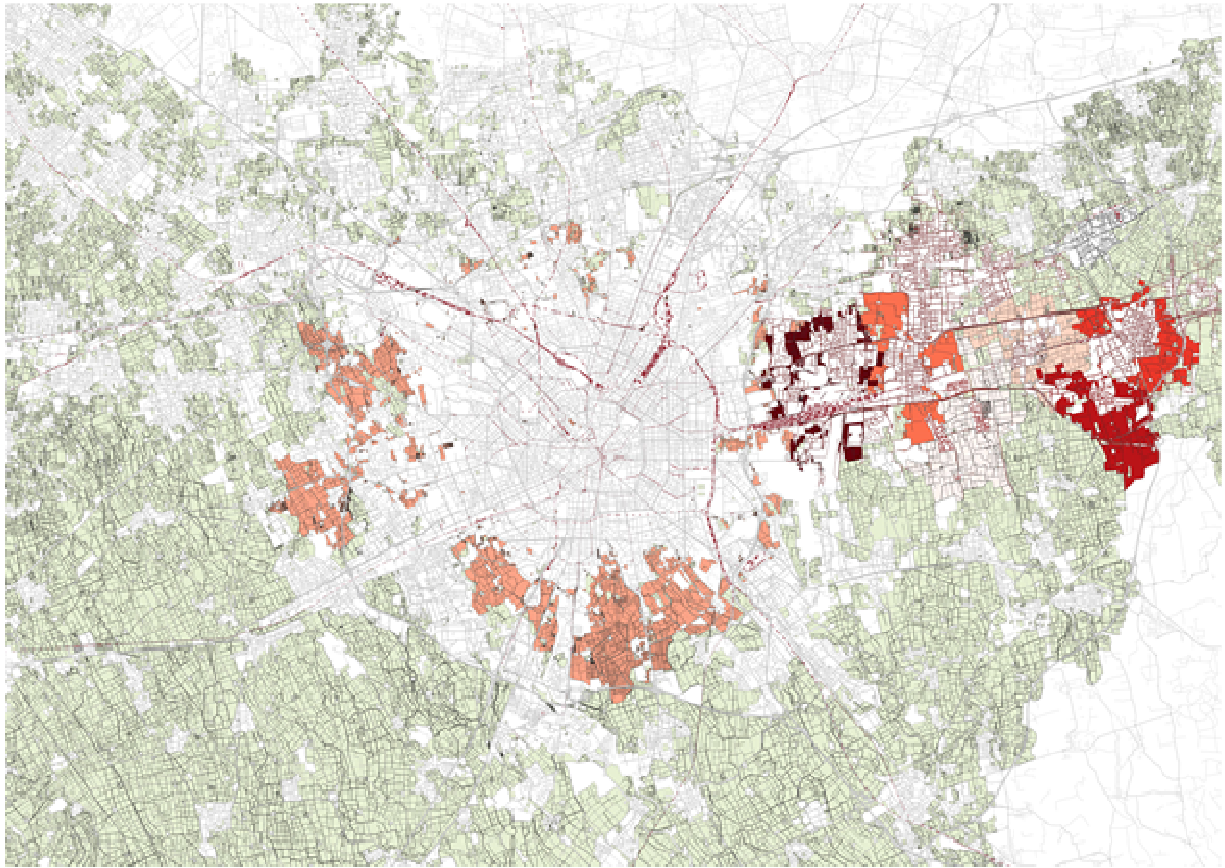


Fig. 2: Metropolitan Area of Milan. Rural Neglection is a qualitative indicator related to Urban-Rural Landscapes in between the interstitial spaces of infrastructured rurality. They are spaces of interdependence from the main Metropolis for flows of productive, ecosystem and social-economic services. Rural Neglection indicates gradients of eco-tonality to establish progressions of spatial quality, through the Metropolitan Cartography's maps.

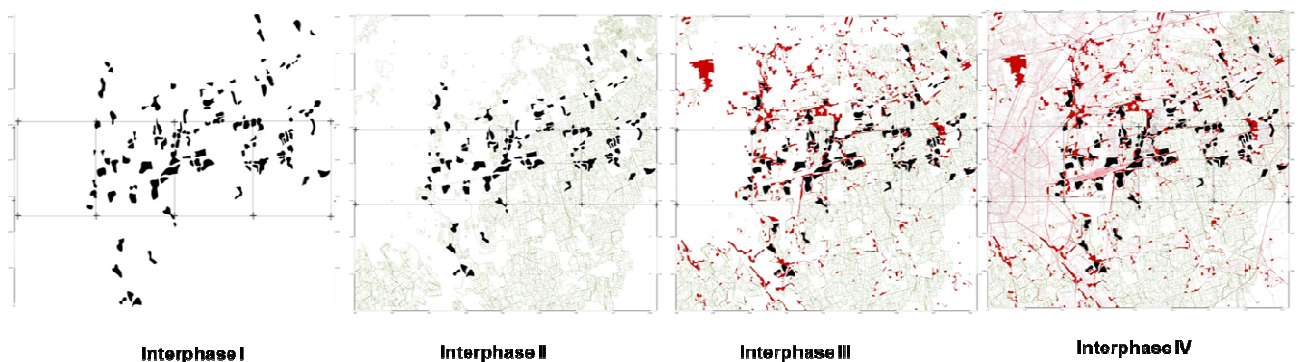


Fig. 3: The urban-rural interphase, in the metropolitan city, is a morphological space, linked to the structural and formal conditions of the land according to Green-Grey Continuity Breakdown

The idea is to systemise the data of the landscape units set on specific quadrants (relative to strategic geographical support points for the project), bounding boxes (micro-action units) and particular field of action (macro-action field) specific to the case study to determine, through our Maps, Meta-projects as plan

for the shareholders' negotiations. We want to stress that it is not only the issue of the impact that interests us (which has already been explored) but also the possibility of generating meta-project maps that can guide administrations' decisions toward priority sectoral policies.

6 THE CASE STUDIES

6.1 Piacenza_Melzo Logistic Living Laboratories. The Logistics Meta-District: Linkage Territory-City-Logistics Pattern

The Metropolitan Architecture Project concerns two areas in the cities of Piacenza in the Emilia Romagna Region and Melzo in the Milan Metropolitan area. The adoption and dissemination of innovative mobility solutions based on best practices, replicable data and planning in the neighbourhood involved in the proposal as a living laboratory contribute to the achievement of the priorities of the European Green Deal (EU Commission, 2019), which stresses that “transport should become drastically less polluting, especially in cities”.

The first case of Piacenza objectives of the project along via Emilia presents the development of the general theme of the optimal distribution of the land use mix both in the urban centres and in the suburbs, looking for the rationalities of the plan to achieve the best combination of residential, commercial, leisure and industrial spaces to reach the most sustainable mobility patterns (integrated mobility) according to the available and future transport demand and supply. Moreover, we want to emphasise the need to determine new patterns of linkage between the territory, the city and the productive areas. This is not only to solve the structural lack of a connection avoiding the fragmentation of areas and the consequent services inaccessibility for the most fragile populations but also, to create a public realm capable of constituting the new idea of inclusive and democratic urbanity at the metropolitan scale.

Obviously, to assess the value of using integrated sustainable mobility at the local scale, it is necessary to understand better the impact of the interconnectedness of HGV freight transport and the burden of e-commerce on unsustainable delivery patterns, such as “just in time” deliveries producing longer journeys with more and more empty light-duty vehicles (LDVs), potentially leading to increased congestion, pollution, greenhouse gas (GHG) emissions and accidents along the transect, right down to the definition of the physical location where the interchange must take place.

The proposal intends to optimise the potential mix of strategically located land owned by public authorities (unused railway tracks and marshalling yards, real estate, car parks) or logistics service providers in urban areas to develop a comprehensive policy strategy and projects on the entire landscape section that integrates transport, logistics and land use returned as common and public space to the community.

Improving spatial management and urban planning by focusing on the “new normal” after the Covid-19 pandemic, considering how cities are optimising space planning and allocation, also means thinking about shared transport facilities for passengers and goods. For example, train/highway/light rail/active mobility interchanges could provide space for bus parking during the day and local delivery centres at night, including integrating transport centres in commercial and office buildings, shortening last-mile delivery distances and providing accessibility for passengers.

Starting from a definition consistent with the sustainability principles expressed by the SDGs, it is possible to demonstrate the viability of economically feasible and design sustainable solutions driven by relevant technologies (e.g. real-time traffic information, space management, electric car data) and the identification of governance/regulatory models that can influence the affordability of sustainable mobility consolidation, unswerving the need for full planning of loading and unloading spaces, to provide services and goods, moving towards a scenario where there is no double parking or no unsafe situations for cyclists and pedestrians in cities that cause congestion and road risk.

The final objective is to rethink the city's structure that integrates its different functions through a linkage pattern based on the definition of the green-grey infrastructure as a tool of interscalarity between urban parts and of a precise landscape image construction defining a new idea of the public realm.

This vision is based on the conviction that the physical dimension of the city determines the implementation of governance (Dente, Bobbio, Fareri, Morisi, 1990) from form to norm. It thus allows a sharing of appropriate principles by the main shareholders (municipality, floating and settled citizens, logistic operators,

couriers, and private institutions) for the development of sustainable and safe practices that determine a sense of metropolitan urbanity capable of connecting the different scales of the city. Addressing the issues of low-emission zone design by employing reliable data leads to the consolidation and management of space by establishing a dialogue with shareholders to define sustainable urban logistics plans and environmentally friendly e-commerce solutions that can also determine new morphologies, functions and new metropolitan urban morphotypes (Contin, Galiulo, 2020).

The case of Melzo is paradigmatic too. The design of the new passenger station connected to the cargo hub must be considered a driver of change for the entire buffer area between the historical city and the new logistics. It must thus connect transversally by giving quality and vertically by generating a public realm that holds together the historic Cascina Triulzia building with its garden and the school complex to the north by rethinking the use of the remaining intermediate agricultural fragments bringing them back to public use.

7 CONCLUSION

Assessing how urban space is used and allocated for the distribution of goods and parking would allow for mitigating impacts on congestion, noise, road hazards, air quality, greenhouse gas emissions and liveability. Still, it would also allow for the return to the city of significant portions of land currently neglected, assessing the impact on the existing and planned sustainable mobility model. The proposal should address the dynamic reallocation of space for the integration of urban freight transport at the local level, the impacts of use on urban and public space, and the optimal mix of space distribution and land use. Project proposals address the potential of strategically positioned urban (or peri-urban) spaces to develop and implement a pilot demonstration integrated with parks, trees or other green recreational areas. The objective is to reduce the impact of freight transport and logistics on the urban fabric through integrated mobility and quality of the public space. Projects could consider the involvement of real estate companies, logistics service providers, together with municipalities and citizens to develop sustainable planning models and spaces designed for open and clean consolidation hubs/spaces in cities (e.g. the use/sharing of existing private locations and other potential areas available in the city), for the dynamic reallocation of spaces building a new pattern of urban, rural, and natural linkage patterns.

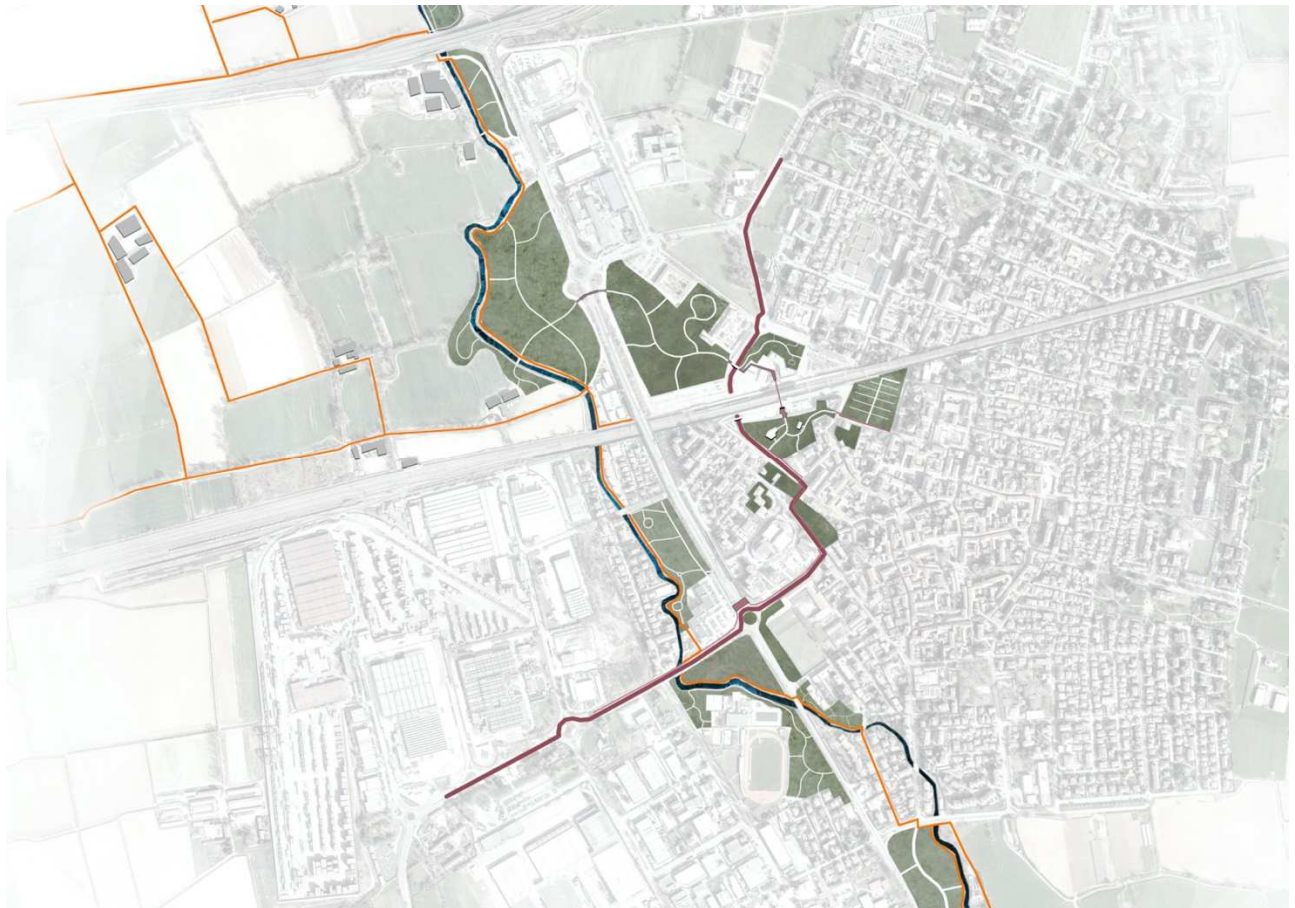


Fig. 4: Strategic Plan for Melzo in Metropolitan Logistic Meta-District of Milan

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