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## **FRAMES OF JUST TRANSITION IN TRANSPORT**

Master of Science in Environmental Sciences and Policy

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## Author's declaration

I, the undersigned, **Arjay Dineros**, candidate for the Master of Science degree in Environmental Sciences and Policy, declare herewith that the present thesis is exclusively my own work, based on my research and only such external information as properly credited in notes and bibliography. I declare that no unidentified and illegitimate use was made of the work of others, and no part of the thesis infringes on any person's or institution's copyright. I also declare that no part of the thesis has been submitted in this form to any other institution of higher education for an academic degree.

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## **Abstract**

This research focuses on the comprehensive assessment of frames of just transition in the transport sector through the completion of a comprehensive, systematic review, and synthesis of literature from 2019 to 2021 and key informant interviews with experts from the transport sector. Results reveal the most common frames of just transition in transport are categorized as cross-cutting and socio-technical themes, emphasizing the interconnections among labor, policies and regulatory frameworks, technologies, and infrastructure. Reviewed documents on just transition in transport also frequently tackled it from the road and intermodal transport perspective, which calls for additional assessment and future research that centers on other modes of transportation, such as, air, maritime, and rail. This research contributes to the existing literature of just transition in transport and shaping the discourse on just transition in the sector, on how it is contextualized across all modes of transportation, and on how it relates to the overarching paradigm of just transition, such as labor, justice, socio-technical, governance, public perception and attitude, and even its cross-cutting characteristic.

# Acknowledgement

*To Rhea,*

*my mother, my inspiration, my light.*

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## List of Abbreviations

CJA	Climate Justice Alliance
CO <sub>2</sub>	carbon dioxide
GHG	greenhouse gas
GRULAC	Latin American and Caribbean Group
GtCO <sub>2</sub> -eq	Global GHG emissions
ILO	International Labour Organization
IPCC	Intergovernmental Panel on Climate Change
OCAW	Oil, Chemical and Atomic Workers Union
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate
UNRISD	United Nations Research Institute for Social Development
WEOG	Western European and Others Group

# 1. Introduction

## 1.1 Background of the Study

The transportation sector is seen to be a key player in the success or failure of the Paris Agreement, or at least the ambition for net-zero emissions by 2050 will be impossible without transformative changes and decarbonization mechanisms in the sector, as it remains one of the sectors with largest greenhouse gas (GHG) emissions.

Just transition has been defined in several ways and from different point-of-views, but it simply captures the social implications of the transition from fossil fuel-dependent economies to a decarbonized world that also reaffirms and commits to sustainable, just, fair, and inclusive processes. Most common frames of just transition include labor and workforce-related concept, justice, socio-technical component, governance, and public perception and attitudes. This research aims to capture these frames of just transition particularly in the transport sector.

Primarily, this research aims to identify the frames of just transition in the transport sector through the completion of a comprehensive, systematic review, and synthesis of existing literature and key informant interviews with experts from the transport sector. While this research is limited in a three-year assessment of literature and documents and interviews with experts from the sector, it accomplished its aims to contributing in the ongoing and increasing discourse on just transition integration in transport.

This research has five major sections: (1) the first chapter introduces the main research question, the specific target objectives, and the theoretical and analytical framework; (2) the second chapter identifies and discusses the literature on just transition, state of transport and the sector's need to decarbonize; (3) the third chapter explains the research design implemented for the study, (4) the fourth chapter discusses the findings for the systematic literature review

and transport expert interviews, and (5) the fifth chapter presents the conclusions of the research.

## 1.2 Study Aims and Objectives

The research focuses on the comprehensive assessment of the integration of just transition framework in the transport sector by implementing a two-pronged strategy that includes a completion of a systematic review and synthesis of existing literature from 2019 to 2021 and key informant interviews with experts from the transport sector. The specific question it targets to answer is, “*What are the frames of just transition in the transport sector?*”

The primary objectives include:

- (a) To complete a systematic review and analysis of literature on just transition in the transport sector from 2019 to 2021;
- (b) To identify and discuss frames of just transition in the transport sector in terms of its regional location, modes of transportation, its thematic areas, which includes labor-oriented concept, integrated framework for justice, socio-technical, governance, public perception and attitudes, and cross-cutting characteristics,
- (c) To identify and discuss definition of just transition as used in the sector and the engagements and projects that relate to the thematic areas of just transition;
- (d) To identify the challenges in and significance of the integration of just transition in the transport sector;
- (e) To propose recommendations on the need for clarification of just transition conceptualization and framework for the transport sector, the need for comprehensive discourse on just transition thematic areas, and the need to contextualize just transition across all modes of transportation.

### 1.3 Theoretical and Analytical Framework

This research uses frame alignment as a theoretical framework, following previous studies' utilizing framing in the context of climate change, communication, politics, social movements, and environment (McEvoy, Fünfgeld, and Bosomworth 2013; Cha and Pastor 2022; Benford and Snow 2000; Feste 2011; Supran and Oreskes 2021).

As argued by Chong and Druckman (2007) the premise of framing as a theory is that issues can be viewed from multiple perspectives and have implications for multiple values or considerations. They then defined framing as “the process by which people develop a particular conceptualization of an issue or reorient their thinking about an issue” (Chong and Druckman 2007, 104).

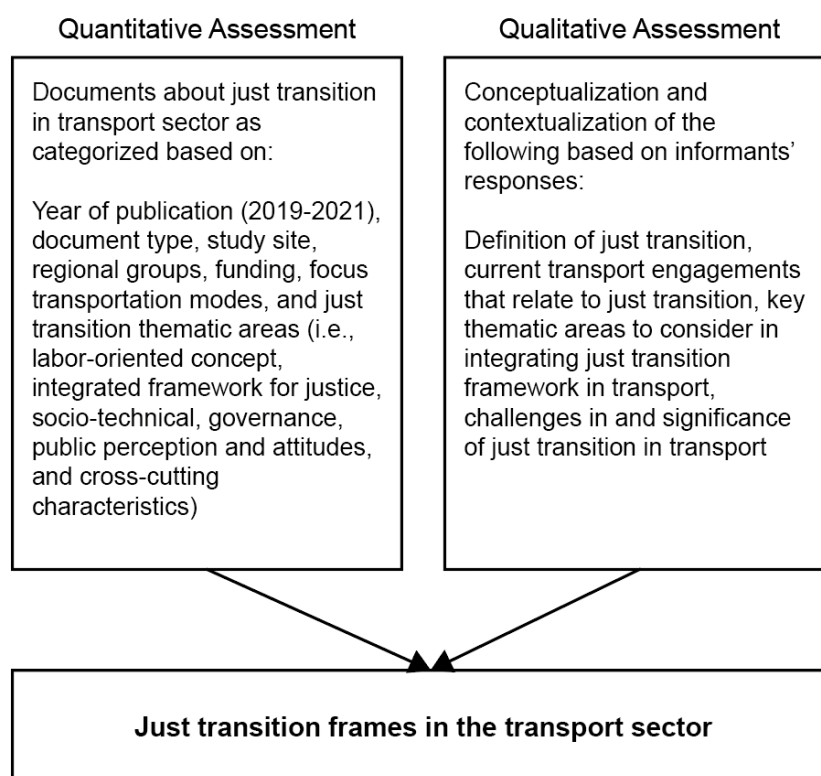
Frame, however, is a central organizing idea for making sense of relevant events and suggesting what is at issue as it provides interpretive cues for facts and is composed of key concepts, metaphors, images, and symbols to structure transmission of meaning, as well as it heightens the saliency of some aspects of reality over others (Feste 2011, 15).

For this study, frame analysis is conducted and completed to reveal the common frames of just transition in the transport sector. To implement this, the following analytical framework was implemented (see Figure 1). It follows a two-pronged strategy that includes assessment of both quantitative and qualitative dimensions. The quantitative assessment includes the systematic review of all documents about just transition in transport sector, with a particular focus on the year of publication (2019-2021), document type, study site, regional location, funding, focus transportation modes, and just transition thematic areas (i.e., labor-oriented concept, integrated framework for justice, socio-technical, governance, public perception and attitudes, and cross-cutting characteristics). The second-level assessment includes analysis based on informants' responses on the definition of just transition, current transport engagements that relate to just

transition, key thematic areas to consider in integrating just transition framework in transport, and challenges in and significance of just transition in transport.

Findings from these two assessments are used to identify key frames of just transition in transport in terms of operational definition, current engagements, thematic areas and modes of transportation, and gaps and its role in transition to decarbonized world.

Figure 1. Analytical framework of the study



## 2. Just Transition and Transport

### 2.1 Overview

Just transition has been defined and conceptualized in different ways by different organizations and authors. The International Labour Organization (ILO) (2015, 4-7) stated a just transition must be “well-managed and contribute to the goals of decent work for all, social inclusion, and the eradication of poverty” and must also address key policy areas related to environmental, economic, and social sustainability, such as macroeconomic and growth policies, industrial and sectoral policies, enterprise policies, skills development, occupational safety and health, social protection, active labor market policies, rights, and social dialogue and tripartism.

Other definitions focus on the process of just transition, such as the Climate Justice Alliance (CJA) and United Nations Research Institute for Social Development (UNRISD). CJA defines just transition as “a vision-led, unifying and place-based set of principles, processes and practices that build economic and political power to shift from an extractive economy to a regenerative economy” (CJA 2016), while the UNRISD describes it as the “fair transition from a fossil-based economy to a low-carbon or decarbonized world” (UNRISD 2018, 11).

In 2018, Robins, Brunsting, and Wood (2018, 6-7) describes just transition as a “global agenda for industrialized, emerging, and developing economies that addresses both decarbonization and resilience and emphasizes the need to anticipate the social implications of the shift to a low-carbon economy and the increasing physical impacts of climate change.”

This study combines the preceding conceptualizations to describe just transition as a set of principles, process and/or practices of a fair, inclusive transition from fossil fuel-dependent economies to a decarbonized world.

Meanwhile, according to reports, just transition originated in the United States during the 1970s as a way to reconcile social, labor, and environmental concerns. The term just transition was introduced in one presentation and later spread within the Oil, Chemical and Atomic Workers Union (OCAW), other unions, and union allies in the U.S. Significant precursor to this phase was the proposal of the *Superfund for Workers*, a program of action developed by unionists and activists in response to the rising jobs versus environment discourse (UNRISD 2018, 6-7).

The coordinated effort to mainstream just transition continued for the next decade as international climate negotiations also continued to disregard the social and employment impacts of policies that tackle and address climate change. The goal of a just transition, however, was incorporated into the negotiating text for the Copenhagen Summit in 2009:

“Mechanisms should be developed to allow for mitigating the impact of the response measures on productive workforces, promoting a gradual and just transition in the most affected economic sectors and contributing to building new capacities for both production- and service-related jobs” (United Nations Framework Convention on Climate Change (UNFCCC) 2009, 119).

After a few years, just transition was also incorporated into the preamble of the Paris Agreement, which was adopted in December 2015:

“The Parties to this Agreement taking into account the imperatives of a just transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities” (United Nations 2015, 2).

## **2.2 Thematic Concepts of Just Transition**

In their brief but comprehensive review of the literature and research agenda on just transition, Wang and Lo (2021) identified five themes: just transition as a labor-oriented concept, as an integrated framework for justice, as a theory of socio-technical transition, as a governance strategy, and as public perception.

### **2.2.1 Labor and workforce-oriented**

This thematic area describes how just transition is a labor-oriented concept as it captures how jobs, the workers, communities, different sectors, and stakeholders will be affected in transition away from an extractive economy to regenerative one (Wang and Lo 2021, 2-3). Policies and mechanisms at the national and local levels play a significant role in ensuring that the transition is fair to all stakeholders and sectors to be affected directly and indirectly. In the ILO (2015, 12) guidelines, it is proposed that accompanying policies must be formulated through social protection (e.g., unemployment insurance and benefits, skills training and upgrading, workforce redeployment and other appropriate measures) “to support enterprises and workers in sectors negatively impacted by the transition to sustainable development.”

### **2.2.2 Integrated framework for justice**

This thematic area describes how just transition is linked with other established concepts in the justice-related literature, such as environmental, climate, and energy justice, which emphasizes distributive and procedural justice and that the transition must be just and equal in its effects and implementation (Wang and Lo 2021, 3-5).

### **2.2.3 Socio-technical transition**

This thematic area describes just transition as a theory of socio-technical transitions, which capture structural system changes that involve long-term and complex reconfigurations of



technologies, policies, infrastructure, scientific knowledge, and social and cultural practices (Wang and Lo 2021, 5-6).

#### **2.2.4 Governance strategy**

This thematic area describes how just transition is viewed as governance strategies and is shaped by political context (Wang and Lo 2021, 6-7). In 2021, Huang and Liu (2021, 4) defined transition governance as “a multi-dimensional, multi-level, multi-actor and multi-phase governing process with the purpose of facilitating systemic transformations of socio-technical regimes towards sustainability.”

#### **2.2.5 Public perception and attitudes**

This thematic area describes just transition from the perspective of public perception, acceptance, and stakeholders' attitudes toward energy transition. According to previous studies about attitudes towards energy transition and how fossil fuel industry stakeholders adapt to energy transition efforts, people and communities' attitudes towards energy transitions are influenced by several factors, including unemployment, environmental sensitivity, and an ingrained connection to the fossil fuel industry (Wang and Lo 2021, 7).

### **2.3 Transitioning the Transport Sector**

The transport sector is one of the largest emitting sectors with direct GHG emissions of 8.7 GtCO<sub>2</sub>-eq and accounted for 23 percent of global energy-related CO<sub>2</sub> emissions (IPCC 2022, TS-67). Seventy percent of the direct transport emissions came from road vehicles, one percent from rail, 11 percent from shipping, and 12 percent from aviation (IPCC 2022, TS-67).

There is no scenario for achieving the ambition of net-zero by 2050 without the transformative changes and decarbonizing the transport sector. Such also threatens the Paris Agreement target to keep global average temperature rise “to well below 2°C above pre-industrial levels and

pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels” (United Nations 2015, 3). This emphasizes the importance of just, fair, and inclusive transition to a sustainable, low-carbon world, and making sure that key themes of just transition and their principles will be integrated and implemented in climate actions and transition pathways in the transport sector.

Meanwhile, the Intergovernmental Panel on Climate Change (IPCC) identified some focus area that will contribute in tackling and addressing climate mitigation goals in the transport sector, such as (a) “the need for demand management solutions combined with new technologies”; (b) “changes in urban form, behavior programs, the circular economy, the shared economy, and digitalization trends”; (c) “fuel and technology shifts”; (d) “the need to plan for the significant expansion of low-carbon energy infrastructure, including low-carbon power generation and hydrogen production, to support emissions reductions in the transport sector”; and (e) “legislations at all levels of government that support transport plans, vehicle and fuel efficiency standards, research and development, and large-scale investments in low-carbon transport infrastructure” (IPCC 2022, TS-67-69).

## 3. Research Methodology

### 3.1 Overview

The following sections identify and discuss the research design for the systematic review and analysis, focus thematic areas to capture just transition in transport, and interview process and topic coverage.

### 3.2 Systematic Review and Analysis

To implement the systematic comprehensive review and analysis of documents related to just transition in transport, three main steps are identified and completed. The first phase includes the search, identification, and collection of documents from 2019 to 2021 from Scopus, “the largest abstract and citation database of peer-reviewed literature and contains over 22,000 titles from more than 5,000 publishers around the world” (Elsevier 2014, 1). During the construction of the queries, the strings were searched only within index terms and metadata “titles, abstracts, and keywords” in the Scopus. The search terms for the two concepts were linked with the Boolean operator “AND”, while the Boolean operator “OR” was used to link possible terms. “TITLE-ABS-KEY (“sustainable transportation” OR “sustainable transport” OR “transport system” OR “low carbon transport” OR “micromobility” OR “bus rapid transit” OR “BRT” OR “public transportation” OR “public transport” OR “ebuses” OR “cycling” OR “biking” OR “walking” AND “just transition” OR “justice” OR “environmental justice” OR “social inclusion” OR “social equity” OR “equality” OR “fairness” OR “equity” OR “systems change” OR “top-down transition”). This phase resulted in 1,310 documents.

The second phase includes the screening and eligibility check. This stage includes removal of documents duplicates and assessment of eligibility for inclusion in the systematic review and analysis. From 1,310 document, only 74 documents from Scopus passed the eligibility check and successfully included in the data review and analysis.

The third phase includes the review and analysis of frames of just transition in the transport sector based on the 74 documents from Scopus from 2019 to 2021 and using the following categorizations: document type, study site, regional groups, funding, focus transportation modes, and just transition thematic areas, such as labor-oriented concept, integrated framework for justice, socio-technical, governance, public perception and attitudes, and cross-cutting characteristics. For the definition of each thematic area, kindly refer to the second chapter. The sixth theme, however, are added by the researcher to capture and describe documents that focus on the multiple thematic areas or the combination of such.

### **3.3 Key Expert Interviews**

Two experts from the transport sector are invited for online interview to discuss the definition of just transition, their current transport engagements that relate to just transition, key thematic areas to consider in integrating just transition framework in the transport sector, the challenges in and significance of just transition in transport. Both informants, however, chose to remain anonymous.

## 4. Results and Discussion

### 4.1 Overview

This chapter identifies and discusses the main findings from the systematic review of literature and key expert interviews, focusing on the number of reviewed documents, study sites and their regional location, funding availability, transportation modes, and just transition thematic areas. The definition of just transition from the sector, current engagements in relation to just transition, alignment strategies and focus areas, and challenges and significance of just transition in the transport sector will also be discussed.

### 4.2 Systematic Literature Review Findings

Tables 1 and 2 identify the number of reviewed documents from 2019 to 2021 (74 documents or  $n = 74$ ). The most frequent type of document is article (71.62 percent), followed by conference paper (13.51 percent), book chapter (9.46 percent), and review pieces (5.41 percent). The data reveal that most content related to just transition in transport is original research or opinion and recently published (Elsevier 2020, 11).

Table 1. Publications included for systematic review, 2019-2021

Year of publication	Frequency	Percentage
2019	17	22.97
2020	23	31.08
2021	34	45.95

*Note:  $n$  means sample size;  $n = 74$*

Table 2. Reviewed documents by type

Document type	Frequency	Percentage
Article	53	71.62
Conference paper	10	13.51
Book chapter	7	9.46
Review	4	5.41

Table 3 lists the focus study sites or countries of the reviewed documents. Documents focusing on multi-country case studies are the most common ones (21.62 percent), followed by documents with no identified or specific location (13.51 percent). United Kingdom is also a frequent study site focus for documents on just transition in the transport sector (12.16 percent), followed by Sweden (5.41 percent), Germany (4.05 percent), and Norway (4.05 percent), highlighting that quarter of the documents reviewed is from developed economies.

Table 3. Reviewed documents' study sites by country

Country	Frequency	Percentage
<i>Multi-country</i>	16	21.62
<i>Location not identified</i>	10	13.51
United Kingdom	9	12.16
Sweden	4	5.41
Germany	3	4.05
Norway	3	4.05
Philippines	2	2.70
Colombia	2	2.70
Russia	2	2.70
Australia	2	2.70
Austria	2	2.70

Spain	2	2.70
India	2	2.70
Italy	2	2.70
Egypt	1	1.35
Thailand	1	1.35
Canada	1	1.35
Ireland	1	1.35
Poland	1	1.35
South Africa	1	1.35
South Korea	1	1.35
Hong Kong	1	1.35
Switzerland	1	1.35
Greece	1	1.35
Algeria	1	1.35
Pakistan	1	1.35
Ethiopia	1	1.35

*Note:* “Multi-country” denotes multiple study sites in two or more countries, while “location not identified” denotes the unidentified study site or focus location for some of the studies.

Table 4 reveals that most of the documents reviewed have received funding (51.35 percent) while the rest has none (48.65 percent). Table 5 lists which regional groups have funding, with Western European and Others Group (WEOG) to be highest (22.97 percent). Reviewed documents from the Asia and the Pacific Group have limited funding (2.70 percent), similar to Eastern European Group (2.70 percent), African Group (1.35 percent) and Latin American and Caribbean Group (GRULAC) (1.35 percent). This suggests that not only the number of documents focusing on just transition in transport is more frequent and completed in developed countries, but the funding is also frequent and provided in these countries.

Table 4. Reviewed documents by funding

Availability of funding	Frequency	Percentage
No funding	36	48.65
With funding	38	51.35

Table 5. Regional groups by funding

	No funding		With funding	
	Frequency	%	Frequency	%
Western European and Others Group (WEOG)	14	18.92	17	22.97
<i>Multi-country</i>	6	8.11	10	13.51
<i>Location not identified</i>	5	6.76	5	6.76
Asia and the Pacific Group	6	8.11	2	2.70
Eastern European Group	1	1.35	2	2.70
African Group	3	4.05	1	1.35
Latin American and Caribbean Group (GRULAC)	1	1.35	1	1.35

*Note:* Regional grouping follow the United Nations' regional groups of its member states



Table 6 identifies that the most common modes of transportation in the reviewed documents are road transport (59.46 percent), followed by intermodal transport (36.49 percent) and maritime transport (4.05 percent). This reveals that documents primarily focus on road transport, creating a knowledge gap on specific contextualization of just transition in air and rail transport, as well as maritime transport. When it comes to regional groups (see Table 7), countries from WEOG have the highest documents that focuses on road transport (25.68 percent) and intermodal transport (16.22 percent). While countries from Asia and the Pacific Group, African Group, Eastern European Group, and GRULAC reported some documents that focus on just transition in road transport, there is a knowledge gap on specific contextualization of just transition in maritime, rail, air, and intermodal transport in these regions.

Table 6. Reviewed documents by transportation mode focus

Transportation modes <sup>1</sup>	Frequency	Percentage
Road transport	44	59.46
Intermodal	27	36.49
Maritime transport	3	4.05

<sup>1</sup> According to Rodrigue (2020, 151-195), “*road transportation* involves moving passengers and freight with vehicles over a prepared surface; *rail transportation* refers to the movement of vehicles on guideways; *maritime transportation* concerns the movement of passengers and freight over water masses, from oceans to rivers; *air transportation* is the movement of passengers and freight by any conveyance that can sustain controlled flight; and *intermodal transportation* concerns the movements of passengers or freight from an origin to a destination relying on several modes of transportation.”

Table 7. Transportation mode focus by regional groups

	Road		Maritime		Intermodal	
	Frequency	%	Frequency	%	Frequency	%
WEOG	19	25.68	0	0	12	16.22
Multi-country	6	8.11	2	2.70	8	10.81
No location	4	5.41	1	1.35	5	6.76
Asia and the Pacific Group	8	10.81	0	0	0	0
African Group	3	4.05	0	0	1	1.35
Eastern European Group	2	2.70	0	0	1	1.35
GRULAC	2	2.70	0	0	0	0

Table 8 shows the focus of just transition thematic areas in the reviewed documents. Majority of the documents tackle cross-cutting themes of just transition (66.22 percent), followed by socio-technical transition (24.32 percent). While there is no document that focuses specifically only on labor and workforce dimension of just transition in transport, two studies in cross-cutting themes included a discussion of labor and how it relates to other themes such as policy, public participation, user involvement, and the expected diversity of the user roles (Sopjani et al. 2019; Herberg et al. 2020). This suggests that most documents focus on overarching themes of just transition not only about one theme or topic.

Table 8. Reviewed documents by just transition thematic area

Thematic area	Frequency	Percentage
Cross-cutting themes	49	66.22
Socio-technical	18	24.32
Public perception	4	5.41
Integrated framework for justice	2	2.70
Governance	1	1.35

The countries from WEOG have the highest documents that focus on cross-cutting themes of just transition in transport (22.97 percent) and socio-technical transition (12.16 percent) (see table 9). Documents with multi-country case studies also reported a high number of cross-cutting themes (17.57 percent), followed by countries in Asia and the Pacific (8.11 percent). This suggests that there is a need to plan and implement original research that will contextualize the approaches and experiences of just transition in African and Eastern European Group and GRULAC, and across all thematic areas.

Table 9. Just transition thematic areas by regional groups

	Justice		Socio-technical		Governance		Public perception		Cross-cutting	
	F	%	F	%	F	%	F	%	F	%
WEOG	1	1.35	9	12.16	1	1.35	3	4.05	17	22.97
Multi-country	0	0	3	4.05	0	0	0	0	13	17.57
No location	0	0	4	5.41	0	0	1	1.35	5	6.76
Asia and the Pacific Group	1	1.35	1	1.35	0	0	0	0	6	8.11
African Group	0	0	1	1.35	0	0	0	0	3	4.05
Eastern European Group	0	0	0	0	0	0	0	0	3	4.05
GRULAC	0	0	0	0	0	0	0	0	2	2.70

*Note:* F means frequency; % means percentage.

Documents with cross-cutting themes specifically focus on road transport (35.14 percent) and intermodal transport (28.38 percent) (see table 10). This is partly similar to documents with socio-technical transition themes who reported high in road transport (17.47 percent). This reveals the need to plan and implement research that will contextualize other thematic areas of just transition and other transportation modes.

Table 10. Just transition thematic areas by transportation modes

Just transition thematic area	Road		Maritime		Intermodal	
	Frequency	%	Frequency	%	Frequency	%
Justice	1	1.35	0	0	1	1.35
Socio-technical	13	17.57	1	1.35	4	5.41
Governance	1	1.35	0	0	0	0
Public perception	3	4.05	0	0	1	1.35
Cross-cutting	26	35.14	2	2.70	21	28.38

## 4.3 Expert Interview Findings

### 4.3.1 Definitions of just transition

Both participants share similar view on the definition of just transition, highlighting how it is about not leaving anyone behind in the transition from fossil fuel-dependent economies to low-carbon or decarbonized world.

“We have included the importance of inclusive, trust, and just transition; it is basically to not leave anyone behind as we move forward or as sector evolves due to climate change, different technology disruptions, and even due to different pandemics in the future” (Informant 1, July 2022).

The second informant echoed the same conceptualization and highlighted the importance of social dimension:

“From what I understood about this term (just transition), it focuses on the social dimension and making sure that when we transform the mobility systems in cities no one will be left behind, which includes workers in the transport sector. For instance, in the work we do in Africa, Asia, and Latin America, we need to consider the context as there are already issues of social imbalances and social segregation in these regions” (Informant 2, July 2022).

The second informant also added how just transition is framed within the concept of sustainable mobility:

“For my opinion, we frame just transition within the concept of sustainable mobility, which has two parts: sustainable and the mobility part. Sustainability includes dimensions like environmental, social, and economic, while sustainable mobility includes emission reductions and how to make transport cleaner, more efficient, and less environmentally harmful (Informant 2, July 2022).

#### **4.3.2 Current engagements that relate to just transition in transport**

The two informants shared current work engagements that relate to just transition, but they explained how such activities are not directly labeled as just transition.

“We do have an ongoing project, a relatively new project on the social inclusion of transport. But it is not framed within the narrative just transition; it is looking at the different user groups of transport and asking how we can improve the inclusivity of transport within the context of change and how we can make sure that we will achieve both sustainable and inclusive transportation at the same time” (Informant 1, July 2022).

The second informant shared their current engagement that relates to policy, and emphasizes the importance of public participation:

“Our work in sustainable urban mobility plans and national urban mobility policies fit the concept of just transition. These are comprehensive policy instruments that see the big picture of what is happening within the mobility system of certain places at the national and local level. The participation approaches are very important to the development of these policy instruments to bring all the people and their voices in the process” (Informant 2, July 2022).

### **4.3.3 Key themes to consider in integrating just transition framework in transport**

Labor-oriented issues are identified to be a main area to consider in just transition in transport.

The first informant pointed out how countries are realizing their status quo and identifying the need to cater for both workers and users:

“Countries are starting to understand and have also realized that they do not have the tools, the policies, and the regular a framework in place. One of the most prominent examples that I can share is on electric mobility. When you are transitioning from this technology, it is not just always about people using these electric cars. We also talk about the users and the workers. Transport workers are not in a very good position when we start to look at the just transition. We already highlighted these issues; workers are not getting enough protection and they are not having enough policies, laws, or regulations to support and protect them” (Informant 1, July 2022).

The first informant also explained the importance of skills training, suggesting it is one of the challenges of some countries:

“We also thought about training existing workforce and re-skilling and upskilling the existing workforce. This is one of the reasons why the labor component of just transition is more prominent than many of the others, because it is a challenge that countries are facing right now” (Informant 1, July 2022).

Meanwhile, the second informant also discussed the role of labor and conceptualized it in the informal transport sector:

“I think the labor dimension is very important because there is a large number of people working in this informal transport sector, and without them participating in the transition this will not work. The informal transport will continue to emit a lot, and the labor conditions will not be improved for them” (Informant 2, July 2022).

Governance is also identified as key consideration in just transition alignment for transport:

“Governance is also key to just transition, especially for cities who do not have capacities. If there is no good governance arrangement, policy document that will be written and developed will be unused and will have no practical effect or impact. Part of the governance component is participation from people, their support, and knowing their needs and point-of-view and making sure that the solutions are tailored-fit in their circumstances and context” (Informant 2, July 2022).

While labor workforce and governance have been identified as main alignment focus for just transition in the transport sector, it is argued to consider all stakeholders and sectors in tackling and addressing such issue:

“I think mobility systems in cities are complex systems, and they are not simple entities because they have a lot of complicated and interlinked interactions among infrastructure, people, operators, government services, and users. There are also way more many stakeholders to bring into the equation, and the way they behave and operate and relate to each other, making it complex. So, I think if we are going to talk about the transition and transformation of such a complex system, we cannot have like simple definitions or simple terms, because at the end the problem is complex” (Informant 2, July 2022).

#### 4.3.4 Challenges and gaps in the implementation of just transition

Some of the challenges and gaps identified by the first informant are the existing governance structure, policies, and regulatory framework:

“There are many challenges, but it is not something that the transport sector can solve alone. It is about changing the governance structure and to shift our current view of different policies or decision-making processes to something that is more compressive and more holistic. Existing policies also have not captured a lot of these issues which is why it is very hard for us to think about just transition when we do not have that existing regulatory framework in place” (Informant 1, July 2022).

The second informant, however, pointed out the challenges in inclusivity and fundamental definition of just transition:

“The concept of just transition is not very clear. It is difficult to work on something that we do not know or we are not familiar with or maybe try to tackle the problem that we do not even know that it exists. Inclusiveness in the process of transport planning is another challenge of just transition in transport. It is very difficult to bring all the people on board. It is complex system of users, operators, the government, and the infrastructure developers and all other stakeholders. But at the end because also resources are limited, and the time is also tight, making participation super difficult to actually make and comprehensive participative process. It also means that there will be some social groups behind whose needs and desires and expectations will not be met because there was not space for them to speak up and to express their opinion” (Informant 2, July 2022).



#### 4.3.5 Significance of just transition in the transport sector

The first informant viewed just transition as collaborative process which opens important approach in tackling decarbonization process and mobility transformation at all levels and across different sectors:

“I think so at the end of the day, it is really about collaboration. It is about coordination, collaboration, and making sure there is horizontal integration and vertical coordination to ensure that the just transition movement is happening on all levels and across all sectors” (Informant 1, July 2022).

The second informant agreed on how just transition aims for holistic approach to tackle the decarbonization in the transport sector.

“On the significance of just transition, I will bring back the example of electrification. I think we will not solve the problem of emissions through electrification alone without considering other factors because you will keep having the same problems that are not related to the environmental issues in transport planning. You will still have traffic jams, unfair use of public space for the city, and rich people taking a lot of space to move around unlike other lower income groups that have to access public transport. I think it is important to bring all dimensions because we do not want only the outcome of reducing emissions, we really want the mobility system to be transformed. To pass from transport planning to mobility planning, it is not only about using active modes and reducing the dependence to fuels. It also includes seeing how we make things differently and reallocation of public spaces. I think without just transition we will just have a technological shift rather than actually a transformation of the mobility systems in the world” (Informant 2, July 2022).

## 4.4 Synthesis

This chapter confirms the existing discourse and state of knowledge of just transition in the transport sector using the collected documents from 2019 to 2021. There is also a significant increase of documents that capture just transition in transport from 2019 to 2021. In summary, a quarter of such documents reviewed are from developed countries, particularly United Kingdom, Sweden, Germany, and Norway, and more than half of the reviewed documents received a funding.

The most existing frames of just transition in transport are captured through cross-cutting themes and socio-technical transitions, highlighting how just transition interlinks with several areas, sectors, stakeholders, and socio-economic dimensions of society from labor, policies and regulatory frameworks, technologies, infrastructure, as well as cultural practices. Most of these documents tackle and address just transition in road and intermodal transport, which calls for further assessment and future research that will center on other modes of transportation, such as maritime, air and rail transport.

The additional section on interview with experts from the transport sector contributed to the discourse of just transition in the transport sector, particularly on its definition and conceptualization, existing engagements, priority areas in the implementation, and challenges and significance in the sector. While there is no overarching and universal definition of just transition for the transport sector, several activities exist which capture the principles of just transition.

As stated by the informants, labor and workforce dimension and governance are identified to be the major priority focus areas to be considered when transitioning to low-carbon or decarbonized economies. It is pointed out that the transport system is complex; thus, all other elements and thematic areas of just transition must be prioritized as well. Lastly, it was

described how just transition can be seen as collaborative process because it captures coordination and collaboration in different levels of society and across different sectors.

## 5. Conclusions

This research offers a systematic, comprehensive assessment of just transition frames in the transport sector. Most of the common frames of just transition in transport are categorized as cross-cutting and socio-technical themes, emphasizing the interconnections among labor, policies and regulatory frameworks, technologies, and infrastructure. While limited, other reviewed documents specifically capture labor, how just transition in transport relates to environmental justice, climate justice, and energy justice, governance, and public perceptions and attitudes. In most of the reviewed documents, just transition is discussed and addressed in relation to road and intermodal transport, which calls for additional assessment and future research that centers on other modes of transportation, such as, air, maritime, and rail.

This research contributes to the existing literature of just transition in transport and shaping the discourse on just transition definition and framework, on how it is contextualized across all modes of transportation, and on how it relates to the overarching paradigm of just transition, such as labor, justice, socio-technical, governance, public perception and attitude, and even its cross-cutting characteristic.

**There is a need for clarification of definition and framework for just transition for the transport sector and even beyond.** This research confirms the lack of an overarching definition of just transition in transport, but it emphasizes how works and mechanisms in the sector are already implemented projects that relate to fairness and inclusiveness. A clarification of definition, if not a creation of one, will be beneficial for the transport sector in categorizing the transition mechanism to decarbonized economies and seeing and assessing where it needs support and improvement.

**There is a need for more comprehensive discourse on thematic areas of just transition.**

This research confirms the cross-cutting themes and socio-technical transition as the most common frames of just transition in transport. Future research and project implementations that will tackle and address other dimensions of just transition in all modes of transportation (e.g., integrated framework of justice, governance, and public perceptions and attitudes), however, must be planned and completed to see how such thematic areas are contextualized in the sector. Such findings will guide understanding on how mechanisms of decarbonization affirm just, fair, and inclusive transition.

**There is a need to contextualize just transition across all transportation modes.** This research confirms how research on transport and its relation to just transition has been skewed to focus more on road and intermodal transport, leaving other modes of the sector, such air, maritime, and rail behind. This creates a gap as other workers, groups and stakeholders are linked to these other modes of transport. The transition to a low-carbon and decarbonized world is only possible if all modes of transport are represented. Research and project implementation and assessment are necessary to understand such complexities of all modes of transportation and how just transition and its key themes can affect them.

We are at the crossroads of transitioning from fossil fuel-dependent economies to decarbonized world and creating policies that promote and prioritize climate actions, resilience, and sustainability in transport and other sectors, while also ensuring that most vulnerable groups, sectors, and communities are not neglected and can still contribute to and benefit from ongoing and future transitions. While the momentum behind just transitions in the transport sector shows the concept resonates with some countries and non-state institutions, as well as in different modes of transportation, there must be a deliberate approach to apply lessons learned,

advance solutions, and act more to ensure the transition to a decarbonized world is not only sustainable, but also just, fair, and inclusive.

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## **Personal Communications**

- Informant 1. July 2022. “Online Interview with the Author.”
- Informant 2. July 2022. “Online Interview with the Author.”