

THE ROAD TO

NetZero



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RAVI MENON TALKS
ABOUT THE NGFS AND
ITS SUPPORT FOR THE
MOVE TO NET ZERO

IVANA POPOVIC ET AL
DISCUSS WHAT A JUST
TRANSITION MEANS FOR THE
FINANCE SECTOR

REDUCING UNCERTAINTY
WILL HELP THE TRANSITION.
SABINE MAUDERER
ELABORATES

SUSTAINABLE DEVELOPMENT

Foreword

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elcome to the Winter edition of The Road to Net Zero, a *World Commerce Review* supplement. This publication has been prepared in response to readership demand for an overview of the steps being taken in the transition to a cleaner and greener sustainable world.

All aspects of climate action are examined, with the most respected authors providing the reader with the most comprehensive information available. Our brief is to provide all the data necessary for the readership to make their own informed decisions. All editorials are independent, and content is unaffected by advertising or other commercial considerations. Authors are not endorsing any commercial or other content within the publication. ■

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What is a just transition and how does it affect the financial sector?



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1. Introduction

The concept of a just transition integrates social and environmental concerns related to a net zero transition. It stems from the fact that, although climate change is an environmental issue, it will unavoidably lead to changes that have social implications as well (Robins *et al* 2019). While 'a ton is a ton [of CO₂]', and while it might be a useful measure for carbon budgets it does not reveal much about the socio-economic consequences associated with reducing its emissions (in Carton *et al* 2021).

Indeed, if net zero is 'science-based', a just transition is 'rights-based' (Curran *et al* 2022). A just transition aims to address the adverse effects a low-carbon transition might have on society, thus preventing or at least mitigating any social harm. At the same time, it aims to seize opportunities arising from addressing social injustices.

The move to a net zero future entails profound changes for societies and economies. In the UK, for instance, one fifth of jobs will be affected by a low-carbon transition (Robins *et al* 2019). Climate adaptation and mitigation policies have long-term benefits for society (eg. preservation of biodiversity, improved public health, job creation, and enhanced energy security).

In the short-term, however, and if poorly managed, climate policies can result in unequal distributions of costs and benefits among different groups and countries (Ludden *et al*; Robins *et al* 2020). Transitioning from high-emitting activities may result in stranded workers and communities (Gambhir *et al* 2018, p. 3), as well as missed opportunities for employee retention and skill improvement (ILO, 2022a).

Net zero transitions may also negatively affect low-income consumers, peripheral regions, and local economies (Robins *et al* 2020). Social inequalities can also be perpetuated or solidified, especially among vulnerable groups, who may not be able to adjust to the changes associated with the transition.

As low-carbon energy sources expand, they may also create concerns related to human rights such as abuses of indigenous peoples' rights, displacement, and loss of livelihoods (Gambhir *et al* 2018; Signorelli and Horvath, 2019). *"Systematically factoring in such risks (...) is central to a just transition"* (ILO, 2022a).

A central axiom of just transition thinking is that a green future may not be possible if not supported by measures aiming to tackle the social injustice that it might bring

Taking action to address climate change does not automatically generate socio-economic benefits (Robins *et al* 2020). Therefore, climate action should be accompanied by policies that would mitigate socio-economic risks and maximise related opportunities. The need for climate mitigation and adaptation is well established, as is the need for addressing the social consequences of those actions.

Striking a right balance between the two, however, remains a challenge (Ludden *et al* 2021). It is important to note here that concerns related to justice are not to be used as an excuse for climate-related inaction (Robins *et al* 2020). A just transition is not at odds with climate mitigation and adaptations efforts, but rather an integral part of those efforts.

It recognises that countries, communities, businesses, and social groups have different capacities when facing a low- carbon transition. These differences must be addressed to ensure that 'no one is left behind'.

The purpose of this paper is to contribute to the discussion of a just transition with a particular focus on the financial sector. The paper is structured as follows. In the first part, it discusses what a just transition means in general. The second part of the paper focuses on a just transition for financial institutions.

Starting with an overview of the various components of a just transition, and why a just transition is important to the financial sector, the paper then proceeds to present a brief overview of the existing frameworks for integrating a just transition into financial institutions' strategies.

2. Just transition to net zero

2.1. Background

The idea behind a just transition appeared in the late 1970s when labour unions in the United States sought to support workers in polluting industries (Gambhir *et al* 2018; Morena *et al* 2018). Apparently, it was born when a

trade unionist, Tony Mazzocchi, started advocating for the rights of workers exposed to toxic chemicals over the course of their careers (Pinker, 2020; Morena *et al* 2018).

The term was introduced in 1995 by Les Leopold and Brian Kohler who argued that the real choice is not between 'jobs or the environment', but rather 'both or neither' (in Morena *et al* 2018). The concept gained international prominence during the 2000s, particularly in the context of UN discussions on climate change and sustainable development (Morena *et al* 2018)¹.

In 2015 the Paris Agreement called upon the Parties to consider *"the imperatives of a just transition of the workforce and the creation of decent work and quality jobs"* when taking actions to address climate change (UNFCCC, 2015).

In addition, the agreement notices the importance of climate justice, as well as the need for the Parties to *"respect, promote and consider their respective obligations on human rights, the right to health, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations and the right to development, as well as gender equality, empowerment of women and intergenerational equity,"* when taking climate-related actions. It also recognises the specific needs and circumstances that developing countries might experience when transitioning to a green future.

The Paris agreement was followed by the International Labour Organization's (ILO) Guidelines for a Just Transition (2015) and the Solidarity and Just Transition Silesia Declaration adopted at the UN COP24 in 2018 (UNFCCC, 2018). Since then, several countries (eg. Canada, Germany, South Africa, the EU, the UK) have also started developing initiatives related to a just transition (Robins *et al* 2021a).

In 2021, the G7 affirmed the ministers' commitment to address environmental justice and just transition objectives (G7, 2021). Commitment to supporting a just transition has been further reinforced by the Glasgow Climate Pact (UNFCCC, 2021) and the Sharm el-Sheikh Implementation Plan (UNFCCC, 2022).

Although the concept of just transition has been around for some time, its incorporation into climate action by financial institutions is a relatively new, but fast-growing phenomenon. Recently, Multilateral Development Banks (MDBs) released a joint statement outlining five High-Level Principles for a just transition (MDBs, 2021). The African Development Bank (2022) and European Bank for Reconstruction and Development (EBRD, 2020) have also initiated plans related to a just transition.

CDC Group together with other stakeholders have published a white paper on just transition in the banking sector (Clifford Chance LLP *et al* 2021) and developed just transition finance roadmaps for India (Tandon *et al* 2021) and South Africa (Lowitt, 2021).

Some banks have started supporting a just transition by integrating social justice into their environmental, social and governance (ESG) reports (eg. Citigroup, 2020), corporate social responsibility (CSR) policies (eg. Crédit Agricole, 2021), plans to support emerging markets (eg. Standard Chartered, 2022; Deutsche Bank, 2022), and assessment reports based on the principles for responsible banking (PRB) (Barclays, 2021).

In 2018, more than 160 investors committed to incorporating a just transition into their climate practices (UN PRI, 2020). In the UK, a coalition of more than 40 financial institutions, along with other stakeholders, formed the UK's Financing a Just Transition Alliance (Robins, 2021b).

Financial institutions are grappling with the realisation that a net zero transition opens new opportunities and benefits, but at the same time might produce negative socio-economic implications as well.

Crucially, a central axiom of just transition thinking is that a green future may not be possible if not supported by measures aiming to tackle the social injustice that it might bring. Thus, the question is not whether 'just' will become a necessary part of any net zero transition path, but rather how it will be achieved.

2.2. What is a just transition?

Although everyone agrees that a just transition puts people at the centre of climate-related discussions, the debate over what constitutes a just transition is far from settled. A just transition has no commonly accepted definition (Spengler *et al* 2021; ILO, 2021; Wilgosh *et al* 2022).

As a result, it can range from addressing concerns related to job losses during a low-carbon transition to more radical requests for transformation of the existing economic and political systems (Morena *et al* 2018). The table below illustrates how just transition definitions can vary.

Definitions of a just transition, thus, might range from those that refer to broad objectives, ie. fairness and inclusivity (eg. Spengler *et al* 2021) to those that describe more concrete objectives, ie. decent work and the eradication of poverty (eg. PCC, 2022).

The concept of just transition has been often associated with addressing injustices after they occur, usually in the energy sector and in regard to job losses in the process of shifting away from fossil fuels (Just Transition Commission, 2021).

However, the socio-economic impacts related to a low-carbon transition usually extend beyond those felt by workers directly employed in the fossil fuel sector - they include a broader range of actors and issues such as impact on local communities, concerns related to land use for renewable energy, and consumers, households, and businesses who will be affected by rising energy prices (Pinker, 2020).

Table 1. Examples of just transition definitions

Definition	Focus
“A just transition is one that ensures that climate action and efforts to build a sustainable economy are designed and delivered so that they improve social justice, with the interests of workers, communities and consumers particularly in mind” (Robins et al 2019, p. 3)	Social justice for different groups
“A just transition aims to achieve a quality life for all (...). A just transition contributes to the goals of decent work for all, social inclusion, and the eradication of poverty. A just transition puts people at the centre of decision making, especially those most impacted, the poor, women, people with disabilities, and the youth—empowering and equipping them for new opportunities of the future. A just transition builds the resilience of the economy and people through affordable, decentralised, diversely owned renewable energy systems; conservation of natural resources; equitable access of water resources; an environment that is not harmful to one’s health and well-being; and sustainable, equitable, inclusive land-use for all, especially for the most vulnerable” (PCC, 2022, p. 7).	Decent work, social inclusion, and the eradication of poverty; people at the centre (especially vulnerable groups); equality, inclusion
A just transition is “a transition to Net Zero and environmental sustainability that is fair and inclusive” (Spengler et al 2021, p. 12).	Fairness and inclusivity
“The key ingredients of what makes for a just transition are well-established: social dialogue (notably with workers and trade unions) in the workplace, along with respect for labour standards and human rights, economy-wide skills development and retraining, buttressed by social protection and safety nets. As many of the core high-carbon sectors are clustered in specific places, community renewal and regional development are crucial, along with a macroeconomic strategy to connect the just transition with key climate policy levers” (Tandon et al 2021, p. 11).	Social dialogue, labour standards and human rights; skills development, social protection; community renewal and regional development
“Nowadays, ‘Just Transition’ is a concept that considers the social and distributive effects of climate action across the population and the territories. The transition to a climate resilient, climate neutral economy presents a global opportunity to deliver inclusive development in the 21 st century, not just avoiding the damage of climate change, but also offering the potential for tackling poverty and inequality as well as ensuring protection of and respect for human rights. (...)” (Ludden et al 2021, p. 17).	Tackling poverty and inequality; protecting human rights

Table 1. Examples of just transition definitions cont.

<p>The term just transition “is best understood as a conceptual framework encompassing the complexities of the transition towards a sustainable, net zero emissions, and climate-resilient economy. This conceptual framework highlights public policy needs and aims to maximise the benefits of the transition, while minimising hardship for the workers, consumers and communities affected by it” (Platform on Sustainable Finance, 2022, p. 21).</p>	<p>Maximise benefits, minimise hardships for workers, consumers and communities</p>
<p>“A just transition for all towards an environmentally sustainable economy (...) needs to be well managed and contribute to the goals of decent work for all, social inclusion and the eradication of poverty” (ILO, 2015, p. 4)</p>	<p>Decent work, social inclusion, and the eradication of poverty</p>
<p>“At its core, achieving a just transition is about putting people at the centre of the climate change transition (...). Central to the just transition is the achievement of effective climate action (...), by means that fairly and inclusively share the benefits of the transition while supporting those who will be negatively impacted by it. The concept highlights the imperative to ensure that the shift to net zero is fair, and seen to be fair, across regions, sectors, the socio-economic spectrum, and generations. In the words of the UN Sustainable Development Goals (“SDGs”), it is about ensuring that no-one is left behind” (Clifford Chance LLP et al 2021, p. 11-14).</p>	<p>People at the centre of a transition, fairness (across regions, sectors, the socio-economic spectrum, and generations) and inclusiveness.</p>
<p>“At the company level, a just transition is an enterprise-wide process that plans emissions reduction efforts to maximise positive impacts and minimise negative impacts on workers and communities through retention and redeployment, skills training, new job creation, social inclusion and community renewal” (Just Transition Centre and the B Team, 2018, p. 3)</p>	<p>At the company level: retention and redeployment, skills training, new job creation, social inclusion, and community renewal.</p>
<p>“To ensure the required momentum for climate action, a “just transition” seeks to ensure that the substantial benefits of a green economy transition are shared widely while also supporting those who stand to lose economically – be they countries, industries, communities, workers or consumers” (EBRD, 2020, p. 8).</p>	<p>Supporting potential losers: countries, industries, communities, workers or consumers</p>
<p>The just transition is “a fair and equitable process of moving towards a post-carbon society. This process must seek fairness and equity with regards to the major global justice concerns such as (but not limited to) ethnicity, income, gender within both developed and developing contexts” (McCauleya and Heffron, 2018, p. 2).</p>	<p>Fairness and equity with regards to ethnicity, income, and gender in developed and developing countries</p>

Beyond climate change, the term can also refer to environmental justice (see, eg. McCauleya and Heffron, 2018) and winners and losers of an energy transition (Cha, 2020). In addition to economic and social losses, a just transition can also involve cultural and emotional losses as a result of, for instance, close cultural ties with a local coal mining industry that needs to be closed (Cha, 2020).

Finally, as well as addressing injustices once they have occurred, the aim is also to prevent them from occurring in the first place. Just transition objectives differ depending on research domains, ideological viewpoints, or stakeholders' needs. As a result, definitions of a just transition vary both in depth and breadth. These different approaches are discussed below in more detail.

When looking at stakeholders' approaches to a just transition, there is a difference between those that are 'group- or constituency-focused' (ie. focused on a particular group of stakeholders) and those that are 'sector-specific' (ie. focused on a particular sector, instead of the economy as a whole) (Morena *et al* 2018).

Furthermore, there is a difference between just transition approaches based on the degree of change sought. Those are the following approaches:

(1) Status quo – which does not call for changing the rules of global capitalism, but rather for 'a greening of capitalism' based on voluntary, bottom-up and market-driven initiatives;

(2) Managerial reform – which seeks to modify certain rules and standards within the existing economic system such as those that relate to employment and occupational safety, but without challenging the existing system and balance of power;

(3) Structural reform – which aims to ensure both distributive and procedural justice, requiring institutional change and structural evolution; and

(4) Transformative approaches – which promote alternative routes to the existing economic and political systems that are seen as responsible for environmental and social problems (Morena *et al* 2018).

A further distinction can be made between these approaches in terms of the degree of inclusivity, which might range from exclusive (ie. geared toward a particular group) to inclusive (ie. geared towards the benefit of society as a whole) (Morena *et al* 2018). The above classifications of just transition are, thus, based on how much change (ranging from small and voluntary to more radical) and inclusivity each seeks.

Wilgosh *et al* (2022) provide a similar classification by making the distinction between two approaches: a limited approach to a just transition based on the existing market-based solutions and employment patterns, and an expansive approach that seeks structural transformation and more inclusivity.

Furthermore, bearing in mind that a net zero transition represents a process of exiting high-carbon activities and entering low-carbon activities at the same time, a just transition might be related to both – ‘transitioning into’ and ‘transitioning out of’ activities (SSE, 2020). Both ‘in’ and ‘out’ transitions will disrupt existing economic activities and generate new ones, with consequent socio- economic impacts (Clifford Chance *et al* 2021).

Also, different research traditions have their own version of ‘justice scholarship’ (Heffron, 2021):

(1) Climate justice – focuses on sharing the benefits and costs of climate change from a human rights standpoint (eg. the just transition should address the impacts of climate change on vulnerable groups);

(2) Energy justice – focuses on the application of human rights throughout the energy life cycle (eg. the just transition should address energy poverty); and

(3) Environmental justice – focuses on the social and environmental dimensions of a transition, and the involvement of all citizens in the development and implementation of environmental policies (eg. the just transition should address the communities affected disproportionately by pollution) (see Heffron, 2021; McCauleya and Heffron, 2018; Lo, 2021; Jenkins *et al* 2016).

Generally, climate and environmental justice focus on addressing injustices after they happen, whereas energy justice, at least in some cases, aims to address injustices before they happen (Heffron, 2021).

Recent definitions of a just transition, which link key dimensions of climate, energy, and environmental justice, distinguish between the following just transition approaches:

(1) Distributive justice – ensures fair distribution of costs and benefits;

(2) Procedural justice – ensures that everyone has equal access to decision-making processes;

(3) Recognition justice – ensures that all groups' interests and needs are considered equally;

(4) Cosmopolitanism justice – refers to the transition effects from a global context; and

(5) Restorative justice – refers to repairing any injustice caused by a transition (see Heffron, 2021; McCauleya and Heffron, 2018; Ludden *et al* 2021; Williams and Doyon, 2019).

Space and time are also critical dimensions of a just transition (Heffron, 2021). Timelines (eg. 2030, 2050) influence transition speed (Heffron, 2021), while space may affect the degree of injustice. A transition needs to be grounded in 'place-based realities' (Robins *et al* 2020) and 'considerations of local needs, capacity and priorities' (Spengler *et al* 2021). Net job losses, for example, vary by region and country (Gambhir *et al* 2018).

This brief overview aims to raise awareness of the challenge of defining a just transition, and subsequently implementing related policies and plans. Depending on the context, the term might include anything from subtle, voluntary changes within the existing system of global capitalism to more radical societal changes.

Just transition might imply focusing on specific social groups (eg. workers and local communities), topics (eg. climate and energy transition), aspects of a net zero transition (eg. distribution and participation), and objectives (eg. eradication of poverty and inclusivity). Intuitively, all stakeholders understand what a just transition might imply. Terms such as fairness, inclusivity, and equality are well understood at the principle level.

However, the concept remains ambiguous when it comes to operationalising and taking action to address social injustices as part of net zero plans, as well as measuring and disclosing progress on a just transition. What is meant by 'just' might be subjected to various interpretations, based on a particular actor's views and needs, and a context.

There is a need, therefore, for further clarification of what is meant by a just transition, especially in terms of the roles that various actors (including financial institutions) should play in addressing social injustices. To transition to a net zero (and nature-positive) future, all aspects of social and economic life would have to be transformed.

Every aspect of that road should be closely followed by measures that will assure that the transition is just. If there is no clear definition of a just transition and its components, social injustice may remain unaddressed.

Figure 1. The legal geography 'Just' framework for the just transition

J U S T	T R A N S I T I O N	Justice	<ul style="list-style-type: none"> Justice takes the form of: <ul style="list-style-type: none"> - Distributive justice - Procedural justice - Restorative justice
		Universal	<ul style="list-style-type: none"> Universal takes the form of: <ul style="list-style-type: none"> - Recognition justice - Cosmopolitanism justice
		Space	Where are events taking place in terms of location? <ul style="list-style-type: none"> At the local, national or international level
		Time	Time takes into account transition timelines (eg. 2030 and 2050) and energy transition speed

Source: Adapted from Heffron and McCauley (2018, p. 77).

The following sections aim to consider a just transition with a particular focus on the financial sector's needs.

3. Just transition and the financial sector: Existing definitions, practices, and guidelines

3.1. Defining a just transition for financial institutions

The current section provides a brief overview of what a just transition means based on existing guidelines for the financial sector.

Some of the most prominent just transition frameworks for financial institutions incorporate distributive, procedural, and restorative justice principles (eg. Curran *et al* 2022; Muller and Robins, 2022). They recommend addressing the distributional implications of a net zero transition, delivering positive social impacts for workers, communities and consumers, and engaging with workers and other stakeholders (Curran *et al* 2022).

To achieve a just transition, it is usually recommended that financial institutions need to engage in social dialogue, respect labour standards and human rights, facilitate skills development, support social protection, communities' renewal, regional development, consumers and suppliers (Tandon *et al* 2021).

A just transition might also be defined through three mutually dependent elements: climate and environmental action, socio-economic distribution and equity, and community voice (Spengler *et al* 2021). The objective is sometimes more broadly defined - a just transition aims to maximise the economic and social benefits of climate action while minimising risks (ILO and Grantham Research Institute, 2022), it seeks to ensure that 'no-one is left behind' by providing fairness and inclusivity (PwC, 2022).

A just transition is also seen as a way of connecting climate-related concerns to other Sustainable Development Goals (SDGs) (Tandon *et al* 2021) or as the 'social' pillar of the ESG (Environmental, Social, and Governance) framework (Curran *et al* 2022).

It seems that the least common denominator is the understanding that both climate change and action will produce certain socio-economic injustices that should be prevented, mitigated, or compensated for in a fair manner.

There is also an understanding that any action related to a just transition should simultaneously be: (a) universal and place-based, (b) applied across all sectors as well as sector-specific, (c) all-inclusive and group-specific, and (d) dynamic as well as grounded in the status quo (Spengler *et al* 2021).

Financial institutions are expected to gain an understanding of the needs of different social groups, the risks they may face, and the opportunities for business that might arise as part of a net zero transition (Robins *et al* 2019). Their financial products and services should be designed to help clients achieve a net zero transition in a socially inclusive way (Robins *et al* 2020).

Usually, just transition frameworks for financial institutions identify workers, communities, suppliers, and consumers as key actors to be affected by a net zero transition (eg. Robins *et al* 2021a; Curran *et al* 2022). Their recommendations tend to be centred around these stakeholders. Some add to that group citizens (F4T, 2021b), indigenous peoples (ILO and Grantham Research Institute, 2022) and emerging markets (Standard Chartered, 2022).

‘Just nature transition’ frameworks for financial institutions have also begun to emerge (see Muller and Robins, 2022). The rationale is to address the socio-economic consequences of nature loss and actions to restore and preserve nature. Several just transition frameworks for the financial sector, like the one by Spengler *et al* (2021), include nature- and climate-related elements.

Since a number of financial institutions are seeking to assess climate- and nature-related financial risks and opportunities jointly, the development of just transition guidelines will likely follow a similar trajectory in the future.

3.2. Why is a just transition important for financial institutions?

Just transition objectives can only be achieved by shifting global finance and adopting investments that accelerate and support those objectives (Spengler *et al* 2021). The concept of a just transition is relatively new in the financial sector (Spengler *et al* 2021; Muller and Robins, 2021).

When used, it has been applied either very abstractly or narrowly to address the loss of jobs associated with a shift away from fossil fuels (Spengler *et al* 2021). Typically, investors look for either climate or social investments, rarely combining the two (Ibid.). A just transition should be about both. Its purpose is to integrate socio-economic concerns into climate-related finance and investments plans.

What makes a just transition significant for the financial sector? Firstly, financial institutions should incorporate a just transition into their plans to ensure compliance with growing national and international initiatives requiring a net zero transition to be just. All financial institutions are expected to align their strategies with the Paris Agreement and the Sustainable Development Goals (SDGs).

As mentioned earlier, the Paris Agreement calls all parties to align their policies with *“the imperatives of a just transition”* and climate justice, in addition to respecting and promoting human rights, indigenous peoples’ rights, local communities’ rights, vulnerable and marginalised groups’ rights and the right to development.

Besides calling for a just transition that promotes ‘decent work and quality jobs’, the Glasgow Climate Pact also calls for ‘sustainable development and the eradication of poverty’ as part of the just transition commitments (UNFCCC, 2021).

With the Sharm El-Sheikh Implementation Plan, just transition objectives have been further reinforced (UNFCCC, 2022). The document explicitly states that “*climate action should be implemented in a manner that is just and inclusive while minimising negative social or economic impacts.*”

It also calls for a just transition to renewable energy, just energy transition partnerships, and a social dialogue. The Plan emphasises that a ‘just and equitable transition’ includes ‘energy, socioeconomic, workforce, and other dimensions’ as well as social protection and social solidarity measures.

Similarly, since they connect environmental and social dimensions (eg. climate action and decent work) many SDGs overlap with just transition aims (Muller and Robins, 2022; Tandon *et al* 2021).

Aside from aligning their strategies with the Paris Agreement and Sustainable Development Goals (SDGs), financial institutions are also expected to adhere to human, social, and labour rights, as outlined in the UN Guiding Principles on Business and Human Rights (UNGPs) (UN, 2011), ILO standards, OECD Guidelines for Multinational Enterprises (OECD Guidelines, 2011), and other relevant documents (Clifford Chance LLP *et al* 2021; Curran *et al* 2022).

Even though the UNGPs and OECD Guidelines do not provide a comprehensive framework for financial institutions to integrate just transition dimensions into their policies, they serve as a critical foundational element (Clifford Chance LLP *et al* 2021).

Secondly, financial institutions should aim to support a just transition due to ‘the risks of not doing so’, especially when it comes to potential litigation exposures (Clifford Chance LLP *et al* 2021).

Increasingly, countries are pledging to make their net zero transitions ‘just’ by including just transition objectives in their Nationally Determined Contributions (ILO, 2022a). Some countries, such as Belgium, Germany, and the Netherlands, have adopted or are considering laws related to mandatory human rights and environmental due diligence (Clifford Chance LLP *et al* 2021).

Likewise, the EU Taxonomy which defines sustainable activities requires compliance with minimum safeguards, meaning those carrying out economic activities must ensure alignment with the OECD Guidelines, UNGPs, the eight fundamental conventions identified in the ILO Declaration on Fundamental Principles and Rights at Work, and the International Bill of Human Rights (Article 18, European Parliament and the Council, 2020).

All these initiatives increase the risk of overlooking socio-economic concerns related to a net zero transition, including the possibility of litigation. Though they may not produce legal effects immediately, financial institutions should begin adjusting to just transition requirements so that they can be ready to comply when they do (Clifford Chance LLP *et al* 2021).

Thirdly, the financial sector should support just transition efforts to reduce financial risks related to climate change and action. A just transition increases the support for green growth (Curran *et al* 2022). Some studies find that perceived fairness is an important predictor of public support for climate action (in Robins *et al* 2020).

Failure to consider socio-economic challenges could lead to climate action failing or being delayed, and consequently the financial sector may be adversely affected. Overlooking the risks of potential negative impacts on workers, businesses, or communities can result in operational and supply chains disruptions, changes in market demands, and deterioration of local economies, which in turn can negatively affect the health of the financial sector (ILO, 2022a).

A just transition thus helps financial institutions to manage systemic risks arising from climate change by integrating the environmental and social aspects of economic performance (PRI, 2020).

Besides, addressing social injustices related to the workforce and communities that may be negatively impacted by a net zero transition has become an 'increasingly material driver for value creation' (Ibid.), for instance by affecting customers' ability to repay loans due to technological changes (Robins *et al* 2020).

Fourthly, a just transition is important for financial institutions because it creates space for new business opportunities. Addressing social concerns is critical to building a resilient green economy that develops the needed skills and capabilities (Curran *et al* 2022) in a timely manner.

Overlooking human capacities and skills to deal with a net zero transition can 'bring less than optimal co-benefits' (ILO, 2022a). Through collaboration with vulnerable sectors, groups, and regions, the financial sector can identify new net zero opportunities (Robins *et al.*, 2020).

For instance, banks can adapt existing and develop new products, such as just transition linked corporate loans, in order to address socio-economic challenges and opportunities (Clifford Chance LLP *et al* 2021)².

3.3. Just transition in the financial sector: what is new and what is old?

Although relatively new in the financial sector, the concept of just transition overlaps or is closely related to some of the existing practices and rules that financial institutions already align with.

As mentioned earlier, financial institutions are expected to adhere to human, social, and labour rights, as outlined in the UN Guiding Principles on Business and Human Rights (UNGPs), ILO standards, OECD Guidelines, and other relevant documents, such as the International Bill of Human Rights.

Although these documents do not explicitly refer to a just transition, they cover some of the just transition objectives, such as the protection of human rights, employment, the environment, public health, and consumer interests.

Just transition objectives are also closely related to SDGs especially those that concern decent work and economic growth (SDG 8), reduced inequalities (SDG 10), poverty elimination (SDG 1), climate action (SDG 13) and protection and restoration of biodiversity and ecosystems (SDGs 14 & 15).

A number of financial institutions have already put in place activities aimed at supporting the SDGs. To achieve the SDGs, it is essential to ensure 'no one is left behind' and to build an 'inclusive and just society' (UN, 2015). These are also the goals that a just transition seeks to achieve.

A just transition is also closely associated with Environmental, Social and Governance (ESG) frameworks. According to some interpretations it is supposed to cover the social pillar of the ESG framework (see, eg. Curran *et al* 2022).

However, the environmental pillar of ESG often receives more attention than the social pillar (ILO, 2022a). For example, while Green Bonds represent the largest segment of the sustainable debt market, Sustainability-Linked Bonds (SLB) have only recently emerged (Ibid.).

Furthermore, financial institutions often consider environmental and social indicators separately, as part of their ESG disclosure frameworks, rather than addressing how social and climate issues intersect (UN PRI, 2022). To ensure a just transition they should connect the 'E' and 'S' pillars of their strategies (F4T, 2021b).

Financial institutions that focus on ESG considerations should consider whether and how they already incorporate aspects of just transition issues, and if so, where they may fall short (Clifford Chance LLP *et al* 2021).

Each of the above covers some aspects of a just transition, but not all. Besides, the goal of a just transition is to integrate socio-economic considerations into net zero transition plans and strategies.

It is not about considering environmental and socio-economic concerns separately, but rather simultaneously as part of transition plans and strategies aiming to avoid any social harm and maximise opportunities related to a net zero future.

Similarly, a just transition is about processes as well as outcomes (ILO, 2022a). It includes the participation, involvement, and support of all stakeholders through social dialogue.

Therefore, even though financial institutions may already apply certain principles and practices relevant to a just transition, they must do so in a more comprehensive and integrated manner so that potential socio-economic risks that could undermine a net zero transition are properly addressed while opportunities are seized.

3.4. Existing frameworks for incorporating a just transition into financial institutions' strategies

Generally, frameworks for implementing a just transition can be classified as those that focus specifically on a just transition (see Appendix 2, 3 and 4) and other related initiatives that do not explicitly refer to just transition objectives but intersect with them (see Appendix 1).

They can also be divided into those designed for governments and social actors (see Appendix 3) and those designed for financial institutions (see Appendix 4). This section focuses mainly on frameworks that are intended to provide recommendations for a just transition in the financial sector (listed in Appendix 4).

Some of the frameworks designed for the financial sector align their recommendations for a just transition with frameworks for financial institutions' net zero transition plans (eg. Curran *et al* 2022). Others focus on investment

vehicles (eg. Spengler *et al* 2021), commercial banks (eg. Clifford Chance LLP *et al* 2021), development banks (EBRD, 2020), financial institutions' practical decision-making (eg. PwC, 2021), or the integration of human rights into renewable energy investments (Signorelli and Horvath, 2019).

While some offer more principle-based guidance, others provide more detailed guidance. Finally, some of the frameworks focus on particular countries (eg. Tandon *et al* 2021), while others provide more general recommendations.

Based on the review of those frameworks, Table 2 outlines key steps and principles the finance sector should consider to address just transition concerns.

In general, all reviewed frameworks recommend financial institutions to integrate just transition objectives into their policies, plans, governance structures and procedures, products and services, engagements with clients and other stakeholders, and disclosure frameworks.

Banks are expected to assist their clients and customers in aligning with just transition objectives. This includes providing loans to customers to finance projects with positive social impact, conducting just transition due diligence, encouraging product development aiming to address social injustices etc.

Supporting SMEs to develop sustainable products and services is seen as particularly significant in that respect. Transition finance, green, social, sustainability, and sustainability-linked bonds are also considered particularly significant areas of bank financing that should be improved to address social injustices.

Similarly, investors are also expected to support just transition objectives, by incorporating a just transition into their strategies, setting clear targets related to a just transition, and applying extra-financial indicators related to social impacts, among other things.

As divestment and decarbonisation engagement might have far reaching negative social impacts, it is recommended that financial institutions approach this issue with suitable care.

The analysed frameworks suggest that in addition to general principles, strategies to deal with the socio-economic effects of a net zero transition should also be sector- and location-specific. A one-size-fits-all approach is not recommended.

Some sectors, such as energy, food, and transport, are seen as particularly vulnerable to social injustices. However, the social implications extend beyond these sectors and should therefore be addressed appropriately.

A just transition does not apply only to 'sectors undergoing decarbonisation', but also to 'net zero aligned and enabling activities that benefit from green financial flows' (ILO, 2022a).

There is also agreement that while some financial actors and companies have started developing plans for a just transition, this has been far from common practice. Most companies do not consider a just transition (WBA, 2021b) and financial flows are not systematically aligned with just transition goals (ILO, 2022a).

One of the reasons for this relates to the difficulties in identifying and tackling *"the components of the just transition agenda from a finance perspective because of a lack of consensus around definitions, limited standardisation of social metrics, difficulties in obtaining decision-useful data, emerging but still limited market recognition of the need to address*

Table 2. An overview of selected frameworks addressing a just transition designed for the financial sector

A just transition as part of financial institutions' net-zero transition plans (Curran et al 2022)	Just Transition Blueprint for investment vehicles (Spengler et al 2021)	Measures that commercial banks can implement a just transition in their financing (Clifford Chance LLP et al 2021)	Approaches to navigating a just transition to net zero – focus mainly on the energy and extractives sectors (PwC, 2021)	Integrating workers, local communities and consumers into investing and financing frameworks (F4T, 2021a, 2021b, 2021c)
<p>Foundations: Financial institutions should integrate a just transition into their net zero transition plans. Implementation strategy: (1) Financial institutions should provide assessments of the socio-economic implications of their net zero plans. (2) Banks should review their customers' portfolio of financing products and services with the aim of either embedding a just transition within existing products or developing new products that will support just transition objectives. (3) Investors should incorporate a just transition into their investment process and support assets that are geared towards it.</p> <p>Engagement: Financial institutions should engage with their customers, policymakers, and other stakeholders (eg. trade unions) with the aim of supporting a just transition.</p> <p>Metrics and targets: Financial institutions should develop and</p>	<p>Ambition – Principle: Investment vehicles should support the integrated just transition elements: climate and environmental action, socio-economic distribution and equity, and community voice. This should be grounded in local context.</p> <p>Investment strategy – Principle: Investment strategies should be explicitly aligned with the just transition elements. They should also be investable by institutional investors.</p> <p>Outcomes framework – Principle: Investment vehicles need to have clearly defined and transparent targets related to each element of the just transition.</p> <p>Structure Principle: Investment vehicles' structure and terms should enable the capital invested to advance a just transition. They should also allow institutional investor to participate.</p>	<p>A. Operationalising the just transition in banks' internal governance and systems:</p> <ul style="list-style-type: none"> To ensure a just transition, banks should have an appropriate governance structure. Banks' climate strategies should account for social implications. Banks should adopt just transition policies. Banks should integrate just transition considerations across risk categories and portfolio risk management. Banks should have the right and transparent tools for measuring progress on a just transition. <p>B. Operationalising the just transition through financial products and services: Two areas of bank financing are particularly relevant to a just transition: (1) Transition finance. (2) Green, Social, Sustainability, Sustainability-linked Bonds and</p>	<p>(1) Green finance Assessment of environmental and social impact, impact on local communities and jobs.</p> <p>(2) Decarbonisation engagement Financial institutions should work more closely with related companies to understand how they minimise the potential environmental and social harm they might cause.</p> <p>(3) Conditional transition finance Financial institutions could impose conditions on lending and investment activities to prevent environmental and social harm.</p> <p>(4) Managed phaseout Financial institutions, along with other stakeholders, need to understand and minimise the potential social harm caused by closing high-emitting assets.</p> <p>(5) Responsible divestment and exclusions Since divestment may have negative social and environmental</p>	<p>(1) Integrating workers in financing and investment frameworks Use cross-sectoral extra-financial indicators to integrate workers into investment strategies. Engage with companies to encourage them to implement just transition objectives. Develop financial instruments to reallocate capital to investments focused on a just transition.</p> <p>(2) Integrating consumers in financing and investment frameworks Three key sectors that will particularly need to integrate consumer needs are energy, food mobility: a. Financing frameworks</p> <ul style="list-style-type: none"> Provide loans to customers to finance long-term projects with positive social impact. Support SMEs to develop sustainable products and services. Support a just transition through insurance products. <p>b. Investment frameworks</p> <ul style="list-style-type: none"> Investing strategies should incorporate extra-financial

Table 2. An overview of selected frameworks addressing a just transition designed for the financial sector cont.

<p>disclose metrics for measuring just transition progress.</p> <p>Governance: Financial institutions should incorporate a just transition into their governance procedures and develop the in-house skills and capacities needed to support a just transition.</p>	<p>Governance – Principle: Investment vehicles' governance structure holds the vehicles accountable for just transition comments and allows for other stakeholders' participation.</p> <p>Operations – Principle: Investment vehicles staff have the necessary skills and capacities to implement a just transition.</p>	<p>Equivalent Loan Products.</p> <p>C. Operationalising at the transactional level – engaging with clients on the just transition:</p> <ol style="list-style-type: none"> 1. Preparatory activities. <ul style="list-style-type: none"> • Understanding the context. • Identifying additional funding sources. • Preparing clients to address just transition considerations. 2. Client and transaction screening. 3. Just transition due diligence. 4. Incorporating just transition issues in loan documentation. 	<p>impacts, financial institutions may decide to reinvest. This is where investment previously in fossil fuel assets/companies is reinvested in projects that have positive social and environmental impacts.</p>	<p>indicators related to environmental and social metrics.</p> <ul style="list-style-type: none"> • Utility companies provide affordable and low-carbon energy sources, so investors should consider investing in them. <p>(3) Integrating local communities in financing and investment frameworks</p> <ul style="list-style-type: none"> • Investors should consider local needs. • Businesses should contribute to the growth of a region through the jobs they create and the services they provide. • Investors should also consider the impact of their investments on nature.
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socio-economic impacts of the decarbonisation process, immaturity of available processes and mechanisms focused on social parameters and the fact that social spending is often seen as a cost rather than an investment” (ILO, 2022a).

Existing frameworks provide clear guidance on how financial institutions can incorporate a just transition into their strategies, governance, and products. However, further work is required to identify and standardise all components of a just transition - that is, socio-economic risks resulting from a net zero transition, pathways to address those risks, metrics for evaluating progress on a just transition, and business opportunities associated with it.

Future work is also necessary to develop sector- specific guidelines and to consider both the short-term and long-term socio-economic consequences of a green future. Meanwhile, firms and financial institutions that do engage with the just transition agenda should do so in a comprehensive and integrated manner that aligns environmental and social objectives.

4. Conclusion

The purpose of this paper is to contribute to ongoing discussions regarding a just transition and the financial sector. It is intended to facilitate future considerations of a just transition by providing an overview of available definitions and frameworks related to its aims and components.

The paper suggests that a just transition represents a multidimensional concept, and it should be regarded as such by the financial sector. Focusing solely on employment in high-emitting sectors, as has been the case in the financial sector up until now, is not sufficient.

A just transition encompasses a much broader set of issues, such as the impact of a low-carbon transition on local communities, concerns related to land use for renewable energy, social inequalities, and eradication of poverty.

These should be addressed in locally relevant and appropriate manner that respects the needs and concerns of specific stakeholders, especially the most vulnerable who are often voiceless in most settings.

Financial institutions should therefore start considering all these various components to ensure that a net zero transition is indeed just. Hence, to accelerate adoption and implementation by financial institutions, a broader consensus is needed on the definition of just transition.

An in-depth analysis and classification of socio-economic risks associated with net zero transitions that should be included in financial institutions' standard risk assessments will be presented in a follow-up paper published by the Centre for Climate Finance & Investment (CCFI).

The analysed literature also suggests that environmental and socio-economic concerns should not be treated separately but rather simultaneously to avoid social harm and maximise opportunities associated with a green future. The financial sector is also expected to engage with other stakeholders (eg. workers, local communities, and indigenous peoples) and understand socio-economic challenges they might face.

Furthermore, financial institutions should assess the social impacts of their decisions and activities, assist clients in aligning with just transition objectives, encourage product development aiming to address social injustices, and develop in-house expertise and governance structures related to a just transition. To do so they should firstly commit to making their net zero strategies 'just' by defining clear targets and metrics for measuring success.

While some financial actors, such as multilateral development banks and private sector players, are taking a more active role in just transition initiatives, a significant gap remains in the alignment of financial flows with just

transition goals (ILO, 2022a). Consequently, more work is needed to ensure that financial institutions are well-prepared for the challenges related to a just transition.

Besides identifying all relevant components of a just transition that should be considered by the financial sector, as discussed earlier, this also involves having a thorough understanding of the costs of a just transition as well as the business opportunities that are associated with it. ■

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Appendix

Appendix 1. A not-exhaustive list of initiatives that intersect with the just transition objectives

Initiative	Relevance for a just transition
OECD Guidelines for Multinational Enterprises (2011)	Non-binding recommendations and standards for responsible business conduct.
UN Guiding Principles on Business and Human Rights (2011)	Guiding principles on the issue of human rights and transnational corporations and other business enterprises.
International labour standards	A comprehensive system of instruments on work and social policy.
Principles for Responsible Banking (2019)	Framework for the sustainable banking system.
Sustainable development goals (SDGs)	The 2030 Agenda for Sustainable Development.
The EU Taxonomy for sustainable activities (2020).	The EU framework to facilitate sustainable investment.
Platform on Sustainable Finance – Final Report on Social Taxonomy (2022).	A proposal for a social taxonomy within the present EU legislative environment on sustainable finance.
Aizawa et al – Principles-Based Social Taxonomy for Sustainable Investing: Building blocks and lessons for the future (2022).	A social taxonomy proposal.

Appendix 2. A not-exhaustive list of international agreements and initiatives that refer to a just transition

Document	Relevance for a just transition
The Paris Agreement (2015)	<ul style="list-style-type: none"> • Calls on the Parties to consider “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”; and • Notes “the importance for some of the concept of ‘climate justice’, when taking climate action in addition to respecting and promoting human rights, indigenous peoples’ rights, local communities’ rights, vulnerable and marginalised groups’ rights, and the right to development.
Glasgow Climate Pact (2021)	Besides calling for a just transition that promotes “decent work and quality jobs” (as emphasised by the Paris Agreement) it also calls for “sustainable development and the eradication of poverty” as part of the just transition commitments.
Sharm El-Sheikh Implementation Plan (2022)	<ul style="list-style-type: none"> • It states that “climate action should be implemented in a manner that is just and inclusive while minimising negative social or economic impacts”. • It calls for a just transition to renewable energy, just energy transition partnerships, and a social dialogue. • It emphasises that a just and equitable transition includes “energy, socioeconomic, workforce, and other dimensions” as well as social protection and social solidarity measures.

Appendix 2. A not-exhaustive list of international agreements and initiatives that refer to a just transition cont.

Sharm El-Sheikh Implementation Plan (2022)	<ul style="list-style-type: none">• It states that “climate action should be implemented in a manner that is just and inclusive while minimising negative social or economic impacts”.• It calls for a just transition to renewable energy, just energy transition partnerships, and a social dialogue.• It emphasises that a just and equitable transition includes “energy, socioeconomic, workforce, and other dimensions” as well as social protection and social solidarity measures.
Solidarity and Just Transition Silesia Declaration (2018)	<ul style="list-style-type: none">• It commits to supporting a just transition, including the just transition of the workforce, as well as decent work and quality jobs in a net zero transition.• It recognises the challenges facing sectors, cities and regions in transitioning away from fossil fuels and high emitting industries, as well as the importance of ensuring a decent future for workers who are affected by it.• It emphasises the importance of a social dialogue aimed at increasing employment rates, ensuring social protection, and improving labour standards and welfare for workers.

Appendix 2. A not-exhaustive list of international agreements and initiatives that refer to a just transition cont.

<p>ILO – Guidelines for a just transition (2015)</p> <p>+ User’s manual to the ILO’s Guidelines for a just transition (2021)</p>	<ul style="list-style-type: none">• ILO’s guidelines for a just transition.• The guidelines cover the following areas: macroeconomic and growth policies, industrial and sectoral policies, enterprise policies, skills development, occupational safety and health, social protection, active labour market policies, rights and social dialogue and tripartism.
<p>PRI – Statement of Investor Commitment to Support a Just Transition on Climate Change (2020)</p>	<ul style="list-style-type: none">• Affirms investors’ commitment to support just transition objectives through investments, corporate engagement, capital allocation decisions, advocacy and partnerships, and transparency.
<p>UNFCCC – Just Transition of the Workforce, and the Creation of Decent Work and Quality Jobs (2016)</p>	<ul style="list-style-type: none">• It focused on the effect of climate change mitigation policies and actions on the workforce.• It also provides guidance on how to approach just transition at the national level.

Appendix 3. A not-exhaustive list of frameworks addressing a just transition designed for governments and other societal actors

Document	Relevance for a just transition
IEA – Recommendations of the global commission on people-centred clean energy transitions (2021)	The recommendations (designed for governments, funders, investors and international organisations) focus primarily on clean energy transitions.
PCC – A Framework for a Just Transition in South Africa (2022)	The document provides a just transition framework for South Africa.
Just Transition Commission – A national mission for a fairer, greener Scotland (2021)	The report provides recommendations for a just transition in Scotland.
ILO – A just energy transition in Southeast Asia (2022)	By examining the cases of Indonesia, the Philippines and Viet Nam, the report discusses the need to ensure a just transition while phasing out coal.
PRI - Proposals for a Just Transition Disclosure Framework in China (2022)	The report introduces a framework for companies to disclose their just transition commitments.
Council for Inclusive Capitalism - Just Energy Transition: A Framework for Company Action (2021)	The document provides a just energy transition framework for companies to ensure that their energy transitions are just for workers, consumers, and communities.
Just Transition Centre and the B Team – Just transition: A business guide (2018)	The guidance provides companies with practical considerations and processes to ensure a just transition for their workers and communities.

Appendix 3. A not-exhaustive list of frameworks addressing a just transition designed for governments and other societal actors cont.

SSE - Supporting a just transition (2020)	The document outlines SSE's just transition strategy and principles.
WBA - Just Transition Methodology (2021a)	The document presents just transition indicators used to evaluate companies' performance.
Climate Action 100+ -Net Zero Company Benchmark (2022)	The document contains indicators used to assess companies' disclosures, including those related to a just transition.
Atteridge and Strambo - Seven principles to realize a just transition to a low-carbon economy (2020)	The report presents seven principles of a just transition, including how to implement those principles in practice.
Ceres - Practices for Just, Equitable and Sustainable Development of Clean Energy Resources (2020)	Recommendations for the clean energy industry to adopt five best practices to help ensure that the transition to clean energy in the US is just, equitable and sustainable.
B4IG - Business for Inclusive Growth (B4IG) calls to put people at the heart of climate action (2021)	This paper proposes indicators for analysing and measuring business contributions to social challenges relating to a net zero transition.

Appendix 4. A not-exhaustive list of frameworks addressing a just transition designed for the financial sector

Document	Relevance for a just transition
Robins et al – From the grand to the granular: translating just transition ambitions into investor action (2021)	Framework that investors can use to assess a just transition.
Curran et al – Making transition plans just: How to embed the just transition into financial sector net zero plans (2022)	Guidance to financial institutions on how to incorporate considerations related to a just transition into their net zero transition strategies.
Tandon et al – Towards a Just Transition Finance Roadmap for India (2021)	The report suggests actions financial institutions in India should take to support climate policies that also deliver a just transition.
Spengler et al – Mobilising institutional capital towards the SDGs and a Just Transition (2021)	Action-oriented recommendations for a just transition (designed for different public and private financial sector actors).
ILO – Finance for a just transition and the role of transition finance (2022)	The paper discusses ways to align financial decision-making with just transition objectives.
ILO and Grantham Research Institute – Just transition finance tool for banking and investing activities (2022)	The document provides financial institutions with practical advice on how to integrate a just transition into their activities.
Clifford Chance LLP et al. – White paper on just transition and the banking sector (2021)	The paper offers suggestions for how banks can incorporate just transition considerations into their internal structures, relationships with clients, and transactions.

Appendix 4. A not-exhaustive list of frameworks addressing a just transition designed for the financial sector cont.

PwC – Navigating a just transition to net zero: A framework for financial institutions (2022)	The report offers the five practical approaches and accompanying strategic questions as a framework for financial institutions to fulfil their role in financing a just transition.
Muller and Robins – Just Nature: How finance can support a just transition at the interface of action on climate and biodiversity (2022)	The paper focuses on ‘just nature transition’ and how finance can support a just transition at the interface of action on climate and biodiversity.
F4T – Stakeholders in the just transition: Integrating workers into investment and financing frameworks. N°1. (2021) + F4T – Stakeholders in the just transition: Consumers. N°2 (2021) + F4T – Stakeholders in the just transition: Territories and local communities. N°3. (2021)	In a series of papers, F4T examines how financial actors can better integrate workers, consumers, and local communities into their strategies.
Signorelli and Horvath – Fast & fair renewable energy investments: A practical guide for investors (2019)	This briefing explains how investors can tackle climate change while respecting human rights and a just transition.
EBRD – The EBRD just transition initiative (2020)	The initiative aims to ensure that the EBRD’s regions share the benefits of a green economic transition, while protecting vulnerable countries, regions, and people from falling behind.
Multilateral Development Banks – MDB Just Transition High-Level Principles (2021)	The document provides high-level principles for a just transition.

Endnotes

1. For more about a brief history of just transition see Morena et al (2018).
2. For more examples of financial products that can support a just transition, see, for instance, Clifford Chance LLP et al. (2021, pp. 66–68).

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The Centre for Climate Finance & Investment at Imperial College Business School

The Centre for Climate Finance & Investment (CCFI)'s purpose is to unlock solutions within mainstream capital markets to address the challenges posed by global climate change. We investigate how financial markets and organizations are affected by climate change; defining and quantifying the risk associated with climate change and undertaking research on how capital markets are responding. Our work is generating a new understanding of the multi-trillion-dollar investment opportunity encompassing renewable energy, clean technologies, and climate-resilient infrastructure.

Combining interdisciplinary research with real-world experience, the CCFI is creating a point of interface between academics and practitioners. Researchers working with the CCFI bridge the academic and business worlds through research and industry collaborations. Founded in 2017, through the generous support of Quinbrook Infrastructure Partners, the Centre aims to produce high impact academic research as well as timely working papers and reports that influence the market.



Central banks and supervisors step up climate action

Climate change will have a significant impact on our economies and financial systems. Ravi Menon discusses the NGFS' efforts to support a successful transition towards net zero

Climate change is directly relevant to central banks and supervisors because it will have a significant impact on our economies and financial systems. Even an orderly transition to net zero will have adverse effects on economic growth and inflation over the short to medium term.

But if the global economy fails to make this transition, annual global GDP losses by 2050 are estimated to be twice as large as those under a net zero transition. These adverse impacts will be disproportionately borne by emerging markets and developing economies (EMDEs), with significant implications for food security, human health, economic opportunity, and development outcomes¹.

This is why the NGFS has made inclusiveness a priority over the last two years. The NGFS was established as a coalition of central banks and financial supervisors to help green the financial system and contribute to global climate action. We started with 8 founding members six years ago, but have now grown to 150 members and observers from across the world.

Last year, I spoke about the NGFS' ambitious and expanded work programme to strengthen collective efforts towards greening the financial system. Thanks to the hard work of our members and partners, the NGFS has made substantial progress on this work programme. Now I want to highlight three key areas of that work:

climate scenarios and their macroeconomic and financial impact
blended finance for emerging markets and
developing economies transition planning by financial institutions

Climate scenarios

Let me start by outlining key findings from the fourth vintage of the NGFS climate scenarios, which was completed and published recently. First, reaching net zero by 2050 will entail significant economic transformation and financial investments against much higher carbon prices than today.

From where we are today, achieving net zero by 2050 will require a significant pivot towards green energy sources. Under such a pathway, renewables and biomass are estimated to deliver over 80% of global primary energy needs by 2050 – this will in turn require a significant scaling up of investment flows, at many multiples of current levels.

Second, carbon prices would have to be raised much higher and much earlier to achieve an orderly transition. The NGFS models suggest that shadow carbon prices² would need to be around US\$200 per tonne of CO₂ in the next decade and increase further in the decades to come – much higher than the prices of carbon pricing schemes at present.

The NGFS scenarios will help facilitate a deeper understanding of the macroeconomic and financial impacts of climate change and inform monetary policy and supervisory approaches

The models also suggest that the implementation of higher carbon prices would need to be early and decisive, to avoid the significant losses from the abrupt adjustments under a delayed and divergent transition.

Third, the world will incur substantial economic costs if we fail to successfully transition. Damages arising from cyclones, droughts, floods and heatwaves are estimated to result in global GDP losses of about 8% by 2050 under a business-as-usual scenario.

Droughts and heatwaves are estimated to represent the largest source of acute physical risk. The severity of these impacts varies across geographies, with Europe and Asia generally being most exposed to heatwaves, while Africa and North America being primarily exposed to drought.

Rising global temperatures will result in additional economic losses, for instance through reduced labour productivity. Under a business-as-usual scenario, these chronic effects are estimated to result in further global GDP losses of more than 5% by 2050.

The NGFS scenarios will help facilitate a deeper understanding of the macroeconomic and financial impacts of climate change and inform monetary policy and supervisory approaches.

According to a survey earlier this year³, there was a clear consensus among NGFS members on the need to better understand both the physical and transition-related effects of climate change on macroeconomic outcomes. This is seen as a necessary foundation for considering the implications for the conduct of monetary policy.

Meanwhile, many central banks and supervisors have undertaken pilot climate scenario analysis and stress test exercises in recent years, with the majority of these conducted using the NGFS climate scenarios⁴. These exercises

have in turn served as a starting point for dialogue with financial institutions on understanding and managing their climate-related risks.

In the next phase of the NGFS' work on climate scenarios, we will focus on two areas.

First, we will look to develop new short-term climate scenarios to inform stress tests as well as macroeconomic assessments for monetary policy formulation. Compared to our existing scenarios, which focus on long-term climate-economy relationships, short-term scenarios serve three functions:

- They are better suited for analysing abrupt and adverse shocks that subside in the medium term.
- They can better capture potential non-linear impacts of climate shocks.
- They can provide more granular insights on the transmission channels across economic sectors.

Second, we will work to better understand the implications of climate change for monetary policy. We will:

- work on an analytical approach to bring climate considerations into monetary policymaking; and
- explore what central banks are doing to protect their monetary policy operations portfolio from climate-related risks.

Blended finance

While climate finance flows have grown over the last decade, they still lag far behind what is needed to meet the

Paris Agreement goals. We are more than 35% short of the annual investment of US\$9.2 trillion⁵ that would be required to get to net zero by 2050.

One key impediment is that many sustainability or transition projects are not quite bankable; their return profile is not commensurate with the risks that investors face. This challenge is further exacerbated in EMDEs, as they face fiscal constraints and limited access to private capital.

To mobilise the necessary capital for marginally bankable green and transition projects, we need blended finance. Blended finance is about partnership and synergy across multiple players.

Governments, development finance institutions, and philanthropies could provide concessional capital – in the form of grants, limited guarantees, and debt or equity at below-market rates of return.

Multilateral development banks can provide technical assistance – in the form of project development expertise, capacity building, and institutional support. This combination of concessional capital and technical assistance will reduce project risk and improve bankability.

This can in turn catalyse multiples of private commercial capital to finance these transition projects. The scaling of blended finance requires collective action from the entire ecosystem of stakeholders. We need to adopt an ecosystem of solutions approach that encompasses partnership across a diverse set of institutions. This is what motivated the NGFS' work on blended finance.

The NGFS is proud to launch a technical document on scaling up blended finance for climate mitigation and adaptation in EMDEs. The document sets out guiding principles and policy recommendations for scaling up

blended finance, and how each key stakeholder in the ecosystem can step up. Let me outline some of the key recommendations.

First, the multilateral development banks need to play a more catalytic role in mobilising private capital. At present, a good part of MDB lending goes towards bankable projects that could well have been financed by private capital.

MDBs could focus more on marginally bankable projects and pivot towards the greater use of innovative de-risking mechanisms such as first-loss equity, guarantees and co-investments, to crowd in private capital.

Second, governments in EMDEs need to deepen and broaden their domestic capital markets. This is necessary to optimise the use of private capital locally and attract new investments from abroad.

Third, ESG data providers and credit rating agencies need to continually enhance their data collection and risk assessment methodologies. This is key to foster greater market integrity and transparency. It would, in turn, help build investors' confidence in blended finance instruments, and allow them to better mitigate and diversify the associated risks.

The NGFS technical document also showcases some interesting blended finance projects across regions. They demonstrate the application of these policy recommendations and illustrate how innovative and scalable solutions can be used to unlock private capital.

Transition planning

Let me now highlight NGFS' work on transition planning. Robust transition planning can help position corporates and financial institutions for the climate transition. Transition planning serves three key functions:

- They identify the changes needed in business models to adapt to a low carbon future.
- They inform the actions needed to manage the physical and transition risks arising from climate change.
- They demonstrate how corporates and financial institutions can fulfil their public commitments to decarbonise or reach net zero.

Financial institutions are in an influential position to shape their customers' business decisions on transition and sustainability. As lenders and underwriters, banks and insurers can raise customers' climate risk awareness and work with them to implement robust risk mitigation and adaptation measures as part of their due diligence and underwriting processes.

As investors, financial institutions can shape corporate behaviour and climate responsiveness through engagement, proxy voting, and sector collaboration.

The recent NGFS stocktake highlighted that there is no commonly agreed definition of a transition plan, partly because transition plans are motivated by different objectives.

- Risk-focused transition plans mainly revolve around the management of financial risks associated with the physical and transition effects of climate change.
- Strategy-focused transition plans are mostly concerned with meeting the financial institution's own decarbonisation or net zero targets.

- Yet other strategy-focused transition plans pay heed to facilitating their clients' and sectors' decarbonisation pathways.

These objectives are not necessarily in conflict, but they are different and it is important to understand which objective is driving which part of the transition plan.

In the next phase of our work on transition planning, the NGFS will study:

- how the prudential approach to transition planning can factor in the needs and challenges of emerging markets;
- how corporate transition plans feed into financial institutions' transition plans; and how the credibility of financial institutions' transition plans can be assessed.

Conclusion

Let me highlight two additional areas of work that we will focus on. The NGFS will set up a new Taskforce on Adaptation Finance.

Adaptation financing is critical for building economic resilience and fostering sustainable development. It is particularly relevant for EMDEs, which are expected to face the brunt of climate change. However, there are significant hurdles to crowding in private sector financing, such as a lack of clear metrics for assessing impact and financial return.

The Taskforce will explore issues related to the scaling up of adaptation finance and identify how central banks and supervisors could best contribute to such efforts.

The NGFS will also continue to advance efforts on assessing nature-related financial risks. This will build on the conceptual framework for nature-related financial risks that we published earlier this year.

This would include setting out illustrative case studies relating to the assessment of nature-related financial risks, as well as bridging modelling and data gaps identified within the framework.

Central banks and supervisors are stepping up to facilitate climate action. This is reflected not just in the phenomenal growth of the NGFS' membership, but also in our growing work programme and expanding network of collaborators and partners. Central banks and supervisors will do their part to facilitate and co-ordinate their efforts across the ecosystem, to support a successful transition towards net zero. ■

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This article is based on [remarks](#) made at the NGFS COP28 Finance Day, Singapore, 4 December 2023.



Preserving a 'Stabilitätskultur'

Monetary policy in the climate and nature crises. Frank Elderson considers more frequent climate and nature events and their greater impact on the economy

The concept of Stabilitätskultur, or culture of stability, was first used by former Bundesbank President Helmut Schlesinger in 1991. In coining this phrase, he wanted to emphasise that stable money – the remit of central banks - not only required a stability-oriented policy from the central bank, but also from the government and society at large.

In the face of the current climate and nature crises, Schlesinger's insight that stability-oriented institutions cannot pursue their objectives in isolation could hardly be more relevant. The *Emissions Gap Report* published by the UN concludes that the world is on a global heating path of 3°C, far above the Paris Agreement objective of well below 2°C¹.

And earlier studies have shown that 25% of species are vulnerable and an estimated one million species face a risk of extinction². I will convey that a culture of stability can only be preserved if climate and nature are stable. Most central banks and banking supervisors around the world have acknowledged this in recent years.

And the ECB is putting it into practice in all its tasks and responsibilities, including our banking supervision and our monetary policy, the latter being the focus of my remarks.

Taking climate and nature into account

As I have often said before and will reiterate to remove any possibly remaining doubt: central banks and supervisors like the ECB are not, and do not intend to be, climate and nature policymakers³.

Moreover, as an independent central bank, the ECB is not directly bound by the European Climate Law that since 2021 has committed the EU to achieving climate neutrality by 2050 with interim deadlines. This does not mean, however, that the ECB is allowed to ignore the Climate Law.

The EU Treaty requires environmental protection to be integrated into the definition and implementation of EU policies. The Treaty imposes an obligation on us to take into account the objectives of climate and nature-related legislation when performing our monetary policy and banking supervision tasks⁴.

This is not just a legal reality. The massive impact of the climate and nature crises on the economy, including the financial system, makes it crystal clear that we must take climate and nature into account. In fact, if we didn't do so, we would risk failing to deliver on our mandate.

The risk of not delivering on our mandate is real if we don't take climate and nature into consideration

The relevance of climate and nature for monetary policy⁵

At least five economic consequences of the climate and nature crises are specifically relevant to monetary policy and our primary objective of maintaining price stability.

First, we can expect macroeconomic volatility – including the volatility of inflation – to increase further as climate and nature events occur more frequently and have a greater impact on the economy.

Second, climate and nature shocks complicate monetary policy analysis and make it harder to assess the appropriate monetary policy response. Whether we are dealing with more frequent extreme weather events and nature degradation or actions to support the green transition, climate and nature events may largely materialise in the form of supply shocks, implying that economic activity and inflation move in opposite directions.

Generally speaking, as supply shocks involve a potential trade-off, they are more challenging for central banks than demand shocks. If supply shocks persistently affect inflation, they may generate risks for price stability and so trigger a change to monetary policy that would further dampen economic activity.

If, however, supply shocks are temporary and pose no risk to medium-term price stability, central banks can look through them and avoid slowing down the economy.

Third, the ongoing climate and nature crises may cause the equilibrium rate of interest to fall. The equilibrium rate is the interest rate that prevails when all shocks to the economy have dissipated and monetary policy is neither accommodative nor restrictive.

Greater uncertainty owing to the climate and nature crises and the necessity to build up resilience to shocks can increase economic agents' propensity to save, thereby lowering the equilibrium interest rate.

A lower equilibrium rate implies that future monetary policy could come up against the effective lower bound for interest rates more often, though the more frequent occurrence of negative supply shocks that I referred to earlier may mitigate this effect to some extent.

Fourth, financial risks arising from climate and nature crises can impair the soundness of financial institutions. Should these risks materialise – despite all our efforts as a banking supervisor to mitigate them⁶ – the transmission of our monetary policy could be affected.

Monetary policy decisions would be transmitted through the financial system and the economy in a less orderly and less predictable manner, potentially hampering our effectiveness in achieving our price stability objective.

Fifth, the risks that may affect financial institutions can also undermine the solidity of the central bank balance sheet. Unlike commercial banks, central banks are not profit-seeking and only expose themselves to financial risks if helpful in achieving price stability.

This is especially true when such risks can cause financial losses that could erode confidence in the central bank's ability to deliver price stability. Prudent central banks will thus seek to avoid any climate and nature-related financial risks that do not contribute to price stability.

I am not aware of any evidence suggesting that seeking exposures to climate and nature-related financial risks might help in securing and maintaining price stability. On the contrary, available evidence suggests the opposite is true.

In fact, when we align our portfolios with the market status quo of high exposure to climate and nature-related financial risks, we risk adding to macroeconomic volatility. As already mentioned, this would make it harder to achieve the monetary policy goal of price stability.

To summarise, in the pursuit of price stability, central banks benefit from mitigation of climate and nature-related risks, which – as analysis consistently shows - is best ensured by securing a timely and orderly transition⁷.

The ECB's climate actions so far

Against this backdrop, in 2021 the ECB explicitly acknowledged that climate change had profound implications for price stability through its impact on the structure and cyclical dynamics of the economy and the financial system.

In the case of the ECB, actions on climate equally serve our secondary objective, as also laid down in the EU Treaties, of supporting the general economic policies in the EU, which include the EU's climate objectives.

Accordingly, we unveiled an ambitious climate action plan covering macroeconomic modelling, financial stability monitoring, data collection, risk assessment capabilities and our monetary policy operations.

And this wasn't just a plan. We delivered on it, just like we said we would. Let me give you some specific examples of how we have put into practice what were still mere ambitions back in 2021.

First, we have made significant progress in improving our capabilities to take climate considerations into account in the macroeconomic analyses that inform our monetary policy assessment. For example, we can now use a suite of macroeconomic models to analyse the economic consequences of the green transition in the euro area.

Using this suite of models, staff have found that an increase in carbon pricing in line with the International Energy Agency's net zero scenarios may have a limited impact on economic growth and inflation⁸. The analysis also suggests that due to the low substitutability of non-sustainable and sustainable consumption, the carbon price path envisaged by the Agency may not actually be sufficient to achieve net zero objectives.

This implies that either carbon prices would need to increase further, or that additional regulation would be required, or a combination of both. Again, we would need to be ready to take into account any monetary policy implications that could arise as a result.

Acknowledging that climate factors can have an impact on our monetary policy assessment is not just 'what-if' thinking. ECB research shows that the related effects are already materialising. For example, ECB staff estimates suggest that the heatwave in 2022 pushed up food price inflation by up to 0.67 percentage points, with the impact lasting well into 2023⁹.

Thanks to our enhanced analytical capabilities, earlier this year we were able to acknowledge for the first time – in our monetary policy statement issued after the Governing Council meeting – that climate factors posed an upside risk to the inflation outlook¹⁰.

Second, between October 2022 and July 2023 we started tilting our reinvestments of corporate bonds towards issuers that have a better climate performance. In so doing, we can avoid undue exposures to climate-related risks that are detrimental to price stability and align the way we administer our monetary policy more closely with the EU's general economic policies.

As of July 2023 we suspended bond purchases in our asset purchase programme, including corporate bonds, to support the downward pressure exerted by our current policy rates in order to bring inflation back to our 2% target.

If required from a monetary policy perspective, the established direction of the tilt will set the minimum benchmark for any future corporate bond purchases¹¹.

In addition to our bond holdings, we are also looking at the collateral framework that we apply in relation to banks' participation in our lending operations. We have decided that only assets that comply with the EU Corporate Sustainability Reporting Directive will remain eligible once it enters into force.

In addition, we are now looking at setting limits on the share of assets issued by entities with a high carbon footprint that banks can pledge as collateral for our lending operations.

Some avenues that we explored did not result in us having to make any changes. When we reviewed the resilience of the haircuts that we apply to collateral valuation, we did not find any evidence that the existing scheme provides insufficient protection against climate-related financial risks over the horizon for which these haircuts should provide protection¹². We will continue to evaluate this in the future as and when better data become available.

Our current actions aim to support a high degree of confidence in the alignment of our activities with the goals set by the Paris Agreement within our mandate. However, the decarbonisation path for our monetary policy assets remains dependent on actions that are not fully under our control, including the decarbonisation efforts made by the issuers of bonds that we hold.

Evaluating, adapting and broadening our actions to include nature

This is one of the main reasons why we have made a commitment to regularly review all our measures to assess their impact. If necessary, we will adapt them to ensure they continue to fulfil their monetary policy objectives and support the decarbonisation path to reach the goals set by the Paris Agreement and the EU climate neutrality objectives.

Moreover, we will also look into addressing additional environmental challenges within our mandate. Even if the legislative environment on nature preservation is trailing behind that on climate change – in spite of the landmark Nature Restoration Law – our initial analyses show that nature-related risks are highly relevant for the European economy and financial system.

Out of 4.2 million firms that we looked at, around three million are highly dependent on at least one ecosystem service, services provided by nature that are significantly subject to degradation¹³.

Besides making continued efforts to further enhance our analytical capabilities and deliver on our data needs, what else should we include when we assess our actions?

Given the prevailing inflation outlook and the need for us to continue to implement a sufficiently restrictive monetary policy to bring inflation sustainably back to our 2% target, we do not expect to expand our balance sheet again anytime soon.

However, that doesn't mean that we don't need to continue re-evaluating the fitness of the instruments we have in our toolkit in case policy adjustments are required. Moreover, in proceeding with the rundown of our balance sheet, we need to think about which features we would like to maintain in a steady state.

Our monetary policy strategy enables us to think about both questions. Specifically, whenever we are faced with two configurations of the set of instruments that would be equally conducive to maintaining price stability, we will and legally must choose the one that best supports the general economic policies in the EU.

This implies that whenever we make a marginal adjustment to the calibration of our instruments, we must choose the option that increases our confidence in the plausibility of our decarbonisation path, unless our proportionality assessment shows that there are other, less intrusive ways of achieving price stability.

Looking ahead, besides the adjustments that we are already implementing, I think this principle may require us to consider two further avenues.

The first concerns our public sector bond holdings. Here we can apply reasoning very similar to that applied to our corporate bond holdings. Currently, the bulk of our monetary policy assets consists of bonds issued by governments of EU member states.

However, the climate and nature-related risk intensity of these bonds is not obvious owing to the absence of a clear and reliable framework to assess their compatibility with the Paris Agreement. At the same time, since the pandemic, the universe of supranational bonds issued by EU institutions has increased significantly, with green bonds representing a relatively large proportion¹⁴.

In my view, when there is no clear monetary policy rationale for preferring domestic sovereign bonds, we should contemplate increasing the share of EU supranational bonds in our total bond holdings to avoid potential climate and nature-related risks and to better align our balance sheet with the general economic policies in the EU.

Not only is this relevant for when we would need to consider new bond purchases. It is also relevant when we need to discuss the composition of any structural bond portfolio that we might maintain in the new steady state.

Second, whenever there is a monetary policy need in the future to reconsider targeted longer-term refinancing operations for banks, there are compelling reasons to seriously consider greening them.

A parallel can be drawn with the way that the ECB has in the past incorporated financial stability considerations into the design of its instruments.

As of the third series that was launched in 2019, the targeted longer-term refinancing operations (TLTROs) that we offered banks comprised a lending target that excluded housing loans to avoid contributing to the formation of real estate bubbles¹⁵.

Similar targeting strategies can be considered to support green lending or exclude non-green lending in the future, provided an operationally efficient validation process is feasible.

Conclusion

Alexander von Humboldt, a pioneer in ecology among many other things, once said, *“The most dangerous worldview is the worldview of those who have never looked at the world.”*

If we transpose this to the central bank’s worldview – and to that of the banking supervision arm – the risk of not delivering on our mandate is real if we don’t take climate and nature into consideration. Preserving price stability means preserving climate and nature stability. It is our mandate. It is our culture. ■

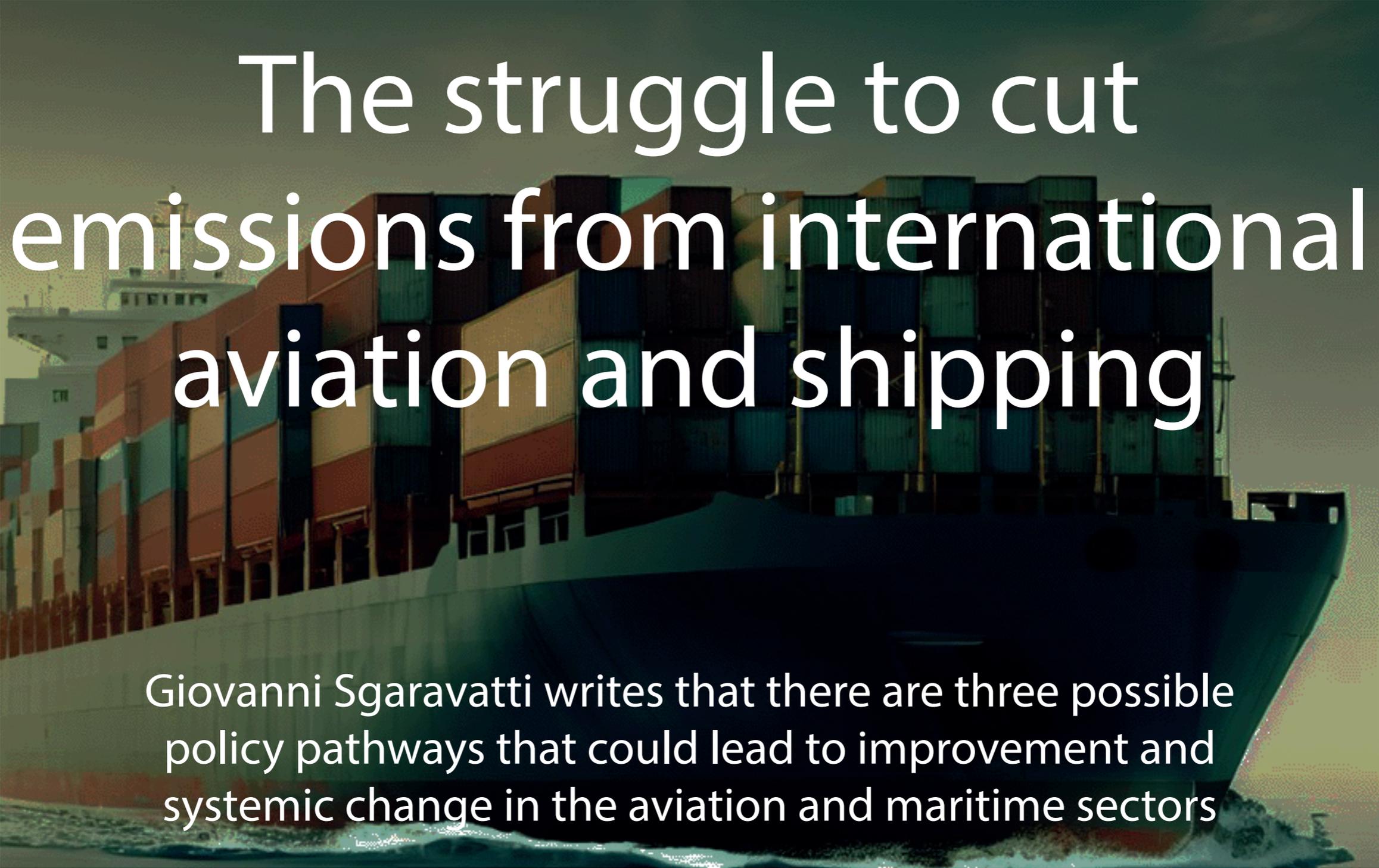
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The struggle to cut emissions from international aviation and shipping

Giovanni Sgaravatti writes that there are three possible policy pathways that could lead to improvement and systemic change in the aviation and maritime sectors

In combination, international aviation and shipping contribute about 3 percent of greenhouse gases put into the atmosphere each year. Emissions in 2022 from international aviation were 436 million tonnes of carbon dioxide equivalent, while from international shipping the figure was 706 Mt/CO₂eq – about the same as Germany (746 Mt of CO₂eq)¹. If within-country emissions are also counted, the figures rise significantly².

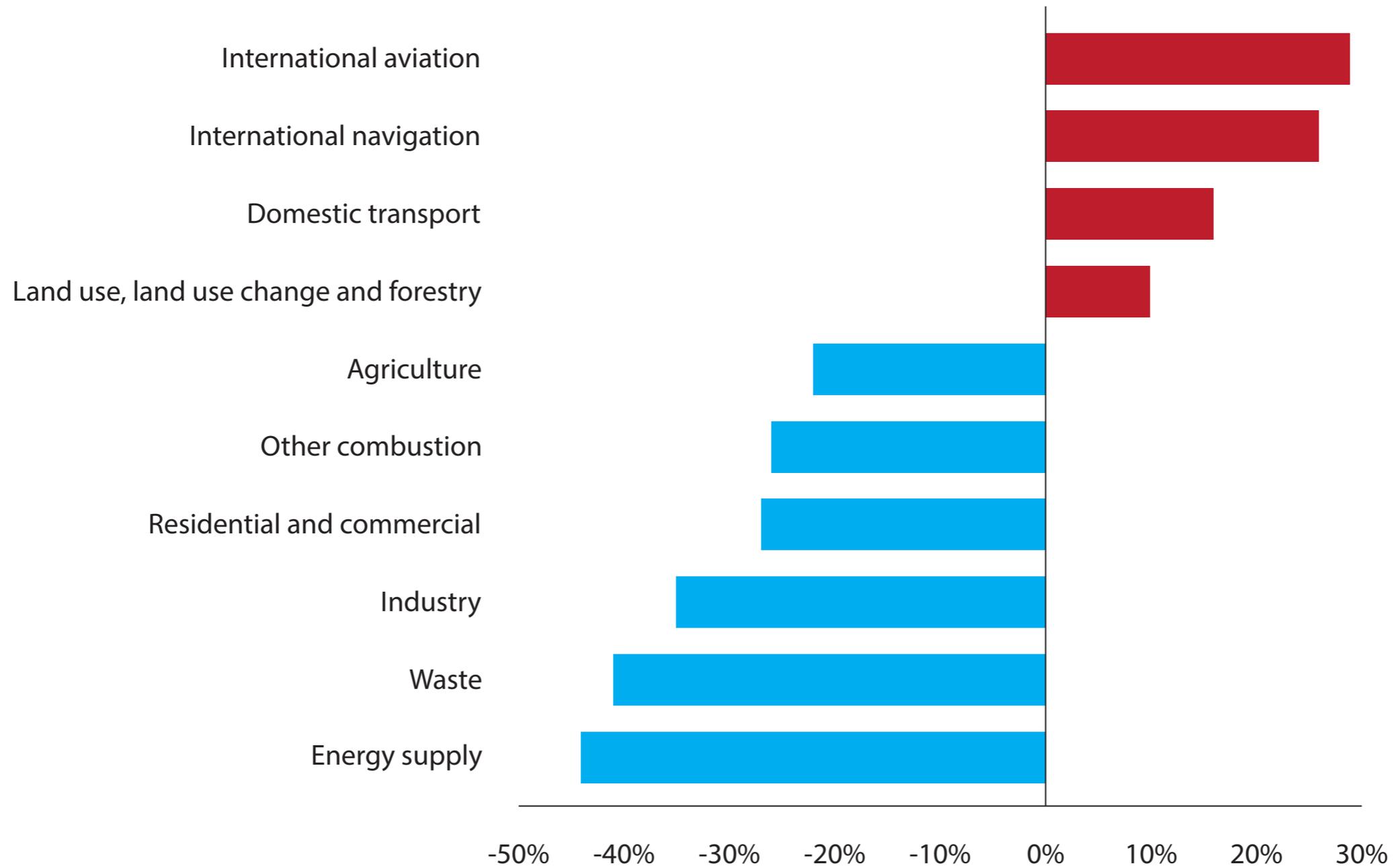
So far, there has been a persistent failure to reduce these emissions. In the European Union, where overall emissions have dropped by 30 percent since 1990, emissions from international aviation and shipping increased by more than in any other economic sector – by 29 percent and 26 percent respectively (Figure 1).

A fundamental obstacle in dealing with shipping and aviation is the labelling of much of their emissions as ‘international’ under United Nations Framework Convention on Climate Change (UNFCCC) reporting. This accounting feature, a legacy of the Kyoto Protocol, means governments have less of an incentive to decarbonise the two sectors. They are not obliged to include clear emissions reduction pathways for the international portion of aviation and shipping in their Nationally Determined Contributions (NDCs)³.

Furthermore, as they operate across borders, they escape national carbon-pricing schemes. The current accounting model, combined with the lack of a global carbon price, makes it very hard to impose the polluter-pays principle on international aviation and shipping.

Aviation and shipping companies also receive special tax treatment. Neither sector pays value-added tax or excise duties on fuel (unlike the railway and road transport sectors). Their special tax status gives them a competitive advantage over other modes of transportation.

Figure 1. EU27 relative percentage change in greenhouse-gas emissions, 1990-2021



*Note: Domestic transport includes the domestic share of emissions from aviation and navigation.
Source: European Environmental Agency.*

This is particularly evident in aviation, where transporting passengers is five times more emissions-intensive than by train⁴, but buying a flight in Europe is cheaper than the equivalent train ticket in 70 percent of instances (Doll *et al* 2020; Greenpeace, 2023).

Companies in the two sectors also tend to profit from low corporate taxes, as they have more freedom to register anywhere in the world than other types of businesses. In maritime shipping for example, the majority of companies are registered in jurisdictions such as Liberia and Panama⁵, which have minimal corporate income tax rates⁶ (McCow, 2023).

The EU already plays a fundamental role in shaping the debate and pushing climate action – a role that it is often under-appreciated – but there is scope to do even more in international aviation and shipping emissions

Recent developments and consensus building

Emissions reductions for international aviation and shipping are agreed internationally. On 7 July 2023, the International Maritime Organisation (IMO) agreed a new worldwide strategy on emission reduction targets for shipping (IMO, 2023).

For the first time, the agreement set targets for 2030 (an emissions reduction of between 20 percent and 30 percent compared to 2008) and 2040 (between 70 percent and 80 percent), with an overall goal of reaching net zero emissions by, or around, 2050. This represents a tremendous step forward compared to the IMO's 2018 strategy, which aimed to only halve emissions by 2050.

However, even the more ambitious targets fall short of putting the sector on a trajectory aligned with limiting global warming to 1.5°C above pre-industrial levels and would deplete the sector's 1.5°C carbon budget (12 gigatonnes of CO₂eq) by as early as 2032 (Bonello *et al* 2023; Comer and Carvalho, 2023⁷).

International aviation meanwhile has established the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) and has a 'Long-Term Global Aspirational Goal' of net zero emissions by 2050, agreed within the International Civil Aviation Organization (ICAO, 2022).

This represents a raising of the level of climate ambition for international aviation but is even less 1.5°C-aligned than the IMO deal as it does not provide any intermediary targets.

Setting distant aspirational goals with no clear pathway on how to achieve them risks depleting the sectoral carbon budget, as it incentivises delaying of investments and regulation needed to limit global warming.

A clear decarbonisation pathway is particularly important for these two sectors as ships and airplanes have long asset-replacement cycles, meaning that the emissions performance of ships and planes built now will be locked-in for decades.

Moreover, the new IMO and ICAO targets are not legally binding⁸ and do not attribute specific emission-reduction goals to individual states, raising doubts about whether they will ever be achieved.

The European Union has taken some steps to bring aviation and shipping emissions within the scope of its climate laws. Intra-EU flights are covered by the EU emissions trading scheme (ETS)⁹.

From January 2024 the EU will extend the ETS to cover CO₂ emissions from all large ships (of 5,000 gross tonnage and above) entering EU ports, regardless of the flag they carry. The system will gradually cover up to half of emissions from voyages starting or ending outside the EU and all of the emissions generated between two EU ports (European Commission, 2023).

The EU has also adopted laws setting limits on the carbon intensity of shipping fuels and promoting alternatives (the so-called FuelEU Maritime initiative) and is working to finalise a similar rule on aviation fuels (RefuelEU Aviation)¹⁰.

The way forward

The frameworks under which international climate agreements work for aviation and maritime shipping thus remain inadequate. In this context, three possible policy pathways could lead to improvement.

First the UNFCCC should change its accounting method to allocate international emissions to the countries of departure and arrival of ships and planes. One option would be to split the emissions of the trips equally between the countries of departure and arrival, similar to what the EU does between its member states.

Second, new binding measures should be incorporated into international treaties, and the reach and scope of existing measures should be extended. For example, the IMO is working on a new GHG Fuel Standard on carbon intensity limits on fuels for ships, which has the potential to have a great impact in curbing emissions.

If incorporated in the International Convention for the Prevention of Pollution from Ships (MARPOL), it would also be legally binding.

Third, introducing compulsory minimum excise duties worldwide on the fossil fuels used by the two industries would represent a source of public revenues that could be used to finance climate action, and would be an incentive for the companies operating in aviation and maritime shipping to speed-up their transitions away from fossil fuels¹¹.

Otherwise, a climate tax on flight tickets similar to that envisaged in France¹² – with revenues invested in climate mitigation and adaptation policies – could be designed easily to be both progressive and climate friendly.

The EU is already in a leading position. The bloc should persist in its regional efforts to decarbonise the two sectors. Finding alliances with other countries or blocs might be a powerful and faster way to push for systemic change than waiting for concerted action at the UN.

More than 40 percent the global shipping fleet transits through the EU every year. For the EU plus the US, Japan, South Korea and Australia, the figure is 75 percent (Mingozzi *et al* 2022). Therefore, regional action can be the main driver of international change, as has already been seen with other EU rules on shipping that prompted adoption at the UN level¹³.

For civil aviation, global manufacturing is dominated by two companies – Airbus and Boeing – registered in Europe and the US. An agreement on new production standards and alignment of targets and incentives for sustainable aviation fuels would be incredibly impactful on the global stage.

Stricter energy efficiency requirements applied to ship and airplane design and construction, engine technologies and operations¹⁴ can also help reduce emissions.

Better incentives for companies to use sustainable fuels should be prioritised over carbon intensity target-setting. Carbon-intensity targets risk persuading companies to use only marginally less-polluting fuels (such as LNG for the shipping industry; Clark *et al* 2020), which would also result in stranded assets.

On international aviation, the first phase of ICAO's CORSIA carbon offsetting scheme ends in 2026. If by then the scheme proves to be insufficient, the EU should apply the ETS to all flights departing from or landing in its airports – in the same fashion as done for international shipping.

The EU tried this before, in 2012, but ultimately decided against it in the face of an unfavourable reaction from the US and other countries. Though doing so now will still be politically difficult, the international context is more favourable than in 2012 (as shown by the success in incorporating international shipping into the ETS).

The fact that alternative fuels for long-distance air travel are not yet available at scale cannot be a justification for failing to price the sector's externalities correctly. A price of €50/tonne of CO₂eq could increase the cost of a return ticket from Berlin to New York by about €100¹⁵, or 16 percent of the average ticket price in economy class.

This would have the twofold effect of dissuading some international travel and raising about €3.5 billion per year in revenues¹⁶, which could be channelled to scale up research into sustainable fuels.

The EU already plays a fundamental role in shaping the debate and pushing climate action – a role that it is often under-appreciated – but there is scope to do even more in international aviation and shipping emissions, especially through cooperation with the United States and other major allied economies. ■

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Endnotes

1. See International Energy Agency webpages on [aviation](#) and [international shipping](#).
2. In 2018, total shipping and aviation each emitted about 1,000 Mt/CO₂eq, which combined exceed Russia's annual emissions (IMO, 2020).
3. NDCs are countries' self-defined national climate pledges under the Paris Agreement, detailing what they will do to help meet the global goal to limit the temperature rise to 1.5°C, adapt to climate impacts and ensure sufficient finance to support these efforts.
4. 160 versus 33 grammes of CO₂ equivalent per passenger kilometre.
5. See Offshore Energy, '[SealIntel: Container Shipping Industry Favours Tax Havens](#)', 8 November 2017.
6. John D McCown, '[\\$34.7B Container Shipping Net In 4Q22](#)', LinkedIn, 3 April 2023.
7. See also Faig Abbasov and Chiara Mingozi, '[Europe Goes from Leader to Laggard in Tackling Shipping's Climate Impact](#)', Transport & Environment, 27 April 2023.
8. Some measures to achieve the commitments, however, can be binding, including the Energy Efficiency Existing Ship Index (EEXI) in shipping. However, these would reduce shipping emissions by only about 1 percent by 2030. See Bryan Comer and Francielle Carvalho, '[IMO's Newly Revised GHG Strategy: What It Means For Shipping And The Paris Agreement](#)', International Council on Clean Transportation Blog, 7 July 2023.
9. After an initial attempt to include all flights to and from EU airports. See Fiona Harvey, '[EU freezes airlines carbon emissions law](#)', The Guardian, 12 November 2012.
10. See [Council of the EU press release of 25 July 2023](#), and [European Parliament Legislative Train Schedule](#).
11. Another option, though politically harder to achieve, would be to design an international carbon price for the two sectors, directing the revenues to their decarbonisation and to poor countries in need of climate finance. In shipping alone, the World Bank estimates that carbon revenues could reach \$1 trillion to \$3.7 trillion by 2050, or \$40 billion to \$60 billion per year (Dominioni and Englert, 2022). See also Pascal Saint-Amans, '[Tax for climate finance should start with shipping](#)', First Glance, 3 July 2023.

12. Clea Caulcutt, Giorgio Leali and Paul de Villepin, *'Macron calls for an international taxation deal to finance climate efforts'*, Politico, 23 June 2023.

13. Examples include CO₂ reporting requirements for ships, sulphur standards and the ban on single-hull tankers. See Aoife O'Leary and Faig Abbasov, *'Let's end the debate: putting international shipping into the ETS is clearly legal'*, Euractiv, 28 January 2021.

14. A 20 percent reduction in the speed of ships could reduce CO₂ emissions and air pollution by 34 percent (Reynolds, 2019).

15. The shortest distance by air between Berlin and New York is 6,385 kilometres and emissions are assumed to be 160 grammes of CO₂ equivalent per passenger kilometre.

16. In 2021, the European Environment Agency estimated the value of EU-attributable emissions from international aviation to be 69,754 kilotonnes of CO₂ equivalent emissions.

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On the way to a sustainable economy

Sabine Mauderer argues that reducing uncertainty about climate change will help us to embrace the opportunities of the green transition

Introduction

Let me begin with a cliché: markets do not like uncertainty. Why? Because dealing with uncertainty tends to be stressful and complex. Unfortunately, when it comes to climate change, there is a lot of uncertainty – many unknowns. Climate change itself, however, is a certainty. Just look outside the window for proof.

Facts on the table

It is Climate Week. Flashback to early June: you would have urged me to stay indoors. Wildfires up in Canada had brought toxic smoke to New York City and turned the skies orange. There is no denying that climate change is on our doorstep.

Let me give you some figures: assuming current policies, physical risks – such as losses due to droughts or rising sea levels – could lead to an almost eight percent loss of global GDP by 2050¹. To put this staggering figure into perspective: the global financial crisis of 2008 led to a GDP loss of around four percent.

The facts are on the table: climate change will have consequences for all of us. That much is certain. Having said that, when it comes to understanding how climate change will affect us, the picture is less clear-cut. This lack of understanding is incredibly worrying.

It may contribute to the lack of urgency that current climate policies reflect all too often. This underlines the importance of reducing uncertainty. Let's shed some light on climate risks!

The role of central banks

This is where central banks come into play. Dealing with financial risks is our bread-and-butter business. This ample expertise can help to strengthen the understanding of climate-related risks.

The Network for Greening the Financial System (NGFS) – of which I am the Vice Chair – is pooling the expertise of almost 130 central banks and supervisors from all over the world. One of our flagship products is climate scenarios.

They help assess how different pathways for emissions and climate policies might affect the economy and the financial system. To give you an example: in the US, heat stress could reduce labour productivity by almost 4 percentage points by 2050². And heat stress is just one of many factors. Therefore, it is important to design holistic models for climate scenarios.

Companies should include transition plans in their broader strategy. In fact, they should be part of their risk management. Transition plans are not only about risks, but also about opportunities

Scenarios explore different plausible futures and hence contribute to reducing uncertainty. Supervisors use them for their climate stress tests. Financial institutions can use them for their in-house risk management, including for measuring Climate Value-at-Risk.

To improve the usability of the scenarios, the NGFS is continuously updating and fine-tuning them. The next update which is due later this year aims to make the scenarios more granular across sectors and regions.

Compass for the journey to net zero

Scenarios offer us a glimpse of what the future might look like. With the current climate policies, the world in 2050 does not look too great, to say the least. That will be 27 years from now. A bit less than that, 26 years ago, in 1997, the movie *Titanic* hit the theatres.

You all know the fate of the ship that was hailed as being unsinkable and that tried to steer away from the iceberg when it was too late. The window to act on climate change is closing but there is still some time to turn the ship.

Shifting the economy towards a net zero future calls for all hands-on deck. Companies must embark on a journey of adjusting their business models. Transition plans can be a powerful tool to guide the way. At the NGFS, we recognise their importance. We have started our initial work on assessing the use of transition plans and will press ahead with this.

In early summer, we published the first findings from a stock-take among members³: we found that, while their importance was acknowledged, a common understanding on this new topic is still lacking. I want to highlight three findings:

- What does it mean exactly for a company to be 'transitioning' – where to?
- If a transition plan is drawn up, what information can and should it provide?
- To achieve the credibility that markets need, the question of checking their accuracy needs to be answered.

At the NGFS, we will continue to work on these issues. We intend to provide more information on the data that users need and find in transition plans early next year.

Despite further work to come, let me share some of the insights we have already gained to move towards a common understanding: Transition plans are a roadmap for companies. They translate a corporate vision of a net zero future into tangible actions - by outlining concrete steps and milestones and by looking beyond the usual strategy horizon.

Companies should include transition plans in their broader strategy. In fact, they should be part of their risk management. Transition plans are not only about risks, but also about opportunities. Companies can show investors that they are ready for a net zero future. And financial institutions can benefit from transition plans, too.

They can use them to manage their own risk, but also assess whether a company is investable. That way, financial institutions can hold corporates to their commitments and enforce market discipline.

With these uses and benefits in mind, I very much welcome and highly appreciate the announcement made by US Secretary of the Treasury Janet Yellen⁴. Her presentation of the *Principles for Net Zero Financing & Investment* is an important step in the development of transition financing generally.

But even more so specifically: if you go straight to the very first principle, you will see that the US Treasury, too, recommends that:

For any voluntary net zero commitment to be credible, it should be accompanied by a net zero transition plan.

I could not agree more.

Looking ahead

Let me wrap up. Reducing uncertainty about climate change will help us to embrace the opportunities of the green transition.

In a decade or so, we will have realised: the green economy is just the economy. There can be no healthy economy without a healthy planet! ■

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Endnotes

1. *Network for Greening the Financial System: NGFS scenarios for central banks and supervisors, September 2022.*
2. *Climate Analytics: Climate impact explorer – Relative change in labour productivity due to heat stress in United States, based on NGFS scenarios.*
3. *Network for Greening the Financial System: Stocktake on Financial Institutions' Transition Plans and their Relevance to Micro-prudential Authorities, May 2023.*
4. *United States Department of the Treasury: Remarks by Secretary of the Treasury Janet L Yellen in New York on Treasury's Principles for Net-Zero Financing & Investment, 19 September 2023.*

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