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Urban Inequalities

This Special Issue intended to wonder about how urban planning can contribute to reduce disparities due to the diversity of access to services, infrastructure and urban places, as well as the origin from a specific territorial area (center vs. periphery) and that could be accentuated by unforeseen global pandemics. Hence, contributions coming from scholars as well as from technicians have been collected around rethinking and redesigning territories and cities to support policy-makers in preventing and reducing socio-spatial inequalities.

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Eco-mobility justice in the ecological transition. An analysis for possible directions in mobility and transport equity

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Abstract
The growing interest in understanding changes in consumer needs and the new paradigm of mobility justice point to new directions for transportation policies. The green transition, which is the first attempt to combine sustainability with the right to mobility and quality of life in transportation, without pollution and with access to services, must prioritize the needs of all users, particularly the most vulnerable, and break the dependence on cars. Although the idea of mobility justice is not new, there is currently a lack of empirical information regarding the relationship between ecological and mobility justice. This article offers a review of the contributions to the literature on the concept of justice for ecological and sustainable mobility, interpreted from the perspective of the ecological transition in view of future policies promoted at a global level, in terms of opportunities for users and with a parenthesis for groups vulnerable. The aim of the contribution is to present the evolution of justice in the field of mobility and offer a discussion on a topic that should gain interest in the literature based on the evidence collected.

Keywords
Mobility; Equality; Sustainability; Environmental justice; Ecological transition.

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1. Introduction

The field of mobility justice research has emerged in recent years to explicitly reflect the moral dilemmas and distributional consequences of transport policies (Beyazit, 2011; Di Ciommo & Shiftan, 2017; Martens et al., 2019), as the lack of accessibility and transport provision for marginalised populations (e.g. Bertolini et al., 2019; Cairns et al., 2014; Delbosc & Currie, 2011; Di Ruocco, 2022; Hernandez & Dávila, 2016; Lucas & Jones, 2012), and evolving into a broader concern that may require its own sphere of justice (Martens, 2021; Vanoutrive & Cooper, 2019). Although research on transportation and cities has long addressed the issue of unequal accessibility to spaces and modes of transportation, it has recently become much more popular (Papadopoulos, 2019). One of the key goals of the new transportation and social policy is to address the relationship between transportation equity and people's well-being (OECD, 2021; EU, 2019a). The mobility gap is getting wider as a result of factors including the conflicting city crises, climate change, and pandemics (Isola et al., 2024; Palermo et al., 2024). Though interest in the relationship between transportation and wellness is still relatively new, spatial mobility is currently a hot topic in the field of transportation. Unfavourable environmental variables can influence domestic migration more than international migration, especially when it comes to migration from rural to urban areas. Adverse climatic change typically has impact on migration, resulting in social and geographical disparities for users.

When using transportation services and their advantages, users are divided into winners and losers as a fundamental result of accessibility. The aspect of fair mobility is also connected with the analysis of effects with climate change and social inequalities (Anger-Kraavi, 2019; Graham, 2021; Islam & Winkel, 2017; Markkanen & Svarstad, 2021; WHO, 2018). The idea of equality has an impact on various fields including psychology and user satisfaction, which is a measure of user well-being.

Climate policy development, including advice on climate policies and action plans, as well as assistance in modeling greenhouse gas emissions make it necessary to think about mobility rights while thinking about sustainability and ecological transition.

The objectives of well-being and quality of life in transport are that proposed by the United Nations (2019) in particular for this study we considered the Goal n.3 "Ensure healthy lives and promote well-being for all at all ages", n. 10 "Reduce inequality within and among countries", n. 11 "Make cities inclusive, safe, resilient and sustainable", n. 17 "Revitalize the global partnership for sustainable development".

To achieve the goals of the transition, it is necessary to consider the needs of each individual, with particular attention to vulnerable groups. Mobility justice is one of the central political and ethical issues of our time and an urgent question on how the world can successfully transition to a more ecological and social mobility, and this concept starts from Fraser (2000, 2009) and Young (1990, 2000, 2006) while, the concept of eco-mobility here presented it is an evolution of the theme of spatial justice in terms of sustainability in the context of the energy transition, where the most discussed terms are social justice and "environmental justice" (Mels 2016; Menton, 2020; Pultrone, 2024; Walker, 2009; Washington, 2015; Woods, 2006).

The policies pursued by European Commission (2019b) in the green transition are the developing a sustainable development strategy for 2050, developing an action plan to improve the well-being of rural residents and ensure the economic stability of rural areas. Mobility enhances people' subjective well-being and satisfaction while also enhancing their way of life, becoming a tool in the micro, meso and macro scales of the transition (Sheller, 2018a, 2018b, 2020; Sheller & Urry, 2006). New mobility models such as MaaS can be difficult to implement in relation to different social classes, as these technologies could widen socioeconomic gaps if they are not distributed appropriately (Alonso Raposo et al., 2018).

The aim of this article is to understand the role of mobility justice in the ecological transition, how it is treated in the literature, how mobility relates to vulnerable groups and sustainability. Since the sustainable development goals (SDGs) can cause environmental injustices and justices due to their paradoxes,

compromises, and partnerships, the term "eco" aims to create a dimension of mobility justice that includes the energy transformations of mobility and transport as stated in Menton et al. (2019).

Therefore, this article aims to understand:

a) How the ecological transition tries to make spatial justice more sustainable, where does the proposal to talk about eco-mobility come from?
b) what are the relevant scientific sectors and the gaps that emerge from these areas?
c) what approaches are present in the literature and in practice and what type of measures can we draw from this analysis?

In chapter 1 the introduction to the topic is covered, in 2 the review of literature, in 3 the methodology, in the Section 4 are exposed the results and discussion which describes the main results divided into thematic areas and discussion, in the Section 5 the conclusions.

2. Literature background

Researchers have started using methods for analyzing transportation systems that emphasize the social aspects of the system, from early 60s (Beyazit, 2011). Important studies include the "new mobilities paradigm" and the Social Exclusion Unit's (Unit, 2003). A wide group of research paid attention to "the politics of mobility," (Cresswell, 2010), with a growing focus on justice and equitable issues in transportation, as the relationship between the transport and social exclusion (Hannam et al., 2006), or with spatial and temporal inequalities (Lucas, 2012; Lucas et al., 2016). Many scholars have analyzed the role of public participation in the social transformation of mobility (Vitrano & Lindkvist, 2022), as a broader social political phenomenon (Wanvik & Haarstad, 2021) or as an economic factor (Taylor & Kalauskas, 2010; Viegas, 2001).

The social justice of mobility in the ecological transition is comprehensively analyzed by Schwanen (2021) and Sovacool (2021) highlighting among the different findings, the relationship between low-carbon transitions land use management and the political ecology of transitions also lead to inequality or vulnerability among users, as Benjaminsen et al. (2021) emphasize the need for greater acknowledgement in climate research, debate, and policy in order to achieve climate justice. The political and theoretical part of the environmental justice framework is discussed by Svarstad & Benjaminsen (2020) based on the work of political philosophers in the radical justice tradition (Fraser, 2007; Honneth, 2001; Young, 2006).

The ambitious green transition policies are based on the reduction of gentrification and the remodelling of the mobility system, which affect decision-making processes but also by necessity involve abundant analysis of user movements as they are mobility actors (Chapman, 2019; ITF, 2021).

While some literature focuses on how to achieve the transition, and sustainable transformations for users and vulnerable groups, it should also be considered that studies highlight externalities of the justice of green transport transitions on mobility. New urban policies have pushed in the direction of gentrification, increasesing the forms of mobile injustice of users who remain excluded from services due to lack of transportation network (Anguelovski et al., 2019). Some studies consider only travel behaviour as the core of inequality is to focus on inequalities in spatial levels of accessibility, expressed in different domains. A popular analytical framework is based on the theoretical framework of horizontal equity and distributive justice in transport studies (Graham, 2021; Islam & Winkel, 2017; Litman, 2002; Markkanen & Anger-Kraavi, 2019; Martens et al., 2019; Pereira et al., 2017; WHO, 2018).

In general, there are numerous ways to conceptualize and quantify accessibility, and some of these approaches are more in line with ethical philosophies than others (Karner et al., 2020, 2023; Luz & Portugal, 2022; Martens & Golub, 2012; Martens et al., 2012). A large body of literature considers accessibility a fundamental and necessary condition for ensuring people's freedom of choice (Gallo & Marinelli, 2020; Guida & Caglioni, 2020). The justice side results in the concept of equality of opportunity in terms of employment, health care, educational services. The focus on accessibility is also justified by the fact that one of the main purposes of

transport policy is to improve access to places, activities, and opportunities. A second issue related to distributive justice concerns the moral principles that should guide and justify the redistribution of resources. Furthermore, the concept of mobility justice must be built on the socio-political system by including investments in active mobility such as walking and cycling. Other studies examine the link between accessibility and general principles of equality and basic needs (Lucas et al., 2019; Lucas & Portugal, 2022). Connected with the transport equity sector there are numerous theories on how to give rights to travel according to different thoughts (liberalism, capability approach, etc.) such as considering transport accessibility as an element outside the market framework (Martens, 2021). The justice of mobility is analysed from new perspectives on place-based development and spatial justice, and the relationship between them (Weck et al., 2022) by linking the value of spatial cohesion and promoting spatial justice through policy dissuasion. Goodwin-Hawkins et al. (2022) focusing on the concept of spatial justice, applying spatial justice to pre-pandemic lifestyle mobilities and looking to future changes, we offer a nuanced and relational perspective on theory and the field. From a more spatial perspective, the work proposed by Piras et al. (2022) presents an approach from the Theory of Change (ToC) to assess the internal and external coherence, and robustness to future uncertainty, of place-based interventions addressing spatial (in)justice of a range of European interventions (public policies and bottom-up initiatives), selected to highlight the ways spatial injustices have been tackled across different scales.

One of the first concepts advanced was Sheller's (2018a; 2018b) and Urry (2016) with the analysis of the conceptualisation of mobility justice that has the role of acting on a unifying framework or, according to Henderson (2020), as a 'totalising framework'. Haas (2021) provides an inspiring modern insight into today's society, arguing that a political-economic basis of the concept and the policy framework of mobility justice are crucial for this transition. Besides the context of justice mobility, a few recent years have seen a move towards an inclusive and equitable framework for a just low-carbon transition in transport.

Many mobility scholars have become interested in the topic of social and spatial justice, reinforced after the latest wars, climate change, migration problems. Some deal with mobility in daily commuting and urban transport, as well as tourism and migration and mobility policies (Bijker et al., 2013). The first concepts of social mobility date back to the term 'motility' (Grieco & Urry, 2011; Kaufmann & Audikana, 2020; Kaufmann et al., 2004; Musselwhite & Haddad, 2010). Sheller (2018a; 2018b) raised the issue of 'Mobility Justice and the Politics', integrating transport and mobility justice by proposing that transport issues at the spatial scales of individuals and urban areas and mainly analysed the multiple ways in which discourses legitimise and normalise unequal mobilities, emphasising the consideration of mobilities in terms of unequal experiences (Adey et al., 2014; Sheller, 2018a, 2018b).

As indicated by Peck (2012), gap developments also concern the uneven consequences of urban austerity on everyday mobility and socio-technical innovations in transport, highlighting that new mobility systems tend to benefit only one group over another. The disability types recognized are: a) mobility impairment; b) cognitive impairment; c) sensory, mental, physical conditions of disability; d) culture and ethnicity; e) income; f) places of living and places of services. These vulnerable groups, by definition, have a subjective perception of space (and the associated subjective well-being changes), so it is a question of moving from mobility justice to environment justice. The weaknesses of environment justice are lack of safe areas for pedestrian transit, lack of accompaniment when getting off/on vehicles, pavements and physical barriers (Smith et al., 2006), absence of ITs to support mobility, planned transport for normal people with a private car.

The work presented by Zhao et al. (2010) on the Chinese urban environment focuses on vulnerable transportation groups, based on the analysis of the characteristics of vulnerable groups, analysed and compared with the traditional solutions and using ITS technology solution. Many similar studies focus on the elderly while ethnic groups, children, and people with disabilities, including health disabilities, are excluded.

3. Methodology

Given the numerous studies that could be considered, particular attention is paid to the most recent studies, published after 2000 until 2023. Although the discussion is mainly focused on mobility justice and the ecological transition, studies on spatial justice and on conditions of equality for categories of users under the lens of sustainability. Since many studies prior to 2019 did not fall within the time of the green deal or the ecological transition more generally adopted by states, social studies on mobility, motility and environmental justice were considered, which would bring out the critical issues of users in relation to transport.

The literature review was done on Google Scholar, Scopus, and WOS, using the keywords: "social justice, ecology, energy transition, mobility, transportation, vulnerable users, weak users, equalities, inequalities".

The methodology is based on the following steps (Fig.1):

- selection and grouping of scientific studies (step 1);
- bibliometric analysis (step 2)
- critical review (step 3)
- discussion (step 4)

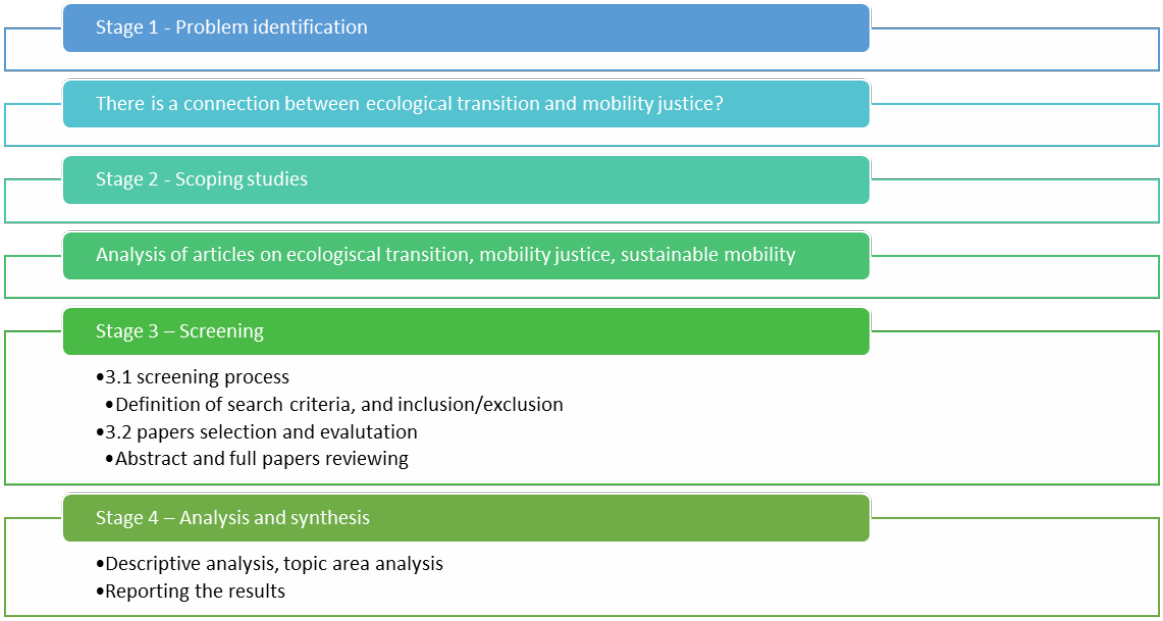

Fig.1 Review flow chart process

In line with the research question, 150 articles emerged, of which 78 were found to be in line with the research topic. The time period considered goes from the early 2000s to 2023. Works that did not address social disadvantage, vulnerable populations or the green transition were discarded. Since the topic of the green transition has only appeared for a few years, all articles related to the energy transition up to 2023 have been covered. The collected articles focus on the concepts of vulnerable groups, green transition, inclusion mobility, mobility justice, transport inequality (Carmo et al., 2020) and climate justice. The thematic areas identified are discussed in chapter 4 and group the relevant contents into four main topic areas: "Spatial inequalities", which collects the articles that analyze the disparities in geographical terms, focusing mainly on rural areas, "Labour Market Access" which collects such as the distance from transport or the lack of accessibility and proximity can affect access to working conditions, "Justice attributes in transport" considers how transport in the ecological transition considers the characteristics of mobility and social justice, and finally the relationship between "Decarbonisation and the environment" for go into detail about the energy consumption of mobility and transformations

4. Results and discussion

This section shows the results that emerged from the review. The thematic areas that emerged from the study of the articles are reported, collecting the most relevant articles in line with the research question and with the theme of vulnerability, energy transition and mobility.

4.1. Spatial inequalities

Ensuring mobility for all users is one of the pillars of cities, as many people living in cities suffer from forms of disability, physical conditions, mental health, age, cultural barriers. These limitations are combined with cities with poor infrastructure, transport planning, and low services. The problem in cities is observed differently than in inner-city areas, because they are more developed and busier, and the urban form needs to be acted upon.

A main difficulty encountered by many users is in spatial mobility (as accessibility and proximity) to destinations reducing spatial injustice means that the localization of primary services, school, work and free time are achievable by age, sex, physical and economic condition. The perception of justice can be composed at a subjective and objective level, in which the subjective factors of mobility concern the factors that influence the way in which people travel and the choice to undertake the journey, such as the state of well-being, from the objective ones such as indicators on transportation.

4.1.1 Spatial inequalities for urban areas

Research and policy have tended to favor methods centered on the city, and on the car. To promote geographical justice, mobility companies do not increase the transport offer in rural and peripheral areas, but community sharing phenomena often arise to move around, while remaining car-based mobility, not respecting the reduction of the same for energy transition. Spatial justice allows for a more equitable distribution of resources in space and the protection of utilization opportunities in the setting of cities.

Few contributions in the urban context deal with transition and just mobility. A first approach, which takes up just mobility in policy terms, is the work done by Loorbach et al. (2021) proposing a top-down method focused on transition governance to accelerate the social, cultural, institutional, and technological changes needed to achieve a future of just and sustainable mobility.

The necessity of recognizing the extremely diverse mobility requirements and experiences of low-income residents is demonstrated by Vecchio's (2020) analysis of micro-mobility in Bogotá. As "each individual has different capacities to reach more or less various opportunities," Vecchio also calls attention to distributive justice. Guzman et al. (2018) analyse pro-poor public transport subsidies in Bogota focusing on the effects on accessibility to income-generating opportunities of the implementation of public transport subsidy. At the urban level, concrete measures rely on ITS tailored to weak users, putting accessibility at the centre for a city beyond injustice and inequality. Among these measures combining mobility with transport are digital infrastructures supporting MaaS to enable travel to remarkable points such as stations, shopping centres, crossing points, and are based on sound, GPS tracking. Augmented virtual reality allows users with reduced mobility to visualise obstacles, both on the street and in enclosed places such as universities, hospitals. Many on-demand mobility services, promote flexible DRT services for the physically disabled. Autonomous vehicles are being piloted and have become the focus of debate for the transport of a large proportion of vulnerable users.

4.1.2 Spatial inequalities for rural areas

Creating an action plan to enhance rural people' wellbeing and guarantee the economic stability of rural areas is one of the objectives of the Green Deal (EU, 2021). According to Benson & Osbaldiston (2016) the research

on desertification and migration has shed light on the dangers of economic decline in rural areas. The distribution of resources is correlated by objective and subjective indicators that vary depending on whether users live in urban or remote areas. Depending on the type of spatial scale, rural areas are characterised by the constraint of not being able to launch zero-car initiatives, where households are often socio-economically disadvantaged, as are those in peripheral areas on the fringes of metropolitan cities (Woods, 2019; 2020).
The characteristics analysed in the literature show that these households have a lower household income, a lower level of education, more disabilities, a higher housing cost, highlighting the inequalities between the promise of sustainability and the SDGs (Menton et al., 2020; Rice et al., 2020) burden and a higher probability of being unemployed than their counterparts in non-rural areas. Vitale Brovarone (2021) and Bacci et al. (2020) analyses the Italian inner areas and discusses how the strategy aims to address accessibility and mobility, in principle and in practice. The analysis of Italian National strategy for inner areas 'SNAI shows the scope and approach of the strategy and points out several criticalities and pitfalls challenging its potential. Bertram & Chilla (2022) proposed a dimension by measuring population catchment intensities and is potentially applicable to other areas with geographical specificities that are relevant objects of cohesion policy. Almeida & Daniel (2022) focus on the pandemic's effects on low-density territories (LDTs) while employing the qualitative case study technique and the "social, technological, economic, environmental, and political" (STEP) approach as a supporting framework.

4.2. Labour Market Access

The most vulnerable groups are only marginally included in the labour market due to significant subjective and objective barriers. Many of these people face multiple barriers to employment, such as problems with geographical mobility (OECD, 2021), or culture (as a migrant). Other services (such as health, social services) must sometimes be provided not only in urban areas but by pursuing the 20-minute city. If this concept seems utopian and unrealisable, adequate mobility services can make up for this shortcoming. As suggested by Karner et al. (2020; 2023), the transition from transport equity to transport justice requires considering a larger variety of actors and concerns. The term "transport justice" is used generically to refer to all issues of justice related to people's daily mobilities. Liljegren & Ekberg (2008) focus on longitudinal relationship between job mobility and health and burnout, found that exists the predictive relationship between job mobility and health has practical implications for health promotive actions in different organizations.
Birau et al. (2019) and Binder & Matern (2020)'s empirical study contributes towards identifying the effect of social exclusion. The work proposed by Birau et al. (2019) on labour market integration of people with disabilities in Romania, highlighting the existing of significant factor of the gap between employees without disabilities and employees with disabilities as lower productivity levels, higher training costs, differentiated work schedules, special demands, higher risk of work injuries and work-related accidents, etc. Based on these studies, it can be concluded that mobility justice, which aims to lessen social and spatial exclusion, promotes special measures to reformulate the implementation of a program of strategic objectives, removing social exclusionary situations and enhancing opportunities for social inclusion, like integration incentives, job creation, and entrepreneurship stimulation. The examined papers demonstrate how the epidemic has exacerbated inequality by raising obstacles to employment and decreasing chances for inclusion.

4.3. Justice attributes in transportation

The most direct relationship between ecological change and justice mobility is found in the desire of well-being. People who belong to potentially vulnerable groups often have a range of complex medical demands and serious health conditions. The literature on transportation has focused more and more on the relationships between transportation and subjective well-being (Ferdman, 2021) that discussed that the objective well-being can explain why active, embodied mobility modes such as walking and cycling offer more opportunities

for human capacity development, contributing to better health lifestyle, while Mullachery et al. (2022), noted that wide spatial and racial/ethnic disparities were launched by COVID-19. Some research has highlighted the role of unequal access to testing as a potential driver of these disparities (Banister & Bowling, 2004). Musselwhite & Haddad (2010) found that an inability to drive/travel independently is one of the strongest predictors of increased symptoms of depression among older people and, in line with this, based on a study among elderly bus users, Andrews et al. (2012) argued that providing satisfactory opportunities for independent travel and mobility will support the older population in sustaining independent living and well-being. In this aspect, Pereira et al. (2017) applying a Capability Approaches (CAs) provided an overview of theories of justice in political philosophy to describe transport disadvantage, social exclusion, and equity in transportation. Church et al. (2000) identify a number of causes related to the mobility system and propose three factors that influence the transport injustice process. The causes of climate inequality are shown in Tab.1.

1.	Economic exclusion due to income conditions;
2.	Work exclusion, due to travel to work or absence from work;
3.	Social exclusion, due to belonging to minorities or ethnic groups;
4.	Geographical/territorial exclusion;
5.	Physical exclusion, due to personal motor difficulties;
6.	Exclusion of facilities, in terms of distance from places of services;
7.	Psychological exclusion, such as anxiety, fear of travel or lack of light, security,
8.	Space exclusion, where space or the management of urban space alienates users.

Tab.1 Factors of mobility system on transport injustice process

Mobility systems raise multiple questions of justice as policies may incentivize or privilege political solutions. and implicit values. Mullen & Marsden (2016) analyse current policy analysis under the energy sector, understanding how mobility justice can enable lesser or greater injustices, and they identify the social unfairness connected to the prevailing, technological methods of combating traffic pollution.

The findings divide into two approaches to mobility justice. The first approach privileges policies facilitating car-based users, the second is that the fundamental normative principles that should guide mobility justice need to be reevaluated. Research on mobility justice has a history of appealing to ideas of justice that center on people's ability to access resources, particularly those that facilitate movement. These ideas don't really address the optimal use of resources. As stated by Mullen & Marsden, justice issues can arise from accessibility and availability issues, which can take many different forms. These issues can be severe obstacles to engaging in social and personal activities, caring for others, education, work, healthcare, and other related activities.

4.4. Decarbonisation and environmental justice

The current low-carbon 'transition to mobility' policies - i.e. structural transformation of transport through technology, physical infrastructure, markets, regulation and governance, cultural values, and user practices towards greater environmental sustainability, do not mention mobility justice policies.

One of the first studies on energy justice to discuss distributive and procedural justice issues was Sovacool & Dworkin's (2015) work. Concerning the field of energy, researchers aim to comprehend how values are incorporated into energy systems or find solutions to prevalent energy issues may find energy justice to be a beneficial analytical tool (Schwanen, 2020, 2021).

In the era of energy revolution, the current theme concentrated on transportation and the development of values for social mobility. Although investments support decarbonization, they are insufficient in the absence of focused legislation, and the examined articles do not demonstrate a robust national or city-level framework for "eco-mobility justice". Such solutions are still conceived on a large scale, but they do not solve the problem

of reducing out-of-town car use, commuting to work for ethnic minorities, and the use of vehicles for the elderly and people with reduced mobility. The real potential of this infrastructure investment is large, but many of the proposed measures are market-based and consumer-oriented, providing incentives for the industry. Many existing movements on people's right on mobility justice and on equity, underlining the problem of bias that persists in transport planning, observe that a disproportionate number of low-income and transit workers many of whom belong to racial and ethnic minorities are exposed to social exclusion (Do Lee et al., 2016).
Regarding green mobility, much emphasis has been placed on EVs. Most of the experiments or pilots have not been implemented for vulnerable users. Using a mobility justice framework, Henderson (2020) proposes a critique of EVs, discussing the influence of liberal economic theory on future EV projections. With reference to electric vehicles and green mobility. As highlighted by the Green Deal (EU, 2021) many European policies lack inclusivity and recommendations for vulnerable groups (Piqueres & Viitanen, 2020) identifying a need for distributive, procedural and recognition justice (Hellmann et al., 2021; Madanipour et al., 2022; Piqueres et al., 2020). The idea of justice in transition research, which aims to bring justice to individuals, communities, and the non-human environment from detrimental environmental impacts, is still present in the work of Williams & Doyon (2019), drawing on the environmental and energy justice literature in the forms of distributive, procedural, and recognition used to reflect on the ways in which justice- based research on sustainability transitions has been applied and provide some suggestions for future study directions.
The main initiatives in terms of sustainable mobility essentially concern the reduction of emissions but do not solve the problem of lack of inclusiveness. Svarstad et al. (2011) present a model of spatial justice based on the works of (Fraser, 2000, 2009; Ikeme 2003; Walker, 2010). They apply it for environmental justice, keeping in mind the decision-making process and the ways in which these social sector actions affect individuals differently in terms of costs and benefits. From literature and from Svarstad et al. (2011) emerge the three key components of justice in as distribution, procedural, and recognition (Fraser, 1998; Holifield et al., 2018; Honneth, 2001; Schlosberg, 2007; Young, 1990) necessary for a successful transition to a sustainable transportation system (Fraser, 2000, 2009). The procedural second type involves evaluating how equitable the decision-making process was, while the distributional level proposes determining how persons should be distributed in terms of benefits and drawbacks (costs and rewards).
Based on these analyses, Tab.2 proposes the gaps that emerged from the most relevant works, and with the proposal of open research questions for future research on the topic.

Emerging gaps	**Possible open research questions**
Impact on the economy, particularly employment losses during transitions	The ecological transition will change the economic structure of labour and induce a change in the vulnerable classes. What will be the position of scientific community, and the adoption of policies?
Socio-spatial distribution, interdisciplinary of transports	Improving the diffusion of green mobility on a territorial scale. The green mobility will be inclusive for all the vulnerable groups?
Implications of change, risks, vulnerabilities	What if the LCA study of e-vehicles with socio-demographic aspects of fragile classes?
Availability, affordability, sustainability of economy of transportation	Propose economic policies to reduce the inaccessibility of transport for the poorer classes. What kind of policies for economic justice?
Normative dimension	If national regulations are strengthened, what improvements can be seen?
Horizontal and vertical collaboration	How propose a cohesive territorial government tool?
Knowledge process value	How support user's motivation and transformation?

Tab.2 Gaps and future research questions

5. Conclusions

European mobility programmes are focusing on the slogan accessibility for all, refining mobility justice and activating user-friendly environment policies. In reaching the equity and mobility gap, the vulnerable users are different users with different needs, i.e. elderly people, women and children move with different needs and rhythms. The effort of the literature must be to analyse their needs both by analysing the economic conditions and the travel behaviour sector. The picture that emerges is a poor background knowledge of their habits, such as transport mode used, distance travelled by each category, number of trips daily, pattern and purposes. Inclusiveness and the aim of environment justice is possible with a view to accompanying policies with measures and with interest from the literature. In addressing the most vulnerable' needs, their lack of mobility is a negative impact to the economic development of the city and the attainment of excellent quality of life indicators of the city. For rural areas, the great interest it has been having for years has the advantage of keeping the focus on inner metropolitan, rural and remote areas and not forgetting the mobility of users in these areas. Good practices in this sector are an evolving concept the aims to focus on policies or strategies also proposed by local authorities, to grow a climate of accessibility and trust in the community, to eliminate barriers between the public transport sector and equity.

The government should make alternative positions realistic by concentrating on social movements that are developing in the field of climate change (Routledge et al., 2018), expanding the emphasis from the energy transition (Geels, 2018; Williams & Doyon, 2019) and accelerating the shift towards eco-mobility.

The directions taken are in line with the principles of involvement of vulnerable users in the pedestrian diagnosis of their environment and the redevelopment of public spaces; diagnosis of bus mobility in their neighbourhood (intergenerational activity); campaign to promote inclusive, independent, sustainable. and active mobility of elderly people; training in cycling mobility; involvement of public transport. Manderscheid & Cass (2022) state that there are still a lot of opposing ideas, thoughts, and points of view regarding this subject, but the future of territories is still a major concern. Subsequent investigations may commence with the research questions posed in this work, highlighting the Critical Environmental Justice (CEJ) framework (Pellow, 2018) in greater detail to investigate the ways in which these ideas are discussed in the literature. Recommendations regarding energy, consumption, and habits can be made because this research is transversal. It is necessary to recognize the connection between "social inequality and oppressions in all forms" and to increase complementary and transversal study.

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Image Sources

Fig.1: Author's elaboration.

Table Sources

Tab.1: Author's elaboration on Church et al., (2000);

Tab.2: Author's elaboration.

Author's profile

Irina Di Ruocco

She, transport engineer graduated at Federico II of Naples in transport engineering and hydraulic systems, is PhD student in methods and models for economic decisions (MMED) at University of Insubria. She deals with transport and sustainable mobility, impacts and evaluation of infrastructure projects, economic analysis and European planning (EU projects) in the field of transportation and mobility. Her professional background includes the analysis of the territory and the urban planning approach of sustainable mobility projects (waterfront, ports, cycleways, carsharing). The work experience is in transportation and infrastructure field, she is the author of several scientific contributions.