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The cover image shows the Irpinia hills at sunset, highlighting the enhancement of two renewable energy sources: sun and wind.
The photo was taken by Giuseppe Mazzeo in August 2022, in S. Andrea di Conza, Avellino, Italy.

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Buffer areas for sustainable logistics. Assessing their added value towards port community

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Abstract
Port-City interface is becoming increasingly pivotal in both urban and infrastructural sustainable development. Urban centers tend to regain their overlook on the sea, while "gigantic" ships require ports to become bigger and bigger. These convergent processes frequently lead to conflicts and unsolved issues. This is the reason why solutions are often searched in defining specifical and dedicated areas and routes to reduce interferences. Buffer Areas for logistics-related operations and procedures are often mentioned. The present work concerns the stakeholders' engagement process conducted in order to evaluate most suitable areas and relevant features to host these activities before freight vehicles reach the proper port area, thus reducing externalities on ordinary traffic flows. In particular, in-depth interviews to several stakeholders of Genoese Port community were conducted and their results were later mainstreamed into a multi-criteria analysis. Despite not being a structured participatory process, the present methodology could help defining intervention priorities and identifying the added value of this kind of facilities for different members of local port community.

Keywords
Sustainable logistics; Buffer Areas; Port-City interface.

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1. Introduction

The maritime sector constitutes an important segment of the overall transport system, both for the quantitative importance of the goods handled and for the economic and employment dimension.

As far as Italy is concerned, the port cluster as a whole (freight and passengers) generates – considering direct and indirect effects – about 2.6% of the national GDP, registering over 11,000 companies in the sector and 93,000 employees. The multiplicative factor appears to be among the highest and more increasing in comparison with other sectors (from the CENSIS Reports, equal to 2.3 for profit and 1.7 for number of employees in 2009 and respectively equal to 2.9 and 2.4 in 2011) (Censis, 2011; 2019). These levels are also confirmed from the National Strategic Plan of Logistics of 2015 (Ministero Italiano delle Infrastrutture e dei Trasporti, 2015) and the latest IPSOS (2021) research, in recalling that Italian logistics as a whole is now worth 9% of national GDP, second only to manufacturing (18.8%).

However, the congestion levels of the motorway network, with the consequent diseconomies in terms of transport times and costs, contribute to make the entire supply chain less efficient and stimulate research to investigate alternative modes more competitive for the transfer of goods. As known, the whole process is structured in three phases, each of which corresponding to the sections in which the transport service is divided into:

- the overland route from origin to the port of origin;
- the sea route, commonly referred to as short sea transport radius;
- the overland route from the port of destination to the final destination of the goods.

To support this complexity, in the main traffic routes, the focus was often on the construction of "freight platforms" (with rail-road interconnection); another possibility is to set up platforms intended only for the parking of road vehicles which do not perform any load breaking.

The concept of Ro - Ro has undergone a great evolution over the years, both in terms of materials used and in terms of organization of the service.

Moreover, as twenty years of studies confirmed, even the creation of new terminals in minor ports must not be neglected because what makes them competitive is the creation of remote platforms that allow a more effective management of port gates (especially in access), particularly when the logistics yards are quite close to the terminals themselves (Foschi, 2006). In literature, they were called "buffer areas BA": according to the definition made by Musso & Sciomachen (2020) "Buffers are all the zones of the terminal where parts wait to be serviced, such as road and yard". Several BAs already exist and assessed their actual performance and how the new options helped reducing congestion and implementing transport efficiency; one of the best case in Italy is that of Venice.

In scientific literature, they are often related to a choice problem in their location: namely, the increase of container traffic and land acquisition issue for terminal expansion leads to usage of external yard in a port buffer area and scholars investigated requisites and method for a optimized positioning in city-port surroundings (Casaca, 2005; Beretta et al., 2009; Rusgiyarto et al., 2017).

In particular, this paper intends to address the case study of the port buffer areas of Genoa and reflect on the acceptability by the logistic community of these new areas identified.

The relationship between the city and the port has been cyclically conflicting and collaborative in coastal areas (Vallega & Augustinus, 1998; Hoyle et al., 1994; Hall & Jacobs, 2012; Xiao & Lam, 2017). In fact, numerous studies in relationship between city and port have been carried on by universities and research groups from all the world (Hoyle, Pinder and Husain, 1994; Musso & Ghiara, 2007; Haezendonck & Verbeke, 2018). The choices made by Port Authorities or other actors of the port clusters often affected the city scale development more than the Municipality which legitimately governed within the urban boundaries (Garcia, 2008). Moreover, the providers of transport connected services and network operators have a big relevance in all strategical issues concerning urban mobility in the metropolitan areas. On the contrary, port productivity can be heavily

constrained by bottle necks represented by urban node which prefers not to be so accessible and open to traffic of international goods (Rodrigue, 2004; Merk & Notteboom, 2014).

Traditionally, the efficiency and effectiveness have the main place in transport policies and research (Sanchez et al. 2003; Valentine & Gray, 2001; Clark, Dollar & Micco, 2002; Blonigen & Wilson, 2008; Merk & Dang, 2013); but, after the big shift occurred about thirty years ago in EU with the innovative conceptions of the White Papers (1992, 2001, 2011, 2021), the issue of sustainability started to enter strongly in the decision process regarding port infrastructures, and in particular in the latest version of the Papers with its holistic definition (considering also the quality of life, the containment of air emissions) (Alberini, 2021; Chang et al., 2018; Casazza et al., 2019; Lam & Yap, 2019; Gonzalez-Aregall & Bergqvist, 2020; Waterbone, 2021).

At the same time, ports systems cannot stop their rush to productivity and traffic increase, because the confirmed trend towards "ship giantism" selects gradually performative ports which are able to update and enlarge their facilities (Randrianarisoa & Zhang, 2019; Randrianarisoa, Wang & Zhang, 2020; Becker et al.; 2021). In particular, shipping emits approximately 1 billion of CO2 emissions and they are projected to increase by 20-50% between 2008-2050 (nowadays, ships in EU ports emit 13% of the total EU transport emissions). The European waterborne transport sector welcomes the European Green Deal (European Commission, 2019) and is committed to reaching its objectives. In particular, the European maritime technology sector annually invests 8-9% of its turnover in RD&I and is fully committed to develop the solutions needed and to invest accordingly. Moreover, the PNRR (Piano Nazionale di Ripresa e Resilienza) provides in section 3.2 "Intermodality and Integrated Logistics" three reforms of specific interest for the digitalization of logistics. In fact, TTS says in its latest report (2021) that a priority for the country are interventions aimed at improving the efficiency and safety of urban logistics, through the adoption of Information Technology Systems in the various areas of activity and optimization tools (travel planning; booking of loading / unloading areas; tracking and tracing of vehicles and loads).

By literature, a strong connection with SUMP, Sustainable Urban Mobility Plan, is also wished. But, above all, the need is related to logistics studies which are focused on city impacts (positive or negative) as Cerreta et al. already did (2020); very often, the urban asset is in fact considered only as a "theater" of the evolution of port development dynamics. Furthermore, the participatory aspects are sometimes neglected about port development decisions, partly because of the absence of devoted mandatory planning tools concerning the topic within the national and local regulations, partly because of a lack of mature mentality by population, that is urgently needed.

This paper tries to help bridge this gap by presenting the process of engagement and acceptability assessment that was carried out with the stakeholders of the port cluster of Genoa. Being Genova city the sixth municipality in Italy (approximately 560 000 inhabitants) and one of the biggest Italian ports (in terms of variety of typologies of handled goods), its metropolitan area plays a pivotal role in terms of investments and, at the same time, it represents a particularly interesting case-study speaking of relations between urban asset and logistics hub (De Ciutiis, 2010). The geomorphological constraints make the expansion of Genoa's port traffic critical and the latest construction sites planned for the entire Liguria Region on the major roads and motorways have made it urgent to reflect on remote areas, such as buffer areas, for efficiency of the arrival and departure of trucks at the gates. Precisely because spaces for port and spaces for civil use are very narrow and interconnected in the Genoese area and a chaotic and uncontrolled situation is often created, the case study appears particularly interesting from the point of view of how to consider the different opinions around the buffer areas by the actors the community (that are the first interested in solving the problem); once more, participatory processes become essential in order to make logistics more sustainable and consistent with other urban activities (Gonzalez-Feliu & Morana, 2010).

This paper will analyze several methodologies that could be implemented in order to engage and involve local stakeholders in participatory steps to define a shared framework of urban logistics territorial asset (section 2),

focus in the following section 3 will be concentrated on the case-study of Genoa Logistics Hub and the specifical interviews and stakeholders' engagement procedures that have been carried on to investigate buffer areas location and functional layout. In section 4 some evidence and conclusions on the main results of the present study will be carried out.

2. Available Methodologies and Analysis' Objectives

As previously mentioned, speaking of relations between urban asset and logistics activities, stakeholders' engagement and involvement procedures, though rarely implemented, could represent a precious tool to find a point of contact (Debrie & Raimbault, 2016), between the need to make logistics chain more effective and efficient on one hand and to respect time and spaces of the city and its inhabitants. A way to see in the integrations of these two components not only a source of conflicts (Van den Berghe et al., 2022) but a fundamental resource (Raimbault, 2019).

In order to foster and support a stakeholders' engagement process, thus mainstreaming in the assessment and selection of the areas' phase further considerations by the local port community, it was decided to drive a specifical analysis on the areas pre-requisites and features.

The initial and crucial step was represented by the choice of an appropriate assessment methodology that could help facilitating management process, legitimizing and strengthening the credibility of the project, motivating the participants, and which is able to convey potential benefits. To achieve these goals, it could be preferable to:

- outline it in the initial phase of the project;
- structure the process around methodologies that can be objectively controlled and organized in consideration of the crucial moments of the project in order to guarantee their supervision;
- ensure the participation of actors involved.

Starting from these essential pre-requites, most appropriate methodology can be chosen among several techniques applied in the present research field:

- SWOT analysis: highlighting strengths, weaknesses, opportunities and threats related to each of the considered alternatives;
- Benchmarking: providing direct comparisons with similar successful international experiences;
- Cost Benefits and Cost Effectiveness Analysis: comparing positive and negative cashflows;
- Multicriteria Analysis: confronting alternatives considering several evaluations criteria;
- Participatory Social Research (Delphi): following several steps of social interaction and interview to relevant stakeholders and experts.

In particular, in this specific case it was decided to carry out some in-depth interviews, according to the Delphi Research approach, targeting stakeholders belonging to the logistics community of the Genoese hub and, subsequently, to place them in support of a multi-criteria analysis.

The proposed methodology derives from the intersection of the Delphi Intuitive Forecasting Method with Multicriteria Analysis. This methodologies' interaction on one hand provides a statistical technique for obtaining individual weighting of the alternatives thus allowing to mainstream individual considerations and evaluations coming from relevant stakeholders; but on the other hand, it enables to standardize them and attribute a global value to the results obtained as well, thus supporting a final synthesis step.

From a theoretical point of view, the combination of mathematical procedures and forecasting techniques suits well to define non-exclusive scenarios to support the development processes of industrial and experimental research, both in terms of forecasting and defining levels of reliability of the results. These, in aggregate form, can contribute to scientifically validate two steps: starting from the data collection phase where research group

have prepared materials to be showed to interviewees, to that of the choices to be made from policymakers, and from the realization of the project to its ex-post evaluation.

According to this coupled methodology, it would be possible to mainstream stakeholders considerations and evaluations in the process of buffer areas' assessment and selection, thus granting simultaneously a more effective and efficient functioning of logistics chain and a higher level of acceptance and integration within the port ecosystem and community as well.

In particular, in this case, following a preliminary discussion about the state of the art of local logistics, through the presentation of area localisation and possible range of services to be inserted in each Buffer Area to interviewees, after literature and case-studies recognition was conducted, issues were subjected to the attribution of weights by the community, which selected the most useful and appropriate ones with the value assigned to it.

At this point the problem shifts to the determination of the necessary activities and / or initiatives to obtain the results expected by the community itself (planning process).

As far as this matter is concerned, it must be highlighted that this step is particularly critical speaking of city/port interface areas' land use. Being respective values sometimes not-shared and intervention rationales driven by law requirements or market instances (Lami & Beccuti, 2010).

This methodology enables researchers to approach the topic focusing on two aspects: on the one hand, the qualitative, behavioural, intentional one; and on the other hand, the more purely quantitative, statistical, operational (Fig.1).

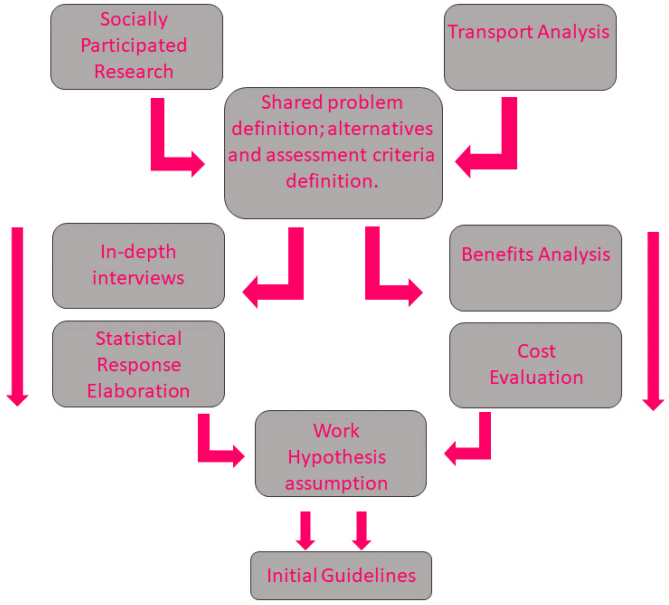

Fig.1 Methodology Flow Chart

In addition, in-depth interviews allow to grasp and highlight the decision-making aspect of the choices, elements that determine individual behaviours. In this way, different interests, sensitivities and needs that influence the work of the subjects who in various ways make up the Genoese logistics community can emerge. However, a subsequent phase of quantification, of attribution of the weights relating to the various alternatives, to the possible scenarios, their hierarchization, according to the method of multi-criteria analysis, allows to operationally estimate the demand (for services, transport, parking) expressed by these stakeholders. The choice to combine participatory social research approach with quantitative assessment methodologies, such as that deriving from multi-criteria analysis, not only aims at reaching greater levels of comprehensiveness, but it represents a precise operational choice.

The quantitative analysis, in fact, intuitively more immediate for the identification of a reference scenario between different alternatives, however falls within the range of the statistical-descriptive models often used for the estimation of demand in the transport sector, and as such allows the elaboration of a model starting from the interpretation of experimental data.

This therefore prevents the replicability of these considerations, binding them to the considered context. A higher, more general degree of knowledge of the dynamics can only be achieved with the analysis of the social, economic and behavioural aspects that characterize the reference community. In fact, this makes it possible to trace the causes of the behaviours implemented and to establish exportable relationships, with appropriate corrections, also in other similar contexts. Despite not being a real participatory process itself, this initial step could represent an important moment to face local port community needs and instances, thus integrating them into the decisional procedures.

The questionnaire includes the request for expressions of the will in part referring to entirely technical aspects, in part to more aspects of vision and future propensity. Despite having detailed questions, it was decided to address varied categories of the urban logistics sector, in order to collect an opinion on issues perhaps not relating to the category itself, but which could still be interesting to understand how this topic it is perceived. This aspect is particularly relevant, also from a scientific point of view, as it allows to safeguard the general intention of the Delphi-Method: the fact that, even on objective questions, the interviewee provides incorrect answers is not decisive. On the other hand, it is interesting for those who have to plan and / or technically support the process to record the sensitivity of the employees in some fields, as well as the more or less structured knowledge at the time of questioning on more technical issues.

In details, major issues addressed by the present survey have been the following:

- definition of the general appeal of a buffer area network of spaces located along the main access routes to Genoa's port in every direction, in terms of location and provision of services, considering the necessary tools and infrastructures, technical, technological, orographic constraints, etc., and verifying the stakeholders and partners to be involved;
- evaluation of a project implementation priority, which may result in a progressive implementation process along the time axis, or as a pricing policy with repercussions on revenue and therefore economic - financial considerations.

Considering targeted stakeholders, two points of view have been mainly deepened:

- transport stakeholders, who pursues the goal of minimizing travel times and, secondly, increasing the quality of the journey given the economic constraints;
- Port Community, that aims to make logistic flows and operations faster, more efficient and cost-effective.

A third relevant point of view is represented by urban local community, which pursues the objective of maximizing the quality of life at the urban level, of preserving the balance and urban, landscape and environmental assets of the area subject to interventions (Pirlone et al., 2022). In this work, this segment's viewpoint won't be particularly deepened, being the attention focused mainly on the areas requisites and features according to the sector's stakeholders perspective.

In this sense, a multi-criteria approach must necessarily make a synthesis of the different "souls" and interests, identifying basic tools and data that make it possible to interpret local dynamics from different points of view. Starting from the previously introduced issues and targeted stakeholders, main objectives of the analyses have been defined:

- to collect preferences, relating to the various services that can potentially be placed in the buffer - survey areas under development;
- to register qualitative and quantitative information on the attractiveness of the system as a whole and knowledge of the phenomenon, based on face-to-face surveys to relevant stakeholders;

- to assess priorities/values of the various services potentially to be offered, based on the technical considerations of the survey and interviews with stakeholders;
- to define "weights" to be attributed to the various criteria, also on the basis of interlocutions with the reference stakeholders.

3. Stakeholders and Interviews

Focusing on the interviews that have been conducted, first step has been represented by stakeholders mapping procedures.

In particular, the specifical need was to identify several relevant stakeholders within Genoese port community in order to reach a comprehensive framework representing different interests, points of view, roles and necessities. Being a quite technical matter, in this initial phase relevant sector's stakeholders were involved in order to obtain more evaluation elements about the pros and cons of each of the alternative considered. Citizens weren't engaged in this first step, being a preliminary assessment of the added value of building a similar network supporting logistics' flows.

As previously mentioned, in fact, it is particularly important to include various perspective and vision, which are not relevant only in an absolute way, but above all as one of many pieces building a more extensive and complex picture.

Following this idea, seven stakeholders have been identified representing several sectors of local port ecosystem:

- Logistical Regional Federation;
- freight transport operators;
- Port Authority;
- carriers trade association;
- Craft and Industry trade associations;
- shipowners.

This initial cluster clearly represents an incomplete one, and many other subjects, as well as infrastructure, dry logistic platforms or maritime services providers, could be involved. Nevertheless, this network was mapped according to literature review and evaluating the most relevant stakeholders referring to Genoa local ecosystem. Each of these seven stakeholders have been addressed with an in-depth interview and many interesting hints and reflections emerged. In details, interviews have been structured into two parts: state of the art analysis and new services to be inserted into buffer areas project definition.

When asked about the state of the art of port operations and logistics procedures, interviewees have highlighted some criticalities mainly concerning digitalisation and space availability.

Looking at digitalisation and access procedures, mentioned main issues are:

- poor data-sharing;
- non-digitalised documents and procedures;
- scarcely integrated and fragmented digital platforms;

Focusing on infrastructures and traffic flows, stakeholders registered:

- absence of parking areas dedicated to carriers, adequately provided with basic services facilities;
- motorway network congestion and consequent problems related to travel time planning;
- limited access areas in port terminals.

Concerning new buffer areas (later B.A.) design and services to be introduced, several ideas emerged:

- B.A. could turn particularly useful in case of traffic congestion;
- B.A. should include service facilities addressing carriers and their vehicles for longer stops;
- B.A. could act as pre-gates or remote operational spaces.

Looking at new buffer areas design, from a previous recognition of urban plan previsions and suitable areas for similar projects implementation along local motorway axes (through the interaction with the local highway infrastructural provider) five lots have been identified around Genoa logistics hub and interviewees were asked to assess their potential strengths and weaknesses (Fig.2).
In particular:

- two areas are located approximately 30 km from Western part of Genoa Port area along motorway network-Savona, West direction and AdS Stura, North direction;
- two areas are located approximately 30 km from Central part of Genoa Port area along motorway network-Chiavari, East direction and Serravalle Scrivia, North direction;
- one closer area -Ex-Fondega- located between Western and Central Genoa Port Area (distances are approximately 5 km).

Fig.2 Buffer Area localisation

To assess alternatives in terms of their suitability as pre-gate areas, for night stops and freight storage, as well as services range to be provided in buffer areas a multi-criteria analysis was conducted on the basis of stakeholders' interviews results. In particular, they were showed empty matrix where only expected impacts' categories and areas' names were present.
Main aim was to identify stakeholders' priorities and preferences through the evaluation and weighting of several features that B.A. should assure in general (namely Usability, Availability, Services Supply, Environment, Road Safety, Urban Environment Quality) and a specifical criterium for pre-gate functions (Social Impact) and night stops and storage usage (Transport needs) (Tabb. 1-2). A similar process concerned services to be provided in buffer areas, where a wide range of functionalities were presented to interviewees to point out which could be considered as most useful and essential (Tab. 3). The research outputs have been three matrix that are showed in the following figures, where options related to different areas and stakeholders' categories were hierarchically classified through colour gradients in order to highlight most required and preferred ones.

As pre-gate area, the closest to port hub – Ex-Fondega – was preferred in terms of usability, availability, quality, environment and social impact; the Eastern one – Chiavari – was well evaluated though, in terms of quality, environment, social impact and safety, even though being nearly 40 km away from Genoa Logistics Hub. Looking at night stops and storage areas, three were selected: Ex-Fondega, being the closest and being considered positively in terms of quality of the environment, usability and safety; AdS Stura adding a strategical position on the way to/from Northern Italy and Savona combining space availability and favourable location for export and import travel with French Border.
In terms of services availability, preferences have been directed towards personal care facilities for drivers, safe parking facilities (responding to EU standards) and fuel stations.

Assessing B.A. alternatives: Pre-Gate Areas					
Criteria/ Expected Impact	1. Ex-Fondega	2. AdS Stura	3. Serravalle Scrivia	4. Chiavari	5. Savona
Usability					
Availability					
Services Supply					
Environment					
Road Safety					
Urban Environment Quality					
Social Impact (Emissions, Fuel…)					

Tab.1 Buffer Areas assessment as Pre-Gates-Interviews results synthesis

Assessing B.A. alternatives: Night Stops and Storage Areas					
Criteria/ Expected Impact	1. Ex-Fondega	2. AdS Stura	3. Serravalle Scrivia	4. Chiavari	5. Savona
Usability					
Availability					
Services Supply					
Environment					
Road Safety					
Urban Environment Quality					
Transport Needs					

Tab.2 Buffer Areas assessment for night stops and freight storage-Interviews results synthesis

Service availability in B.A.								
Function/ Expected Impact	Drivers	Trade Association	Terminal Operators	Industry and Enterprises Association	Carriers	Transport Operators Association	Port Autority	TOTAL
Toilets/ Restaurant								
Hotel								
Safe&Secure EURO Park								
Traditional Fuel Station								
Alternative Fuel Station (LNG, electricity..)								
Hydrogen Station								
Vehicles Repair and Maintenance								
Charging System for Refrigerated Trucks								
ADR Areas								
Weighting System								
PT links								
Car-sharing services								
Remote Port Services								
Trip Planner App								

Tab.3 Buffer Areas service facilities assessment- Interviews results synthesis

4. Conclusions

As previously introduced, port and logistics activities represent extremely relevant resources to urban centers as Genoa.

Nevertheless, conflicts between city and port communities frequently emerge in terms of land use definition and overlapping traffic flows; and this becomes more and more evident in urban contexts where infrastructural asset is not adequate (as motorway network in Genoese Area) and dedicated routes and areas are absent.

As SUMP strategy suggests for urban mobility, traffic components should be separated using dedicated infrastructure and assets in order to enhance safety, livability and sustainability.

When speaking of freight transport this need to reduce shared spaces in common with private mobility, translates into two different strategies: motorway and rail infrastructure enlargement, thus enabling faster and more efficient connections and definition of specific areas (the so-called Buffer Areas) for bureaucratic procedures, vehicles maintenance and repair, drivers personal care and stops.

These areas have to be found outside port borders thus interfering with urban space, this requires necessarily to identify adequate methodologies and solutions to engage and involve port and urban stakeholders to find and assess possible locations and services facilities.

For the present case-study it was decided to carry out some in-depth interviews, according to the Delphi approach, targeting stakeholders belonging to the logistics community of the Genoese hub at different levels and, subsequently, to place them in support of a multi-criteria analysis. This integrated methodology allows firstly to investigate progressively which are local stakeholders' preferences and needs, and secondly to identify a hierarchy within them, to translate quantitively qualitative considerations. Even though absolute values are not assigned relative comparison enables further decisional steps.

Stakeholders' involvement led to identify several functions to be assigned to five areas belonging to the central part of Liguria Region, located within a radius of approximately 30 km from Genoese Logistics Hub in order to improve accessibility and working conditions for drivers and port stakeholders.

The definition of a participated and shared approach allows to include different perspective and points of view and to build a more comprehensive framework that goes beyond technical and operational issues, thus enabling researchers to assess social, environmental, and economic aspects, too. Nevertheless, this initial step need to be further supported by citizens engagement and involvement (Franco & Cappa, 2021) in order to acquire a larger view of urban/port spaces interrelations, while the first part of the process that has been presented in the previous lines mainly concerned the mainstreaming of technical considerations by port community stakeholders.

Sustainability enters therefore the debate on local infrastructure, as recently has been suggested and promoted by the Italian Ministry of Infrastructure and Sustainable Mobility that developed a specifical scoring methodology (the so-called SIMS) to support social and environmental considerations to be mainstreamed in infrastructure design and project process. It is desirable, though, to extend this kind of reasoning and rationale from urban infrastructures to port and logistics ones.

As Covid-19 pandemic outbreak outlined dramatically freight transport and logistics will become more and more relevant in our society, thus requiring larger spaces within urban borders (Stufano Melone & Borgo, 2020), : main hubs growing outside cities need to have some arrival points to manage last-mile component to reach railways, port, businesses and consumers. These new spaces, as Gonzalez-Feliu & Morana (2010) highlight, need to be thought as urban spaces, integrated to urban fabric, and interacting sustainably with local community and environment: they don't have to be designed as simply functional areas serving port activities, but as a *trait-d'union* linking city and port, especially in urban realities where space is missing, Genoa above all.

For this reason, the application of a multi-criteria analysis reveals extremely pivotal to assess alternatives relatively and to define intervention priorities, thus contributing to subsequent decisional moments. Contribution indeed not only in terms of pre-elaborated analysis but also in terms of dissemination and communication of projects intention to the local community. The possibility to include a wider range of considerations compared to Cost-Benefit Analysis and to involve directly local stakeholders represents a unique opportunity to re-think relation between city and port and to overcome traditional barriers that, though invisibly, still separate Genoa from the sea.

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Image Sources

Fig.1: Authors' elaboration;

Fig.2: Authors' elaboration;

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Tab.2: Authors' elaboration;

Tab.3: Authors' elaboration.

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