



REPORT

LOSS AND DAMAGE FINANCE: AN ASSESSMENT OF THE MOST PROMISING INSTRUMENTS

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Executive Summary

This research report discusses and assesses instruments to raise finance for addressing climate change-related Loss and Damage (L&D) not avoided through mitigation of and adaptation to climate change. Such finance whose needs are estimated at hundreds of USD billion per year should not increase the debt burden of developing countries which currently is becoming a serious problem. The report's recommendations are aimed at policymakers, primarily the L&D Transitional Committee, that are called to decide on L&D finance instruments.

Our desk research of the ten most promising instruments applies the four principles of the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement - adequacy, predictability, feasibility and fairness. Its summary is presented in Table 1 below:

Table 1: Summary of assessment of instruments to raise L&D finance (most to least promising).

Instrument to raise L&D finance	Adequate?	Predictable?	Feasible?	Fair?
Carbon pricing	Yes	Yes	Yes	Yes
Financial transaction tax	Yes	Yes	Yes	Yes
Fossil fuel extraction levy	Yes	Yes	Partially	Yes
Catastrophe bonds	Yes	Yes	Yes	No
International (solidarity) aviation levies	Partially	Yes	Yes	Partially
(Global) Wealth tax	Yes	Partially	Partially	Yes
International (solidarity) shipping levy	Yes	Yes	Partially	Partially
Debt-for-climate swaps	No	Partially	Yes	Partially
Special Drawing Rights (SDRs)	Yes	No	Partially	Partially
Subsidised insurance	No	Partially	Partially	Partially

Source: Authors' elaboration.

Expanding our assessment framework drawing on work by Richards et al. (2023), Bakhtaoui and Shawoo (2022) as well as Roberts et al. (2017) we operationalized the four criteria through seven relevant indicators (Table 2) and surveyed 31 experts from all six world regions and from a variety of sectors during August 2023 to comment on our approach.

Table 2: Criteria and indicators for assessing L&D finance instruments.

Criteria	Indicators
1. Adequacy	1A: Share of L&D finance gap potentially covered by the instrument.
2. Predictability	2A: Timeframe for which the revenues (or funds) available under the instrument can be specified with a high degree of confidence. 2B: Likelihood that revenues (or funds) remain constant or increase over time.
3. Feasibility	3A: The technical ease of introducing the instrument. 3B: Likelihood the instrument can generate support by both developed and developing countries.
4. Fairness	4A: Percentage of funding coming from (current and historical) greenhouse gas emitters. 4B: Percentage of funding coming from entities/individuals with above average resources (globally).

Source: Authors' elaboration.

Overall, the results of the desk research and the expert survey are very similar. Across three of the four criteria, **carbon pricing** was rated the most promising instrument. In fact, in the survey carbon pricing was scored the highest across five of the seven indicators (except for the two indicators on fairness). This is in line with our desk research-based assessment where carbon pricing was identified as one of only two instruments (along with the Financial Transaction Tax) without significant downsides. In contrast, a **(global) wealth tax** was scored the lowest overall by participating L&D finance experts and ranked the lowest regarding the second indicator on fairness, contradicting its rationale and the findings of the desk research. Survey participants and the authors' desk research concurred that **subsidised insurance** is probably the least promising of the instruments analysed.

For two indicators – timeframe and implementation – no instrument was found to be significantly more promising than others in the survey. Desk research, however, illustrates that variations of carbon pricing instruments and financial transaction taxes have already been widely implemented, and could be earmarked to contribute to filling the L&D finance gap. These and other instruments discussed in this research report, however, will face significant challenges beyond the four criteria discussed. For example, despite their very high revenue potential, multilateral top-down sources could be considered as 'political non-starters', given the historical difficulty to agree on large-scale multilateral finance instruments. While the design (e.g., tax rate and coverage of sectors) of instruments might increase their acceptability, it could also decrease their adequacy, and vice versa. Lastly, some of the instruments presented are unsuited for addressing all aspects of L&D. Their shortfalls could be – to some extent – compensated for if they were part of a concerted effort to ambitiously raise L&D finance in an adequate, predictable, feasible and fair way.

Key recommendations

1. Mobilizing the **scale** of finance needed for L&D as well as the **most appropriate instruments** is contingent on **massive political will**, capable of overcoming the resistance of very **powerful interest groups**.
2. A **combination of financial instruments** will be required to effectively address all four criteria discussed by this research report, and to respond to the **wide range of actions that encompass addressing L&D**, including the immediate and long-term needs related to economic L&D, non-economic L&D (NELD) as well as sudden and slow onset climatic events. Actually implementing such a 'winning combination' would be facilitated by a **reform of the multilateral system** of public development finance.
3. Countries should **pursue immediately realisable options to raise L&D finance**: Instruments such as an aviation levy or carbon pricing have been implemented on a significant scale and can be expanded and earmarked for L&D. Countries may consider the use of pilots to further inform the international community of what workable solutions of the instruments could look like.
4. Complexity should not be assumed solely because an instrument may theoretically be complex – the **actual design of the instrument matters**: The Transitional Committee should use its mandate to make recommendations for consideration and adoption by COP 28 and CMA 5 to raise awareness and promote understanding among countries and stakeholders on the proposed instruments.
5. Continuous emphasis should be made to **source L&D finance** building on **equity, the 'polluter pays' principle and the UNFCCC principle of Common but Differentiated Responsibilities and Respective Capabilities**.
6. **Guardrails are necessary including the development of systematic monitoring and accountability measures** to ensure funds raised from these instruments are used effectively for L&D.
7. As the landscape of climate change and its impacts is continuously evolving, **regular assessments of the financial instruments' effectiveness** will further ensure they remain relevant and impactful.

Table of Contents

Executive Summary	iii
Key recommendations	v
Figures	viii
Tables	viii
Abbreviations	ix
1. Introduction	1
1.1. Context: Why do developing countries need support for L&D?	1
1.2. Loss and Damage: a third pillar of climate policy?	1
1.3. Objectives and methodology of the research report	2
2. State and trends of Loss and Damage finance	3
2.1. Loss and Damage in the international climate policy context	3
2.2. Trends in finance for Loss and Damage	6
3. Analysis of promising Loss and Damage finance instruments	7
3.1. Assessment framework	7
3.2. Fiscal instruments	8
3.2.1. Carbon pricing	8
3.2.2. Financial transactions tax	9
3.2.3. Fossil fuel extraction levy for producers	10
3.2.4. (Global) Wealth tax	10
3.2.5. International (solidarity) aviation levies	11
3.2.6. International (solidarity) shipping levy	12
3.3. Debt-related instruments	13
3.3.1. Catastrophe bonds	13
3.3.2. Debt-for-climate swaps	14
3.4. Direct resource allocation	15
3.4.1. Special Drawing Rights	15
3.5. Insurance	16

3.5.1. Subsidised insurance	16
3.6. Summary of Loss and Damage finance instruments	17
3.7. Overview of challenges related to the Loss and Damage finance instruments	19
4. Expert survey on L&D finance instruments	19
4.1. Expert survey description	19
4.2. Results of the expert survey	20
5. Key findings and recommendations	23
References	25
Annex A: List of fundable actions to address L&D	33
Annex B: Full list of instruments considered to raise L&D finance	35
Annex C: Current L&D finance pledges, as of August 2023	36
Annex D: Survey on Loss and Damage Finance: What are the most promising instruments?	37
Annex E: Complementary analysis of the expert survey	40

Figures

Figure 1: Loss and Damage in climate negotiations over time.	5
Figure 2: The funding gap for support to address L&D.	6
Figure 3: Survey results – Financial volume.	40
Figure 4: Survey results – Predictability (1/2).	41
Figure 5: Survey results – Predictability (2/2).	42
Figure 6: Survey results – Feasibility (1/2).	43
Figure 7: Survey results – Feasibility (2/2).	44
Figure 8: Survey results – Fairness (1/2).	45
Figure 9: Survey results – Fairness (2/2).	46

Tables

Table 1: Summary of assessment of instruments to raise L&D finance (most to least promising).	iii
Table 2: Criteria and indicators for assessing L&D finance instruments.	iv
Table 3: Criteria and indicators for promising L&D finance instruments and tools.	8
Table 4: Summary of desk research on promising instruments to raise L&D finance.	17
Table 5: Ranking of instruments to raise L&D finance, ordered by highest total score.	21

Abbreviations

AfDB	African Development Bank
AOSIS	Alliance of Small Island States
ARC	African Risk Capacity
Cat bonds	Catastrophe bonds
CBAM	Carbon Border Adjustment Mechanism
CCRIF	Caribbean Catastrophe Risk Insurance Facility
CDM	Clean Development Mechanism
CHTA	Caribbean Hotel and Tourism Association
COP	Conference of the Parties
CPI	Climate Policy Initiative
CTO	Caribbean Tourism Organisation
DFC	Debt-For-Climate
DFE	Debt-For-Environment
DFH	Debt-For-Health
DFN	Debt-For-Nature
EEA	European Environment Agency
ETS	Emissions Trading System
EU	European Union
ExCom	Executive Committee
FFL	Frequent Flyer Levy
FTT	Financial Transaction Tax
G7	Group of Seven
G77	Group of Seventy-Seven
GHG	Greenhouse Gas
GST	Global Stocktake
HLAG	High-level Advisory Group
IAPAL	International Airline Passenger Levy
IATA	International Air Transport Association
ICCT	International Council on Clean Transportation
IDB	Inter-American Development Bank
IEA	International Energy Agency
IHLEG	Independent High-Level Expert Group on Climate Finance
IKI	International Climate Initiative
IMF	International Monetary Fund
INC	Intergovernmental Negotiating Committee for a Framework Convention on Climate Change
IMO	International Maritime Organisation
IPCC	Intergovernmental Panel on Climate Change
L&D	Loss and Damage
LDC	Least Developed Country
MARPOL	International Convention for the Prevention of Pollution from Ships
MDB	Multilateral Development Bank
NCQG	New Collective Quantified Goal on Climate Finance
NDC	Nationally Determined Contribution
NELD	Non-Economic Loss and Damage
NGO	Non-Governmental Organisation
ODA	Official Development Assistance
OECD	Organisation for Economic Co-operation and Development
PCA	Panama Canal Authority
RST	Resilience and Sustainability Trust
SDR	Special Drawing Right
SIDS	Small Island Developing State
SNLD	Santiago Network for averting, minimising, and addressing loss and damage
SOPA	Share of Proceeds for Adaptation
UN	United Nations
UNFCCC	United Nations Convention Framework on Climate Change
UNSG-HLAG	United Nations Secretary General's High-Level Advisory Group on Climate Change Financing
V20	Vulnerable Twenty Group
WIM	Warsaw International Mechanism for Loss and Damage

1. Introduction

1.1. Context: Why do developing countries need support for Loss and Damage?

Climate change exacerbates extreme weather events like heatwaves and extreme precipitation, leading to loss and damage (L&D) for vulnerable communities worldwide. Given that global average temperature has already increased by more than 1.1°C from the preindustrial period and the speed of increase is unbroken, it is almost certain that the severity and scope of climate change impacts will escalate in the coming years (IPCC 2022). Consequently, policymakers must be ready to adopt both adaptation and comprehensive risk management strategies to reduce future L&D effectively. Nevertheless, there will remain L&D that cannot be prevented.

The L&D agenda has been discussed under the auspices of the United Nations Convention Framework on Climate Change (UNFCCC) since the early 1990s. A formal definition of what constitutes L&D is yet to be adopted which has had implications for how it is discussed in both scientific and policy arenas. An overview of the different framings of L&D in the policy arena is provided by Calliari et al. (2019) while Hartz (2023) focuses on the challenges faced by the Intergovernmental Panel on Climate Change (IPCC) in reaching an agreement on wording around L&D in its Sixth Assessment Report. This research report steers away from these debates and adopts the definition of L&D as the **adverse effects of climate change that cannot or have not been avoided through climate change adaptation and mitigation or are unavoidable because the limits to adaptation have been reached** (IPCC 2022). L&D is often differentiated into **economic** and **non-economic** L&D (NELD). Economic L&D is quantified in monetary terms through asset loss valuation, such as damages to infrastructure, or through market prices, such as a decline in agricultural production. NELD, in contrast, is less tangible and harder to quantify or attach a monetary value to, and hence often underreported. Examples of NELD include loss of life, culture, biodiversity, or traditional knowledge (UNFCCC 2013). Moreover, L&D occurs through both **slow onset** events, such as sea-level rise or desiccation, and through **sudden onset**, extreme weather events such as floods, droughts, and heatwaves induced by climate change (UNFCCC 2018).

The concept of L&D is particularly important to low-income and Small Island Developing States (SIDS) that are disproportionately affected by climate change, while having contributed only marginally to the problem. Moreover, these nations often lack the resources to adapt to the effects of climate change, making them more susceptible to severe L&D (Chandrasekhar et al. 2022). The issue of L&D is increasingly recognised as a critical component of international climate policy, with a focus on providing financial and technical assistance to vulnerable countries.

The decision at the 27th Conference of the Parties (COP 27) to establish new funding arrangements, as well as a dedicated fund for L&D acknowledged “the urgent and immediate need for new, additional, predictable and adequate financial resources” (UNFCCC 2022a, p.2). It further stressed the need for “identifying and expanding sources of funding” by “recognising the need for support from a wide variety of sources, including innovative sources” (*ibid.*). It should be stressed that **public** finance has been widely agreed and acknowledged to be the main source of L&D finance. Given the deficits in public finance, the escalating debt crisis in many countries exacerbated by rising interest rates and reported shortfalls in the delivery of climate finance, however, a mosaic of solutions across countries, regions, institutions, and markets including innovative sources of funding will be necessary to fill the L&D funding gap. Several propositions have already been put forward (see Annex B), including the introduction of a levy on fossil fuel producers, an International Airline Passenger Levy (IAPAL) and using Special Drawing Rights (SDRs) (e.g., Richard and Boom 2014; Müller et al. 2016; Plant 2023; Richards et al. 2023; UNFCCC Technical Support Unit 2023).

1.2. Loss and Damage: a third pillar of climate policy?

In general, L&D finance can be understood as international climate finance¹ earmarked for activities to respond to L&D as per the definition provided above (see Bakhtaoui and Shawoo 2022). Conceivable actions to address L&D are manifold.²

¹ We would like to note that this can include both public and private sources, provided the latter are mobilized by public action. For an overview of definitional challenges in defining and accounting international climate finance, see further Shishlov and Censkowsky (2022a), Shishlov and Censkowsky (2022b) and CARE (2023).

² Often, the distinction between adaptation and L&D is not made carefully (Annex A).

Without adequate international climate finance, countries are forced to find resources for adaptation, mitigation and addressing L&D elsewhere, including taking on more sovereign debt. Indeed, many governments that had massively borrowed during the long period of low interest rates are now struggling with the increasing burden of their debt as inflation and interest rates are surging, in the worst cases leading to government defaults, such as, for example, in Ghana (e.g., Mosley and Rosendorff 2023). In April 2022, the International Monetary Fund (IMF) warned that the proportion of countries at risk of or already in high debt distress has doubled compared to 2015 levels, reaching 60% globally (Chabert et al. 2022). Further, in the absence of dedicated L&D finance, non-addressed impacts of (increasingly) frequent climate-related disasters accompanied by short and unsupported recovery processes will amass, increasing vulnerability and amplifying risks (Pardo 2021). Directly earmarking financing instruments exclusively for L&D may thus beg the question about the relevance of L&D financing options in the broader context of international climate finance and the risk of different funding needs competing against each other.

1.3. Objectives and methodology of the research report

Given the need to ramp up L&D finance, it is important to understand the advantages and limitations of various international finance instruments proposed. It is worth noting that several instruments have been discussed in other contexts such as ‘innovative financing for development’ following the 2002 Monterrey Consensus (UN 2003, p.16). Additionally in the international climate finance context in 2010, when the UN Secretary General appointed a High-level Advisory Group (HLAG) to explore potential sources of international climate finance in the context of the target to mobilize USD 100 billion per year by 2020 to support mitigation and adaptation activities from a ‘wide variety of sources’ (UNSG-HLAG 2010; see also Climate Policy Initiative (CPI) et al. (2011) and OECD (2022)). This research report therefore aims at contributing to this knowledge by analysing the advantages and limitations of these instruments to help identify the most promising ones for L&D.

The research report proceeded in two main steps. In a first step, using desk research, we reviewed the landscape of international climate finance instruments relevant for L&D in order to shortlist the most promising ones based on the desk-based research. A full list of instruments considered and filtered is provided in Annex B. Some of the factors considered for the shortlisting included evidence gaps and implementation barriers, the attractiveness of the instrument, the potential scale of funding and (un)predictability of revenues than could be raised by the financial instruments.³ In the end, ten instruments were shortlisted for the analysis, all of which have been discussed repeatedly during meetings and workshops of the Transitional Committee, and which could be put up for further discussion in the run-up to COP 28/CMA 5: carbon pricing, catastrophe bonds, debt-for-climate swaps, financial transactions tax, fossil fuel extraction levy for producers, (global) wealth tax, international (solidarity) aviation levies, international (solidarity) shipping levy, Special Drawing Rights and subsidised insurance. These ten instruments have been classified into fiscal instruments⁴, debt-related instruments⁵, direct resource allocation⁶ and insurance.

In a second step, based on the four criteria, we developed a survey with Likert-scale statements⁷ to determine how ‘promising’ the identified financial instruments are considered by L&D finance experts (see Annex D). The survey used a scoring system from 1-5 across all criteria (1 = strongly disagree, 2 = somewhat disagree, 3 = neither agree nor disagree, 4 = somewhat agree, 5 = strongly agree). 31 experts from academia, foundations, governments as well as non-governmental organizations (NGOs) responded. To our best knowledge, a comparable expert survey specifically on L&D finance has not been conducted elsewhere.

³ Excluding, e.g., crowdfunding, share of proceeds on transactions of the Voluntary Carbon Market and Article 6.2 of the Paris Agreement, and a windfall tax on fossil fuel profits.

⁴ Fiscal instruments are tools governments use to manage revenue and expenditure, such as taxes and public spending.

⁵ Debt-related instruments involve borrowing and lending, like government bonds and loans, to manage public debt.

⁶ Direct resource allocation refers to the government's targeted distribution of resources, often through subsidies, grants, or contracts, to achieve specific policy goals or support certain sectors.

⁷ Based on the seven indicators 1A-4B in Table 1.

The remainder of this research report is structured as follows. Section 2 presents an overview of the current state of discussions on L&D in the international climate policy context as well as trends and flows of L&D finance. Section 3 then proceeds to discuss the most promising L&D finance instruments and tools, based on an assessment framework consisting of both quantitative and qualitative criteria. Section 4 presents the results of the expert survey. Section 5 concludes with key findings and recommendations primarily for policymakers responsible for exploring and implementing potential L&D finance instruments.

2. State and trends of Loss and Damage finance

2.1. Loss and Damage in the international climate policy context

The international climate policy agenda concerning L&D was initially conceptualised by the Alliance of Small Island States (AOSIS) in 1991, in a proposal to address impacts of future sea level rise through an International Insurance Pool (Intergovernmental Negotiating Committee for a Framework Convention on Climate Change (INC) 1991). However, the UNFCCC adopted in 1992 was agreed without including L&D in the final text.

Nevertheless, the L&D agenda stayed alive in the UNFCCC process, albeit politically charged and marked by significant ambiguity and complexity.⁸ Different ways of addressing climate change-induced L&D were subsequently examined, including in the 2007 Bali Action Plan (UNFCCC 2007). However, it took almost two decades until at the 16th Conference of the Parties (COP 16) in Cancun in 2010, a framework to consider approaches “to address L&D associated with climate change impacts in developing countries that are particularly vulnerable to the adverse effects of climate change” was adopted. The Warsaw International Mechanism for Loss and Damage (WIM) was established at COP 19 in 2013, aiming to “address L&D associated with impacts of climate change, including extreme events and slow onset events, in developing countries that are particularly vulnerable to the adverse effects of climate change” (UNFCCC 2014, p.6). Additionally, an Executive Committee (WIM ExCom) was established to guide the implementation of functions of the WIM (*ibid*).

It was only in the Paris Agreement, adopted at COP 21 in 2015, that L&D was addressed ‘head on’ in its own self-standing Article 8, creating political legitimacy in the negotiations for L&D within the UNFCCC regime. However, several developed countries led by the US only accepted this development on condition that it would “not involve or provide a basis for any liability or compensation” as was therefore clearly stated in paragraph 51 of decision 1/CP.21 (UNFCCC 2016, p.8). Article 8 (4) of the Paris Agreement provides a positive list of eight “areas of cooperation and facilitation to enhance understanding, action and support” through which the Parties to the Paris Agreement may seek to avert, minimise, and address L&D (UNFCCC 2015, p.12). Article 8 further alludes to the need for support for averting, minimising and addressing loss and damage, but does not expressly mention ‘finance’ for L&D (Chhetri et al. 2021). COP 21 requested the WIM ExCom to establish a clearing house for risk transfer as a centralised database for insurance and risk transfer information to assist Parties in their endeavours to formulate and execute comprehensive risk management strategies. At COP 23 the Fiji Clearinghouse for Risk Transfer was launched as a repository with easily accessible information for countries.

The first global stocktake of the Paris Agreement (GST) has been running from 2021 and is expected to close in 2023 and will be repeated every five years thereafter. The GST facilitates the assessment of global collective progress on mitigation, adaptation, and means of implementation (securing finance and support). The GST seeks to inform the next round of Nationally Determined Contributions (NDCs) to increase the level of ambition and creates an opportunity to evaluate the need for enhanced action and support (UNFCCC n.d.a). In 2018, the Katowice decisions at COP 24 which include the ‘Katowice Climate Package’ set the scene for the first GST, including that, L&D could be used as a source of information for the GST and as a part of the Transparency Framework (UNFCCC n.d.b). Notably, the GST has yet to include an assessment of L&D. The UNFCCC further lacks established procedures for the

⁸ The slow progress on L&D discussions and actions under the UNFCCC can be linked to a range of obstruction and contention tactics deployed by opponents since 1991 (see further Falzon et al. 2023).

systematic collection, recording, and reporting of information concerning L&D, as well as the associated financial needs of countries. The lack of an existing mechanism to effectively monitor and disclose the financial flows related to L&D further impedes assessing individual country or collective progress (Chhetri et al. 2021).

At COP 25 in 2019, the Santiago Network for averting, minimising, and addressing loss and damage (SNLD) was established to catalyse technical assistance for the implementation of approaches at all levels in vulnerable developing countries (Paragraph 43 of 2/CMA.2). It also highlighted the need to ensure that work on L&D is guided by the best available science and is expanded to address slow onset events and non-economic losses.

In 2021 at COP 26, Parties came close to creating a 'Glasgow Loss and Damage Facility' proposed by the Group of 77 (G77) and China, which was ultimately rejected by developed countries fearing unlimited liability (Tagliapietra 2022). In the end, the Glasgow Dialogue between Parties and relevant stakeholders, was established as a platform to discuss funding arrangements of activities to avert, minimise and address L&D associated with the adverse impacts of climate change over two years in cooperation with the WIM ExCom. Discussions under the Glasgow Dialogue have so far included the gaps, barriers, and challenges of existing finance to address L&D and the operationalisation of new funding arrangements with a focus on addressing L&D by providing and assisting in mobilising new and additional resources (UNFCCC 2023a). At COP 26, the functions of the SNLD were elaborated, while the SNLD's institutional structure and terms of reference to enable full operationalisation were agreed and established at COP 27 in Egypt in 2022. The selection of suitable host of the secretariat of the SNLD is expected to be finalised in late 2023 (UNFCCC 2023a).

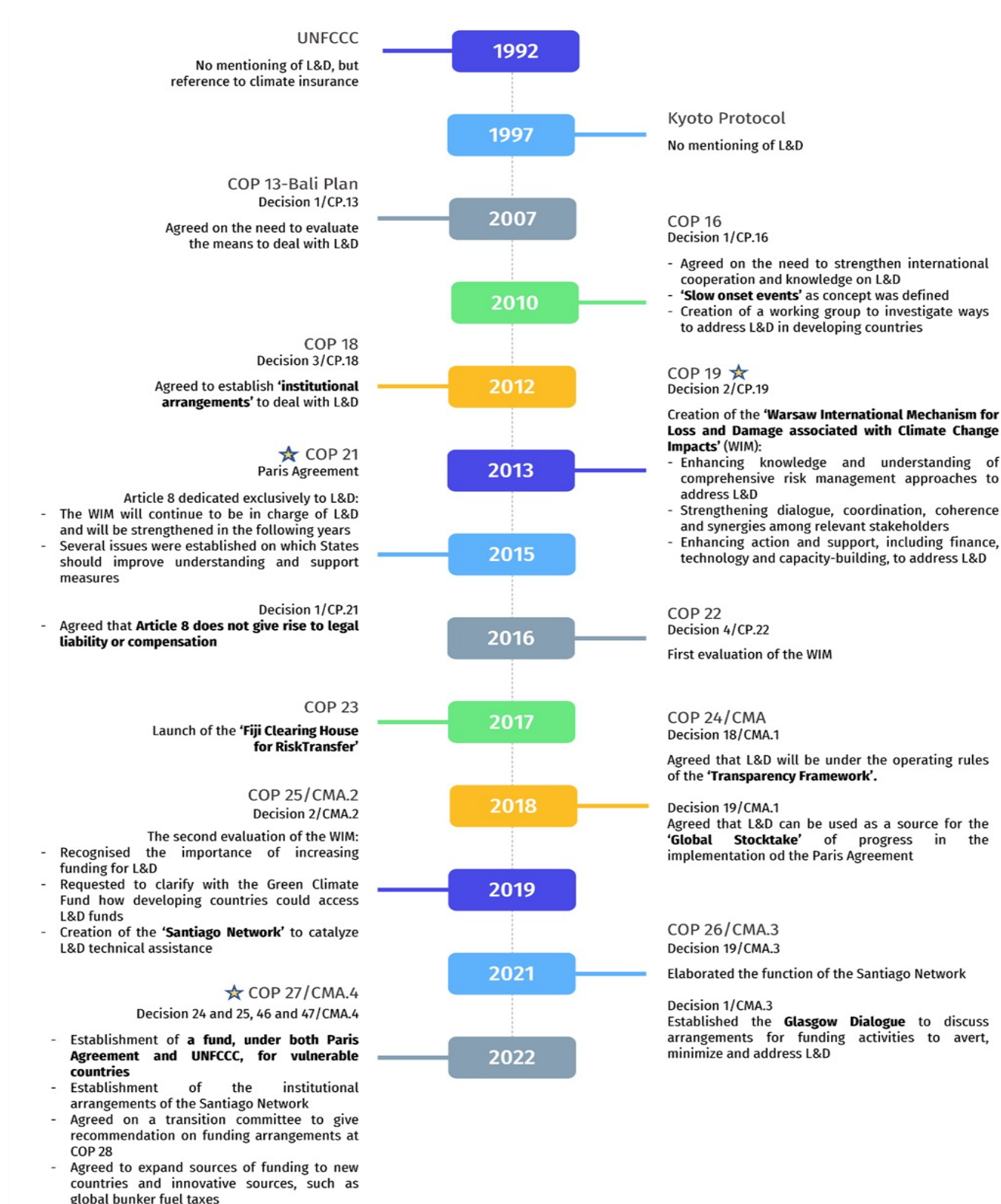
Finally, after three decades of engagement from developing countries, at the conclusion of COP 27, in November 2022, Parties agreed to establish "funding arrangements for responding to L&D associated with the adverse effects of climate change" (UNFCCC 2022b). The arrangements include "establish[ing] a fund for responding to loss and damage" that will "assist developing countries that are particularly vulnerable to the adverse effects of climate change" (UNFCCC 2022c). While the agreement to establish an L&D fund is widely celebrated, its operationalisation still faces an uncertain future. Set up at COP 27, the Transitional Committee⁹ is tasked – among other things – to establish the institutional arrangements, operational modalities, governance of the fund, and importantly, to identify and expand sources of funding to capitalise the fund and ensure complementarity with existing funding arrangements. In 2023, the Transitional Committee is confronted with ironing out contentious issues ahead of COP 28 (UNFCCC n.d.c). These include what form the fund could take, what types of activities it can support, who can receive financial support and how it will be funded in addition to a mapping of the existing funding arrangements and innovative sources relevant to addressing L&D (UNFCCC 2022c; UNFCCC 2023b). As of September 2023, the Transitional Committee has made some progress in discussing several options on these themes, however, there is still a lack of consensus and clarity on the possible narrowed down options that the Committee will present at COP 28, given the different viewpoints of members based on country or regional bloc positions.¹⁰

Figure 1 below summarises the L&D-related developments within the international climate policy regime since its inception.

⁹ The Committee is composed of 24 members with ten members from developed country Parties and 14 members from developing country Parties.

¹⁰ See UNFCCC (n.d.d)

Figure 1: Loss and Damage in climate negotiations over time.



Source: Authors' elaboration. The stars indicate the COPs most relevant to L&D.

2.2. Trends in finance for Loss and Damage

There is general consensus that L&D finance should focus on addressing impacts that cannot be avoided because the limits to adaptation have been reached or because they have not been avoided due to technical, institutional or financial barriers to support adaptation and mitigation (IPCC 2022). Specifically, such finance should focus on addressing immediate impacts and the more difficult (and costly) tasks of rehabilitation and reconstruction from extreme and slow onset events, rather than averting or minimising these impacts, which can be done using existing international (mitigation and adaptation) climate finance. An overview of the range of activities that can be supported by L&D finance and the funding gaps that need to be addressed are illustrated in the right column of Figure 2.

Figure 2: The funding gap for support to address L&D.

	Averting loss and damage	Minimising loss and damage	Addressing loss and damage		
Impacts			Reversible —————> Irreversible		
			• Super storms • Heatwaves • Forest fires • Floods • Droughts	• Sea level rise • Desertification • Glacial melt • Erosion	• Loss of biodiversity (including extinction of species)
Mitigate Adapt Address	Climate change mitigation Reducing greenhouse gas emissions	Climate change adaptation Risk reduction: • early warning • emergency preparedness • building dykes • retrofitting infrastructure	Recoverable —————> Permanent and irrecoverable losses		
			Economic losses —————> Non-economic losses		
			Humanitarian assistance: • relief • recovery • reconstruction • rehabilitation • social protection • resilient rebuilding		Loss of culture Loss of heritage
Displacement			Temporary displacement	Permanent relocation	Loss of territory
Funding	Dedicated but insufficient		Limited —————> No funding		

Source: Heinrich-Böll-Foundation US (2021, p.6)

L&D finance has not yet been clearly defined by the UNFCCC, and a 2019 technical paper found “limited evidence exists of sources of finance and financial instruments that explicitly address loss and damage” (UNFCCC 2019, p.38). Without a clear definition and systematic framing for L&D, it is challenging to come up with robust estimates of the costs of addressing the gaps in L&D funding. Moreover, there is no single (unique) L&D marker to support the tracking of L&D finance, while most climate-related funding is for mitigation and adaptation, whether through the UNFCCC climate funds or multilateral development banks (MDBs).

According to a synthesis report on L&D finance presented by the Transitional Committee there is a huge gap between current L&D financial flows and current needs, let alone the future needs (UNFCCC 2023c). A widely cited study by Markandya and González-Eguino (2019) concludes that L&D finance needs range from at least USD 290 to USD 580 billion annually by 2030, rising to USD 1 trillion or more per year by 2050. Richards et al. (2023) even suggest that by 2030, more than USD 600 billion, by 2040 USD 1.2 trillion and by 2050 USD 2.2 trillion per year will be needed. Based on conservatively estimated actual L&D costs in 2020, a **floor of at least USD 400 billion** in annual L&D finance would be needed immediately (*ibid.*).¹¹ Notably, the linkages between and overlaps of L&D finance, development finance,

humanitarian finance, disaster risk management and adaptation are well documented (UNFCCC 2023c). However, without a commonly agreed framework, disaggregation of L&D finance from these other financial instruments will be very difficult if not impossible.

To date, L&D finance pledged and contributed (see Annex C) from national and sub-national states has taken the form of solidarity contributions to vulnerable developing countries amounts to just approximately USD 430 million (Richards et al. 2023). The delivery of this finance would have to be significantly – if not solely – grant-based, so it does not contribute to increasing existing debt burdens. Given that between 2016 and 2020 72% of all international public climate finance was loan-based (concessional and non-concessional (Organisation for Economic Co-operation and Development (OECD) 2022), this is by no means ensured.

Given the only recent addition of the L&D finance topic to the international climate finance agenda, the (missed) pledge made by developed countries at COP 15 to collectively mobilise USD 100 billion annually by 2020 from public, private, and alternative funding sources did not include any L&D finance commitments. Thus, going forward, the challenge would be to ensure the discussions on the New Collective Quantified Goal on Climate Finance (NCQG) for post 2025 consider L&D as a sub-target of climate finance (besides mitigation and adaptation) and demonstrate the extent to which the total quantum will consider L&D finance needs, alongside clear goals on how the target can be met.

3. Analysis of promising Loss and Damage finance instruments

3.1. Assessment framework

In this chapter, we assess the landscape of proposed L&D finance instruments that can help to close the L&D funding gap. So far, discussions around L&D finance instruments have focused on identifying new and innovative finance instruments and funding arrangements. In this research report we note that some of the instruments have already been applied to different areas – e.g., adaptation – or have been successful in some countries or regions and can be scaled up. Thus, the focus of this research report is rather on identifying which instruments are the most promising irrespective of whether they are ‘innovative’ or more ‘traditional’. To do so, we developed an assessment framework based on the principles of the UNFCCC as well as the Paris Agreement given their high degree of international legitimacy using criteria put forward by Richards et al. (2023), Bakhtaoui and Shawoo (2022) as well as Roberts et al. (2017) as a starting point. Some of these criteria are merged, and specific indicators were developed for each criterion to have a more standardised metric for the assessment of each financial instrument and tool. As such, the framework allows for each proposed instrument and tool to be assessed and compared across four criteria and relevant indicators (summarised in Table 3).

1. **Adequacy:** Assesses the extent to which revenues (or funds) can be raised by the instrument contribute to closing the identified L&D finance gap (USD 400 billion annually). This figure is based on the conservatively estimated actual L&D costs for 2020 (Richards et al. 2023) and is positioned centrally within the range of USD 290 to 580 billion needed in L&D finance by 2030 calculated by Markandya and González-Equino (2019). We adopt a similar disclaimer as Roberts et al. (2017, p.214) that “an instrument’s position among others examined in this assessment should not be considered a testament to its adequacy outside of our analysis. As projections of future loss and damage costs suggest, no single mechanism considered in isolation can be seen as adequate to support all necessary response efforts”.
2. **Predictability:** Indicates to what extent funds will be available in the future. Ideally, funds would increase over time according to a pre-defined schedule, to be called predictable.

¹¹ This suggested floor is four-times higher than the proposal by the Independent High-Level Expert Group on Climate Finance (IHLEG), launched jointly by the COP 26 and COP 27 Presidencies (Songwe et al. 2022). More precisely, IHLEG estimates that, in total, about USD 2 trillion a year (of which USD 1.4 trillion in private finance) would be needed across climate finance for mitigation, adaptation and L&D in developing countries alone (ibid.). This total amount is comparable to what is currently flowing into fossil fuels and high-carbon infrastructure every year (Harvey 2022).

3. **Feasibility:** Assesses whether an instrument can be successfully implemented within existing mechanisms or policy regimes. What are the potential requirements to adopt the instrument, e.g., the need for a new international treaty or separate entity? How broad is support for the instrument?
4. **Fairness:** For an instrument to be deemed fair, it must demonstrate a clear and direct link between actors or activities that have played a role in causing climate change-related L&D (based on principles of equity, historical responsibility, the 'polluter pays' principle).

Table 3: Criteria and indicators for promising L&D finance instruments and tools.

Criteria	Indicators
1. Adequacy	1A: Share of L&D finance gap potentially covered by the instrument.
2. Predictability	2A: Timeframe for which the revenues (or funds) available under the instrument can be specified with a high degree of confidence. 2B: Likelihood that revenues (or funds) remain constant or increase over time.
3. Feasibility	3A: The technical ease of introducing the instrument. 3B: Likelihood the instrument can generate support by both developed and developing countries.
4. Fairness	4A: Percentage of funding coming from (current and historical) greenhouse gas emitters. 4B: Percentage of funding coming from entities/individuals with above average resources (globally).

Source: Heinrich-Böll-Foundation US (2021, p.6)

3.2. Fiscal instruments

3.2.1. Carbon pricing

In essence, carbon pricing instruments such as carbon taxes or Emissions Trading Systems (ETS) put an explicit price on greenhouse gas (GHG) emissions. Carbon pricing therefore creates economic incentives to mitigate climate change in a flexible manner and, at least theoretically, at the lowest cost (Baranzini et al. 2017). According to the World Bank (2023), 73 carbon pricing instruments (ETS and carbon taxes) have been implemented or scheduled to date, covering around 23% of global GHG emissions. Here we consider carbon pricing as a broad instrument, not targeted at specific sectors. Instruments such as an aviation or shipping levy are sector-specific and are therefore considered separately.

Carbon pricing instruments can generate revenues for jurisdictions that implement them, part of which can be earmarked for activities to address L&D.¹² For example, the revenues from the auctioning of allowances in the EU (European Union) ETS are an increasing source of income for EU member states. The EU ETS Directive provides that member states should earmark at least 50% of auctioning revenues (or the equivalent in financial value) for climate and energy-related activities. Funding mechanisms have also been introduced under the Directive including a Modernisation Fund to support lower-income member states to modernise their energy systems and improve energy efficiency and an Innovation Fund to support innovation in low-carbon technologies and processes for all member states. More recently, the EU has introduced the Carbon Border Adjustment Mechanism (CBAM) designed to replace the free allocation of allowances as the chosen policy option to address carbon leakage. The EU CBAM aims to equalise the carbon price paid by EU industrial producers operating under the EU ETS and the one for

¹² Where applicable, this should not be counted towards the international obligation for climate finance to be additional.

imported goods. This will be achieved by obliging companies that import into the EU to purchase so-called CBAM certificates to pay the difference between the carbon price in the country of production and the price of allowances in the EU ETS.

In terms of revenue potentials specifically for L&D, no assessments have been widely discussed yet, but they would be dependent on the design elements of the mechanism, e.g., the tax rate and coverage of sectors in the case of carbon taxes. However, overall global carbon pricing revenue in 2022 reached USD 95 billion compared to USD 33 billion in 2017 (World Bank 2023; World Bank 2018). In the third phase of the EU ETS (2013-2020) the total revenues generated exceeded USD 56 billion. Notably, most revenues generated were used to fund domestic/EU climate and energy activities, while only a small fraction was used for international climate and energy purposes, such as the initial years of the German International Climate Initiative (IKI) (European Environment Agency (EEA) n.d.). The CBAM will not generate revenue in the transitional period (2023-2025), and the revenue generated as of 2026 will be only partly collected nationally by EU member states (25%), while most of it will accrue to the EU budget (75%). It is estimated that the CBAM will generate about USD 1.6 billion (EUR 1.5 billion) (2018 prices) per year as of 2028 (EU Commission 2023). Some proposals suggest that the EU CBAM revenues specifically from high-income countries, such as Australia or Japan, be allocated for L&D (Gläser and Caspar 2021).

The introduction and implementation of carbon pricing systems is subject to other contextual issues that should be carefully considered. For instance, the use of the revenues in designing carbon pricing instruments is often contentious. A potential issue to overcome relates to governments building public acceptance for nationally collected taxes to be used internationally to address L&D, especially in moments of economic downturn. Depending on the jurisdiction, political buy-in may also require long political processes e.g., national stakeholder consultations or, as in the case of the EU, this may require consensus to be achieved through trilogue negotiations.¹³

An advantage of this instrument is that the revenues can be raised from entities who are currently contributing to climate change. However, it needs to be carefully designed including through the careful recycling of revenues to offset the inherent regressive nature of such policies (IMF 2019). This may be an additional issue of contention for developing countries if all countries would be expected to adopt carbon pricing instruments and further allocate funds for L&D, without consideration of historical responsibility.

3.2.2. Financial transactions tax

A financial transaction tax (FTT) is, in principle, a small levy on monetary transactions or trades of financial instruments, e.g., bonds, stocks, derivatives, and foreign currencies. As of 2023, FTTs exist in different forms in more than 30 (mostly developed) countries. The FTT can be designed in different ways, depending on the rate and tax base, e.g., a 0.02% tax on high-frequency trading. As of now, there is no evidence that they have impaired the development of any financial centres. Today, most FTTs (such as the French and British one) apply only to transfers of ownership, effectively excluding the majority of all transactions which occur during the same day ('intraday'), e.g., high-frequency transactions or those carried out on alternative trading platforms (Cappelle-Blancard 2023).¹⁴

So far, FTTs bring in about USD 2 billion (EUR 1.8 billion) in France per year, USD 5 billion (GBP 4 billion) in the United Kingdom, and the equivalent of more than USD 7.7 billion in South Korea, Hong Kong and Taiwan (*ibid.*). A tax on financial transactions similar to the French FTT or the British stamp duty extended to the global level could raise billions of dollars, euros and other globally exchanged currencies. Extended to G20 countries, an equivalent tax would raise between USD 170 billion (EUR 156 billion) and USD 284 billion (EUR 260 billion) per year, depending on the nominal rate chosen of 0.3% or 0.5%. However, if it was possible to extend the FTT to intraday transactions and high-frequency trading, the revenue collected would then exceed USD 436 billion (EUR 400 billion) per year (Cappelle-Blancard 2023).

¹³ Trilogues are informal tripartite meetings on legislative proposals between representatives of the EU Parliament, the Council and the Commission.

¹⁴ Though any tax on intraday transactions would bring in additional revenue and improve transparency on the financial markets, they might risk reducing the total amount of transactions (*ibid.*).

In terms of feasibility, countries could commit to make the changes in their next budget process for the implementation to happen within 12 months, report annually on proceeds and reallocation, and work together to increase the coalition with the aim of extending it to all G20 countries as soon as the end of 2024 (Capelle-Blancard 2023). Thereafter, technically speaking, every country could implement an FTT that fits the best with its respective domestic circumstances and priorities. Most likely to champion the FTT are countries who have already implemented one of its different forms. Countries without a significant financial sector, in turn, should be considered likely to prioritise other taxes to raise revenues for L&D finance. Lastly, in terms of equity and considering the polluter pays principle, FTTs are proportional to the ability to pay reflected in more frequent financial transactions and would raise L&D finance mostly from the better-off, who are also generating significantly higher GHG emissions than the general population (e.g., Elton 2023). As the FTT is always transaction-based, it would not conflict with other L&D finance instruments discussed here, including wealth taxation, and would come with a high degree of predictability, based on the volume of financial transactions from previous years.

3.2.3. Fossil fuel extraction levy for producers

Fossil fuels are usually not taxed at source, except for production royalties in some countries. A fossil fuel extraction levy can be envisaged as a global tax imposed on oil, gas, and coal producers, charged for each tonne of coal, barrel of oil or m3 of gas extracted at a level that would reflect how much carbon dioxide (CO₂) is embedded in each tonne of the respective fossil fuel (e.g., Richards and Boom 2014). The levy would have to be implemented on the national level and could oblige extracting companies to declare a) volumes of coal, oil and gas extracted, as well as b) their respective emission profile, to the tax authority of the country of extraction. This declaration could build on existing legal arrangements for payment of royalty (or similar) on the quantity of fossil fuels extracted. For its proponents – mostly Non-Governmental Organisations (NGOs) and civil society as well as academia – the extraction levy is the best illustrating case for applying the polluter pays principle: Not only does it ensure that those who produce pollution should bear the costs of managing it, the levy also internalises the external costs for mitigation, with a price signal that effectively incentivises a shift towards decarbonisation.

To address equity concerns, a proposal by Richards et al. (2018) suggests using a globally consistent rate and to differentiate the levy's allocation depending on the countries of extraction. A starting rate of USD 5/t CO₂-equivalents (CO₂e) could increase annually by USD 5 to 2030 to reach USD 50/t CO₂e, then by USD 10 annually for the 2030-2050 period to reach USD 250/t CO₂e in 2050. In that case and assuming global implementation, revenues would reach USD 70 billion in the first year of implementation, and USD 300 billion per year on average to 2050. For oil specifically, with about 30 billion barrels produced each year, a solidarity contribution of only one USD per barrel could generate USD 30 billion in revenue (*ibid.*) Thus, revenues would become available from the first year of implementation of the tax and – similar to the aviation or shipping levy described below – would decrease over time the more the fossil fuel sector decarbonises, unless rates are increased at a higher speed.

3.2.4. (Global) Wealth tax

General wealth taxes and other taxes on the rich, by their very design, must be considered effectively green taxation as they aim to reduce the huge (over)consumption and related GHG emissions by the richest, which can easily reach several thousand tonnes of CO₂ per year (Barros and Wilk 2021). In fact, the 10% of households with the highest per capita wealth alone contribute 34-45% of global consumption-based household GHG emissions, while the bottom 50% in terms of wealth only 13-15% (IPCC 2023). The wealth tax may take different forms including taxing personal income to capital gains, unrealised capital gains, property tax, inheritance, and net wealth, but in any case, addressing both equity and the polluter pays principle.

A recent study by Christensen et al. (2023) for Oxfam stresses that since the 1980s, the average tax rate on the wealthiest has fallen across the OECD countries, and that they are subject to real rates of taxation that are often only in the single digits. Since 2020, with the beginning of the COVID-19 pandemic, the richest 1% captured nearly two-thirds of all newly created wealth¹⁵ (*ibid.*), worth USD 42 trillion, almost twice as much as the bottom 99% of the

world's population (Chancel et al. 2023). Taxing extreme wealth reduces not only wealth inequality but also ongoing racial, gender, and colonial inequalities, all of which are inextricably linked to causing and worsening the climate crisis (Carlson and Hanks 2023). The higher inequality, the higher vulnerabilities, and the higher the need for and quantum of L&D finance.

Consequently, the amount that could be raised in L&D finance from progressive taxation on wealth is among, if not the highest, of all instruments discussed. On a global level, Oxfam (2023) estimates that a net wealth tax¹⁶ of 5% on the world's multimillionaires and billionaires could raise USD 1.7 trillion a year. On a sliding scale, such a tax of 2% on the world's millionaires, 3% on those with wealth above USD 50 million and 5% on the world's billionaires would raise USD 2.52 trillion dollars annually (*ibid.*). A more conservative estimate, by the Chancel et al. (2023), arrives at around USD 300 billion per year if a progressive rate of 1.5% to 3% for wealth of over USD 100 million would be applied to the 65,130 wealthiest individuals, those with over USD 100 million (or EUR 92 million) that represent only 0.001% of the world's adult population.

In theory, states both within and outside the OECD, can introduce (and increase) wealth taxes on hyper-rich individuals at any time, and direct funds towards addressing L&D. Most recently, calls for taxes on wealth have emerged globally, including at the latest World Economic Forum in Davos (e.g., Planelles 2023). Similarly, at the time of writing, a global minimum tax of 15% for global corporations has seen increasing support around the world (e.g., Mehboob and Gottlieb 2023). However, as the richest individuals and companies also tend to have significant political influence, implementing a wealth tax only on national level should be considered likely to be insufficient, considering the frequent practices of resettling and tax evasion. A global wealth tax, starting for example at the OECD level, would be a more promising, though harder to implement step forward to raise highly predictable L&D finance.

3.2.5. International (solidarity) aviation levies

The aviation sector is one of the fastest-growing sources of GHG emissions and is often considered a 'hard to abate' sector. In 2022, aviation accounted for over 2% of global energy-related CO₂ emissions (International Energy Agency (IEA) 2023). In relation to L&D finance, two proposals, an International Aviation Solidarity Charge/Levy and a Frequent Flyer Levy (FFL), have been made that may generate revenues to provide adequate funding for L&D activities in the most vulnerable countries and communities (Müller 2009; Zheng and Rutherford 2022).¹⁷ These proposals may also support the decarbonisation of the sector while ensuring equitable distribution of the financial burden.

The first proposal, the International Aviation Solidarity Charge/Levy entails the introduction of an international tax or levy on air passenger tickets based on travel and not necessarily on the GHG emissions of air travel. The proposal dates as far back as 2008, when at COP 14, the Least Developed Countries (LDC) Group proposed the IAPAL with a flat fee rate of USD 5 on economy tickets and USD 60 for a business or first-class ticket, estimating it could raise between USD 8 and 10 billion per year for the Adaptation Fund of the Kyoto Protocol (Müller 2009). In the European Union (EU) alone, the revenue potential of the levy has been estimated at USD 6 billion per year with a minimum fee rate of USD 10 per ticket on international flights only (Ricardo 2021).

Such a levy could be implemented in the short term with relative ease given that airlines only need to collect the tax at air ticket purchase. Moreover, precedents can provide best practices. Levies on air tickets have been applied by several countries since 2006, following the adoption of the 'Declaration on Innovative Sources of Financing for Development' by the UN in 2005 (UN 2014). A well cited example is the French air ticket levy¹⁸ introduced in 2006 imposed and collected at source and managed by the French Development Agency. The levy generates approximately

¹⁵ Net wealth (assets minus debt) (see further Christensen et al. 2023).

¹⁶ This can be understood as a tax levied on total wealth accumulated by an individual (above a certain threshold) based on the net value of all their assets (minus debts), within the country or offshore. This includes housing, bank deposits, corporate stocks, financial assets or tangible assets (e.g., jewellery, paintings, yachts) (*ibid.*).

¹⁷ A dedicated tax on private jets to raise finance for L&D could have also been included (e.g., Markey 2023), but would likely be covered under global wealth tax proposals as well.

¹⁸ The levy was a surcharge of USD 1.1 (EUR 1) on economy class flights within Europe, USD 4.4 (EUR 4) on long haul economy class, USD 11 (EUR 10) on business class within Europe and USD 44 (EUR 40) on long haul business class.

USD 210 million a year which are earmarked for funding organisations working in global health such as UNITAID, combatting HIV/AIDS, malaria, and tuberculosis. The adoption of this tax by other countries¹⁹ has been a source of sustainable and predictable funds for UNITAID. As of 2019, approximately USD 3 billion (70% of UNITAID's funding) had been raised from the aviation levies (Ren 2019).

In the context of L&D under the UNFCCC, it would have to be agreed by Parties how such an international levy would be introduced and managed. As Müller et al. (2023) note, the UNFCCC and the Paris Agreement cannot impose decisions on the airline sector. However, it may be possible for such a levy to be introduced on a voluntary basis at the national level (as in the French case) and funds channelled downstream by the governments towards existing multilateral climate funds that respond to L&D or the L&D Fund once it is established.

The levy would address the polluter pays principle and require individuals and businesses with the means to fly internationally to take responsibility for the emissions they contribute to (but not account for historical emissions). This implies a direct and coherent link of the funds raised for L&D, considering the related climate change impact of flying. The International Air Transport Association (IATA), however, opposes the imposition of such a tax on this notion, terming it as a discriminatory tax on the aviation sector that shifts the responsibility to finance social programmes from states to air passengers (IATA n.d.). Some SIDS and LDCs have also raised concerns about the negative impacts on the proposal to their tourism dependent economies. To address these equity concerns, further proposals have been made to introduce exemptions for travellers to these countries, provided they demonstrate a high reliance on tourism. One such example is the Caribbean Hotel and Tourism Association (CHTA) and the Caribbean Tourism Organisation (CTO) that urged the EU to ensure climate actions “do not deter potential European travellers from taking vacations in the Caribbean” (CHTA and CTO 2007, p.3).

A second proposal to address equity concerns by the International Council on Clean Transportation (ICCT) relates to the FFL which entails applying a progressive tax depending on the number of flights a person takes in a year. This proposal is premised on the significant disparities in air travel both within and between nations (Zheng and Rutherford 2022). For example, according to Gössling and Humpe (2020), only 10% of the world population flew in 2018 and only 4% internationally. Moreover, the top 1% of frequent travellers are responsible for half of the emissions from flying. The tax burden would thus primarily be on wealthier frequent flyers rather than on people who fly only occasionally such as relatively poor migrant workers. The FFL would thus have the potential to curb the demand for air travel²⁰ and contribute to emission reduction from the sector.²¹ The study by Zheng and Rutherford (2022) finds that by applying a flat rate of USD 25 on each one-way flight in 2019, USD 121 billion a year could have been raised. In contrast, an FFL starting at USD 9 for a person's second flight in a year and escalating to USD 177 for the twentieth flight would raise the same amount (*ibid*).

3.2.6. International (solidarity) shipping levy

Historically, international shipping has been a tax-free sector and, together with aviation, is not included in countries' NDCs (e.g., Lo 2023a). Global shipping produces around 3% of total GHG emissions (International Maritime Organisation (IMO) 2020) and since oil-based fuels have met over 99% of the total energy demand for international shipping (IEA n.d.), the sector faces a big challenge to decarbonise without affecting the 80% of global trade dependent on it (United Nations Conference on Trade and Development n.d.). Thus, as one possible instrument, an international levy on shipping GHG emissions could be collected from all ships above a given tonnage or a levy be charged per loaded container. On the level of canal authorities, levies on shipping are commonly used and changed frequently (e.g., Inchcape Shipping Services 2023). In 2021, for example, the Panama Canal Authority (PCA) imposed a surcharge of up to USD 10,000 per vessel depending on their length, to help conserving freshwater and fund new solutions in the long-term (Professional Mariner 2020). Introducing a shipping levy of USD 10 per standard shipping container, for

¹⁹ Including Cameroon, Chile, Mauritius, and South Korea.

²⁰ Although higher ticket prices may not effectively deter the wealthy from flying.

²¹ Airlines in the United Kingdom have recently come under fire for incentivizing frequent flyer programmes, estimating that the average passenger would need to fly on enough flights emitting between 5.6 - 92.8 Mt CO₂-e/year to qualify (Alexander & Beevor 2023).

example, would still be less than the currently applied Panama Canal Surcharge of USD 15 to 35 per standard shipping container (Gerrit n.d.).

The levy would have to be introduced, and revenues be collected by the IMO as the UN entity responsible for international shipping (including its energy transition) and the mandate to introduce binding international regulations to reduce and eliminate shipping GHG emissions. The IMO meetings in July 2023 have seen the adoption of the IMO's Revised GHG Strategy, including a net-zero target 'by or around 2050' as well as measures operationalising this objective (IMO 2023a). However, no shipping levy was agreed on at this meeting (IMO 2023b). Future meetings will discuss this option, but the chasm between proposing Pacific Island nations and trade-dependent developed and developing countries is large (Lo 2023a).

The World Bank estimates show that a shipping levy could raise as much as USD 50 to 60 billion a year without damaging global trade, of which some revenues could be used to address L&D. Japan, the world's second largest ship-owning nation, has called for a levy of USD 56/t CO₂ from 2025, while the Marshall Islands and others call for at least USD 100/t CO₂ (Harvey 2023). The IMF, in turn, proposed a baseline of USD 75/t CO₂ by 2030 which could be doubled by 2040, raising USD 75 billion per year by 2030 and USD 150 billion by 2040. One of the biggest shipping firms, Maersk, even proposed a levy of at least USD 450 per tonne of fuel, which translates into USD 150/t CO₂ (Richards et al. 2023) and is thus in line with the IMF's proposal.

In any case, the level of this levy should provide an incentive to reduce GHG emissions while also mobilising sufficient resources for L&D, which, by the nature of the levy, would be highly predictable. The levy's level could be revised on a regular basis for adapting it to future evolving contexts, as suggested by the IMF. Funds would become available as soon as the first year of taxation and continue until the whole shipping sector is fully decarbonised. Given a fixed shipping levy, revenues would sink annually, in parallel to global decarbonisation, but the IMO and its members have the authority to adjust the levy at their biennial meetings. Revenues might be generated until after 2050 since the international net-zero target has been agreed on to be 'by or around 2050' (IMO 2023a), and before the latest IMO meeting only one third of all shipping firms currently aimed to be carbon neutral by 2050 (Hakirevic Prevljak 2022).

From a technical viewpoint, the shipping levy could be quite easily operationalised and implemented. Even though there was no consensus for it at the last IMO meeting (2023), it can still be considered one of the most effective and most equitable instruments, if designed correctly. The levy could build upon the existing IMO convention and mechanisms, e.g., the International Convention for the Prevention of Pollution from Ships (MARPOL) (IMO n.d.a) and ships' fuel consumptions are already reported to the IMO Data Collection System (IMO n.d.b).

The financial burden of a shipping levy would fall disproportionately on countries exporting the most goods by ship and most dependent on sea transport, including China and the US, but also developing and middle-income countries from all over the world such as Brazil and India (e.g., Gabbatiss 2023), explaining the broad resistance to it (Lo 2023a). However, if the barrier(s) to negotiation are overcome and, for example, low- and middle-income countries are allowed to keep their collected revenues and use them for addressing domestic L&D, the shipping levy could be adopted at one of the next IMO General Meetings and enter into force in 2027 (Gabbatiss 2023).

3.3. Debt-related instruments

3.3.1. Catastrophe bonds

Catastrophe bonds (cat bonds) are specialised financial instruments that insurance and reinsurance companies use to manage risk and transfer it to the capital markets. They are organised as high-return debt instruments with primarily two components: the principal and the coupon (interest) rate. The principal is generally paid back in full or in part when the bond matures, and investors receive periodic interest payments throughout the bond's duration.

The central aspect of a catastrophe bond is its triggering mechanism²² that determines whether investors will face partial or complete loss of their principal if a catastrophic event unfolds (Ando et al. 2022). Two primary types

of triggers exist: Indemnity triggers that calculate the payout based on the real losses suffered by the insurer or reinsurer due to the specific catastrophe, and parametric triggers whereby predefined parameters, e.g., hurricane wind speed, are utilised to ascertain if the bond should be triggered. The latter offers faster payouts, as they do not hinge on evaluating and verifying actual losses.

Cat bonds can effectively reduce the impact of risks (ex-ante) caused by extreme or sudden onset events for L&D initiatives through timely disbursement of funds. However, they have limitations, such as being less suitable for slow onset events²³ and having limited flexibility terms, higher fixed costs, and limited availability to smaller entities (OECD 2021). Cat bond issuance through MDBs such as the World Bank addresses some of these barriers and aid in widening the investor base (Ando et al. 2022). Cat bonds have so far been applied by sovereign risk pools such as the Caribbean Catastrophe Risk Insurance Facility (CCRIF) and the African Risk Capacity (ARC), which transfer the burden of climate risks away from relevant member governments themselves (Durand et al. 2016).

According to data from the specialised insurance website Artemis (2023), current outstanding cat bonds amount to about USD 40 billion, with annual issuances reaching approximately USD 10 billion and expected to grow to USD 50 billion by 2025 (Willems 2023). However, L&D responses do not necessarily generate revenues from which the bond and interest payment could be repaid. The key is thus the calculation of the interest, which must be commensurate to the risk of L&D occurring, as otherwise no one would be willing to buy the bonds.

Governments of countries with high L&D risks such as SIDS can issue cat bonds, to the extent it does not compromise their commitments to increasing resilience in their countries (Ando et al. 2022).²⁴ However, if they do not suffer L&D during the duration of the bond, they must pay the interest – which is usually higher than a plain sovereign bond – and thus are worse off than they would be without having issued such bond (White et al. 2022). Additionally, given that under climate change the risk of climate-related disasters will increase, it needs to be expected that the costs associated with cat bonds will also increase, and these potentially become unaffordable or even wholly unavailable, which reduces the predictability of funds from these instruments (Thomas et al. 2018).

Cat bonds do not demonstrate a clear causal relationship to L&D and only have limited and specific triggers that may not cover slow onset impacts such as sea level rise or biodiversity loss. They also do not directly address equity concerns unless bond buyers are willing to accept an interest not commensurate with the risk of L&D occurring. Overall, cat bonds may be a useful risk transfer mechanism, but they do not necessarily generate additional finance for L&D and do not address the debt burden.

3.3.2. Debt-for-climate swaps

Debt-for-climate (DFC) swaps are bilateral or multilateral debt relief by creditors for a commitment by the debtor to use outstanding debt service payments for national climate action programmes. DFC swaps have mostly been discussed as an alternative source of climate finance including L&D finance for middle-to-high-income SIDS (Thomas and Theokritoff 2021). These countries, despite high vulnerability to climate change and high levels of external debt, have had limited access to climate finance due to the failure to meet defined eligibility criteria of funds (*ibid.*). However, as climate change impacts continue to worsen and debt burdens of developing countries rise, proposals have broadened to cover more countries.

A DFC swap was implemented in the Seychelles in 2016 but otherwise, the instrument has not been used (CPI n.d.). Similar instruments such as debt-for health (DFH) swaps or debt-for-environment (DFE) swaps, but mostly debt-for-nature (DFN) swaps have been applied since 1980 in countries such as Bolivia (1987), Jamaica (2004), Belize (2021), Ecuador (2022) and, most recently, Gabon (2023)²⁵ (Walsh 1987; Inter-American Development Bank (IDB) 2023; Pilling

²² Stipulations outlined within the bond's agreement.

²³ Although proposals such as sea level rise bonds that would provide payouts based on exceeding a certain sea level threshold have been made but remain at a conceptual stage.

²⁴ Cat bonds have previously largely been issued by insurance firms, however, there have been recent examples of MDBs such as The World Bank in Jamaica and sub-national governments such as California using cat bonds against tropical cyclones and wildfire losses respectively (Willems 2023).

et al. 2023). Most of these debt swaps have involved bilateral public debt, but they can also be conducted with multilateral public or external commercial debt (Novikova et al. 2021).

Several challenges can be identified that complicate the implementation of DFC swaps. They can lead to perverse incentives if not carefully managed. For instance, in countries with poor governance, public finance made available through DFC swaps may not be used to finance L&D and rather used to benefit corrupt entities and individuals (Woolfenden and Sharma Kushal 2022; Warland and Michaelowa 2015). DFC swaps can also be complex to design and contain risks including sometimes lengthy or expensive negotiation periods with the involvement of multiple stakeholders. For instance, the DFC in Seychelles took four years to finalise (*ibid.*). Consequently, DFC swaps may not be suitable for countries in the aftermath of climate related disasters to address immediate needs.

In terms of funds that can be mobilised for L&D, until 2022 only three of over 140 swaps struck over the past 35 years had a value of more than USD 250 million, and an average size of USD 26.6 million (African Development Bank (AfDB) 2022). DFC swaps could provide predictability since these agreements often span throughout several years (Warland and Michaelowa 2015). However, there is limited evidence that debt swaps (in general) have delivered adequately at both alleviating debt levels and freeing up resources for climate finance, especially for countries experiencing unsustainable debt levels (Woolfenden and Sharma; Caliri 2020). Moreover, debt swaps should be a measure to supplement official development assistance (ODA) and climate finance, not a substitute for other channels that could provide new aid, but many creditor countries have already used this instrument to boost their ODA numbers (Novikova et al. 2021).

DFC swaps are partially fair, in that a majority of creditors demonstrate higher GHG intensity (currently and historically) than borrowers. To address equity concerns, proposals have been made to include a substantial element of unconditional debt cancellation and that all the risks of a swap are carefully assessed and mitigated so they do not cause harm (e.g., Hirsch 2021).

3.4. Direct resource allocation

3.4.1. Special Drawing Rights

Special Drawing Rights (SDRs) are the international reserve assets, created by the IMF in 1969, against which its member countries can draw liquidity in times of need. Technically speaking, SDRs are neither grants nor loans, but only transfers of hard currency reserves from contributing countries to receiving countries. Consequently, they neither create debt in the recipient country nor come with any conditionality. Further, SDRs would allow a country to make one-time expenditures in universally accepted currencies,²⁶ but cannot be used for recurring expenses (IMF n.d.). As of 2023, the global pool of SDRs is worth almost USD 1 trillion (IMF n.d.). The most recent general allocation of SDRs in 2021 – in response to the global COVID-19 pandemic – alone was worth USD 650 billion, making it the largest-ever single allocation (*ibid.*). Of this amount, however, only USD 275 billion went to emerging markets and just USD 21 billion was received by low-income countries, in proportion to members' quota shares at the IMF (IMF n.d.).

Shortly after, at COP 26, Barbados' Prime Minister Mia Mottley called for an additional USD 500 billion worth of SDRs to be issued every year for 20 years to unlock the investments needed to limit global heating to 1.5°C (Farand 2021). As an outcome of President Macron's Global Finance Summit in June 2023, a special allocation of SDRs worth USD 100 billion was promised. They, however, are only re-allocated, (so far) unused SDRs from the last general allocation (Élysée 2023), making them non-additional and thus not in line with the demands of the Bridgetown 2.0 initiative (Barbados Government Information Service 2023).²⁷ This illustrates that the consistency of L&D finance from SDRs with equity concerns and the polluter pays principle depends on the allocation of the SDR.

²⁵ At the time of writing, it has not been clear how the coup d'état in Gabon in August 2023 (e.g., Beaumont 2023) would impact the debt swap agreed on only a few weeks before.

²⁶ The US dollar, the euro, the Chinese renminbi, the Japanese yen, and the British pound sterling (IMF n.d.).

²⁷ Since COP 26, under the leadership of Barbados, several reform proposals were put forward by climate-vulnerable countries under the '2022 Bridgetown Agenda for the Reform of the Global Financial Architecture'. Bridgetown 2.0' highlights six key areas (Barbados Government Information Service 2023). Among others, they include restructuring debt with long-term low interest rates, an SDG stimulus of USD 500 billion, and the creation of a truly sustainable international trade system.

More precisely, as the current system allocates SDRs based on IMF member's quotas, it depends on countries' voluntary pledge(s) of proportions of their SDRs to other countries and selected entities. As of the time of writing, it is still unclear if the L&D fund agreed on at COP 27 could be equipped with SDRs itself or not. In any case, it would be on the IMF members to add the L&D fund to the list of non-state entities of (so far) mostly MDBs (IMF n.d.). Another difficulty for SDRs to immediately raise L&D finance as well as its predictability is that if they were to be channelled through the IMF's newly set up Resilience and Sustainability Trust (RST) – endowed with USD 41.5 billion for the next decade – the RST would first have to be reformed to channel SDR's for L&D purposes (IMF 2023).²⁸ While SDRs do not pose an immediate financial burden for any IMF member, one cannot create unlimited quantities of them without destroying the fabric of the IMF. Their potential for raising L&D finance may be high as a one-time injection but low in the long term.

3.5. Insurance

3.5.1. Subsidised insurance

Insurance has held a pivotal position within the UNFCCC process from its beginning. It primarily allows the insured entity to transfer the risk of future financial losses to another party, the insurer, in exchange for a premium payment. It serves as a risk management tool for individuals, businesses, governments, and regions to recover financially from unexpected occurrences and damages caused by extreme events. Moreover, insurance can also encourage proactive measures to prevent damages and potential losses. In the L&D context, simply put, insurance can play a role in reducing the financial 'protection gap' (McQuistan et al. 2022).

However, insurance has clear limitations that has led to mixed views on its role in addressing L&D. It can only cover events that are sufficiently random and infrequent in their occurrence and are therefore difficult to apply to slow onset processes and, increasingly, the extreme events caused by climate change (Linnerooth-Bayer et al. 2019).²⁹ Moreover, it is not suitable to address NELD, for which suitable responses do not necessarily equate to monetising and insuring them (Richards and Schalatek 2018).

According to the OECD (2021), in developed countries over half of economic L&D occurrences were insured, compared to only a tenth of the events insured in developing countries. For vulnerable communities, paying insurance premiums is often unaffordable. Within the climate negotiations, insurance as an L&D solution has been proposed by the Global North, while the Global South has consistently pushed for the L&D Fund (agreed at COP 27) as a response mechanism.

The focus on insurance by developed countries has been criticised as being humanitarian or development finance,³⁰ applied as a diversion tactic by developed countries from meeting their obligation to provide adequate and predictable public climate finance while also outsourcing solutions to public issues to the private sector (Linnerooth-Bayer et al. 2019; Richards and Schalatek 2018). This is given the low evidence of climate insurance as an appropriate or sustainable risk management tool for developing countries, compared to other micro-scale financial and social protection measures e.g., social safety nets, or cash transfer programmes (*ibid*; Munich RE n.d.). Hence, insurance should not be implemented as a standalone solution but rather integrated into a comprehensive approach to climate risk management to effectively reduce L&D (United Nations University 2017). Nevertheless, if insurance is well-designed and subsidised for the most vulnerable communities, and potentially if developed countries paid the premium, it could be a solution for a part of L&D.³¹

At COP 27, considerable financial commitments were made in this direction with the 'Global Shield Against Climate Risks' – a predominantly insurance-based initiative announced by the Group of Seven (G7) countries and the

²⁸ For reform options including L&D finance and climate finance generally, see for example Plant (2023) and Mariotti (2022).

²⁹ See Schäfer et al. (2021) for an overview of proposed innovative insurance solutions to address some slow-onset processes.

³⁰ Or as Linnerooth-Bayer et al. (2019, p.506) state: "The focus lies on the potential of insurance to aid poverty reduction amidst climate and disaster risks."

³¹ As Richards and Schalatek (2018) demonstrate with Hurricane Harvey in Texas that occurred in 2017, even in developed countries such as the US, it is largely the public sector that is providing financial support to address L&D from extreme climate change events.

Vulnerable Twenty (V20) Group (InsuResilience Global Partnership n.d.). As of June 2023, USD 294 million had been mobilised, with calls for additional partners to join the initiative (Élysée 2023). To sufficiently be considered as closing the L&D finance gap, contributions to the ‘Global Shield’ would have to be new and additional, and not part of current ODA targets. Furthermore, the predictability of such funds would largely depend on the willingness of governments and other institutions to subsidise premiums.

Insurance raises questions around fairness and the causal link between historical GHG emissions and L&D. By design, subsidised insurance reduces the premiums for developing countries and the most vulnerable communities. However, they are still required to pay for insurance premiums which is contrary to the polluter pays principle and partly shifts the financial burden of L&D away from those who caused the problem. Previous experiences have shown this does not necessarily guarantee that the recipients of subsidised insurance are those most vulnerable to climate change (e.g., Ben-Shahar and Logue 2015).

3.6. Summary of Loss and Damage finance instruments

Table 4: Summary of desk research on promising instruments to raise L&D finance.

Table 4 provides a brief overview of the instruments discussed above.

Instrument to raise L&D finance/Criteria	Adequate?	Predictable?	Feasible?	Fair?
Carbon pricing	Yes (revenue in 2022 USD 95 billion)	Yes (annual finance flows more or less stable)	Yes (already more than 70 different instruments implemented globally)	Yes (revenues are raised from entities who are currently contributing to climate change)
Catastrophe bonds	Yes (outstanding USD 40 billion, and USD 10 billion in annual issuance)	Yes (paid out in the case that pre-defined events occur)	Yes (already used by risk pooling facilities, e.g., CCRIF and ARC)	No (if countries do not suffer L&D during the duration of the bond, they must pay the interest and are worse off than they would be without having issued such a bond)
Debt-for-climate swaps	No (average value of debt swaps USD 26.6 million, but hardly ever above USD 250 million)	Partially (negotiated country-by-country, annual savings)	Yes (more than 140 debt swaps already)	Partially (conditional debt relief, but only in a few cases leading to significant debt reduction)
Financial transaction tax	Yes (could raise between USD 170 and 436 billion annually in the G20 alone, depending on the nominal rate)	Yes (annual finance flows more or less stable)	Yes (implemented in more than 30, mostly developed countries, and could be implemented any financial year)	Partially (proportional to the ability to pay reflected in more frequent financial transactions, but not directly linked to GHG emissions)
Fossil fuel extraction levy	Yes (from a bottom of USD 70 immediately to USD 300 billion by 2050)	Yes (fossil fuel production unlikely to drop significantly from one year to another)	Partially (not yet implemented in any legislation)	Yes (those who produce pollution bear the costs)
(Global) Wealth tax	Yes (a tax of only 5% on the world's multimillionaires and billionaires could raise USD 1.7 trillion a year)	Partially (a variety of forms possible, annual tax more predictable than one-offs)	Partially (never implemented at the global or OECD level, but frequently at national level)	Partially (the richest typically have over-proportionally high carbon footprint)

Instrument to raise L&D finance/Criteria	Adequate?	Predictable?	Feasible?	Fair?
International (solidarity) aviation levies	Partially (UNITAID as reference at least USD 200 million per year, in the EU alone USD 6 billion per year possible with a USD 10 levy per ticket)	Yes (annual flight numbers unlikely to drop significantly from one year to another, except in case of a major crisis)	Yes (could be implemented in any national legislation or group of countries, and already used for UNITAID)	Partially (considering the tourism-dependence of some SIDS and LDCs, but impact dependent on the amount of the levy)
International (solidarity) shipping levy	Yes (USD 75 billion by 2030, USD 150 billion by 2040 have been repeatedly calculated)	Yes (annual shipping numbers unlikely to drop significantly from one year to another, except in case of a major crisis)	Partially (vast resistance at the last meeting of the body who could implement it, the International Maritime Organisation)	Partially (financial burden would fall disproportionately on countries exporting the most goods by ship and most dependent on sea transport, including developing countries)
Special Drawing Rights (SDRs)	Yes (in 2023 the global pool is worth almost USD 1 trillion)	No (so far, 'donating' SDR certificates depends on the goodwill of individual countries and cannot be done in a regular fashion)	Partially (allow only for one-time expenditures in universally accepted currencies, but cannot be used for recurring expenses)	Partially (as a reserve asset no financial burden for any IMF member, but also non-additional)
Subsidised insurance	No (for example the 'Global Shield' initiative has mobilised less than USD 300 million by mid-2023)	Partially (the total amount of subsidised insurance is still too small to be significant and predictable)	Partially (difficult to apply to slow onset processes and increasingly common extreme weather events caused or exacerbated by climate change)	Partially (people and communities are still required to pay for insurance premiums, thus not guaranteeing that the recipients are the most vulnerable to climate change)

Source: Authors' elaboration.

3.7. Overview of challenges related to the Loss and Damage finance instruments

Chapter 3, up to now, discussed challenges faced by individual instruments to raise L&D finance. As has been noted earlier, these instruments have been on the table for a while, including multilateral top-down financial instruments such as global taxes or levies. However, they could fundamentally be considered as ‘political non-starters’, considering that they are yet to be implemented despite their high revenue potential, which further undermines their predictability. This could partly be explained by countries viewing such instruments as a threat to their sovereignty. Tax collection for instance, has historically been a mandate of national governments, hence international taxes are unattractive given governments cannot directly control how money collected is spent. Moreover, in an increasingly challenging political and economic landscape, governments may be unwilling to compromise their political support base by increasing taxes for citizens, who in the case of L&D would not be direct beneficiaries of the tax revenues. Simply put, it may not be easy to justify a tax increase in country ‘X’ to pay for L&D-related activities in country ‘Y’, especially given that unlike mitigation – which relates to a global public good – L&D activities are contextual and localised.

Another jurisdictional challenge in the international climate regime is the lack of consensus on whether the UNFCCC has the authority to introduce such financial instruments. Even so, the solutions to these issues may lie in the precedent set in the UNFCCC itself. In the context of the Kyoto Protocol (and now in Article 6 of the Paris Agreement), countries have agreed on a Share of Proceeds for Adaptation (SOPA) as a source of income for the Adaptation Fund collected from the Clean Development Mechanism (CDM) and through the Article 6.4 Mechanism that seemingly overcame these challenges (Müller et al. 2016). However, given the relatively small amount of Article 6 transactions at the moment, this instrument was not considered further in this research report.

Some of the instruments are also structurally unsuited for addressing all aspects of L&D. For example, cat bonds and subsidised insurance can only cover climatic events that are sufficiently random and infrequent in their occurrence, effectively excluding slow onset events as well as increasingly frequent extreme events and are not designed to cover NELDs (Linnerooth-Bayer et al. 2019; OECD 2021). Similarly, instruments that entail one-off payments such as SDRs and some types of (global) wealth taxation would not be suited to slow onset events. This is not to say that they should be pre-emptively excluded from L&D finance discussions. Instead, their shortfalls could be – to some extent – compensated for if they were part of a concerted effort to ambitiously raise L&D finance in a fair, predictable, adequate and feasible way. Even then, some instruments would still have to be re-calibrated to become aligned with the four principles in their own right, such as fairness (e.g., subsidised insurance, cat bonds) or predictability (e.g., SDRs).

4. Expert survey on L&D finance instruments

4.1. Expert survey description

Overall, 31 experts on L&D finance filled out the survey, from all six world regions, more than half (19) from Europe (11) and Africa (8) alone, four from Asia, three from Latin America and the Caribbean and North America each, and two from Oceania. This equals a response rate of slightly above 10%, as the authors sent the survey to more than 280 people, which is not uncommon in such research surveys. Most experts are affiliated with academia/research organisations/think tanks (16), NGOs (9), and the public sector (10); one participant works for a consultancy, and one works in the financial sector.

To differentiate experts from non-experts, a self-assessment question was included.³² Of the 31 participants, 22 expressed to have a solid and up-to-date understanding of the current discussions on L&D finance (score 4-5), five stated that they have moderate understanding (score 3), while four stated that they only have a limited understanding. The latter were therefore excluded from the analysis. The L&D experts were asked to score from 1 to 5 each of the ten instruments across seven criteria (one for adequacy, two each for predictability, feasibility, and fairness). Thus, overall, instruments could receive a maximum average score of 35 points across the seven indicators.

³² Please rate: I have a solid and up-to-date understanding of the current discussions on L&D finance.

4.2. Results of the expert survey

Table 5 provides an overview of the results of the survey for each financial instrument against the identified criteria from the highest to lowest total score (in Annex E, all results are shown for every question, see Figure 3 to Figure 9). Highlighted in green are averages of 4.00 or higher, in yellow of 3.50–3.99, and in red 3.49 or lower.

Overall, the L&D finance experts who participated in the survey considered carbon pricing as the most promising instrument (score of 28.7/35), while a (global) wealth tax was considered the least promising (24.1/35). In fact, carbon pricing was scored the highest across five of the seven indicators (except for the two indicators on fairness). This is in line with the authors' desk research-based assessment where carbon pricing was identified as one of only two instruments without significant downsides. The least promising financial instrument, a (global) wealth tax, was ranked the lowest regarding the second indicator on fairness,³³ contradicting the findings of the desk research.

For two indicators – timeframe and implementation – no instrument has an average score of 4.00 or above. This is roughly in line with the author's finding of six instruments whose revenues should be considered very predictable³⁴ and five whose implementation should be considered very feasible.³⁵ Most experts rated that the funding would come from entities or individuals with above-average resources across all the instruments (score of at least 3.5 or higher). This contradicts the authors' desk research only with regard to cat bonds. As they are currently designed, they should not be understood to be 'fair' for the most climate-vulnerable countries and communities. Indeed, if countries do not suffer L&D during the duration of the bond, their governments must pay the interest and thus are worse off than they would be without having issued such bond (White et al. 2022). Besides, cat bonds might potentially become unaffordable or unavailable with accelerating climate change (Thomas et al. 2018). Finally, they only have limited and specific triggers that may not cover slow onset impacts such as sea level rise or biodiversity loss.

Further, to what extent the assessed instruments should be called 'promising' also depends on the weight given to relevant indicators. Our assessment gave equal weight to all seven indicators, but this led to the interesting result whereby the second-highest scoring instrument – DFC swaps – ranks the lowest across three indicators related to three different criteria, aligned with the author's desk research-based assessment. This illustrates the difficulty of this type of analysis: Instruments such as DFC swaps or a fossil fuel extraction levy may score high and low on different indicators at the same time, leaving only carbon pricing to be scored consistently across the seven indicators. If feasibility would be considered the most important single criteria, a fossil fuel extraction levy (2.57/5.00), SDRs (2.97/5.00) and shipping levy (3.30/5.00) would be the least likely instruments to 'fly'. This is roughly in line with the desk research for which subsidised insurance and a (global) wealth tax were also found to have only limited (partial) feasibility.

As the survey results show, one could further qualify what is 'most promising' depending on the respective context. This is best illustrated with the fossil fuel extraction levy. The participating experts considered the instrument the most 'just' across the two fairness indicators (4.12/5.00; 4.54/5.00), but it is also considered the least likely to get support from both developing and developed countries (2.56/5.00) and is considered the most difficult to implement (2.58/5.00). Thus, rightly, one of the survey participants commented that further research could consider evaluating the financial instruments in terms of their suitability to address L&D related to slow onset events or rapid onset events, economic or non-economic L&D.

³³ Funding would come from entities or individuals with above-average resources and not the most vulnerable people and communities.

³⁴ Carbon pricing, financial transaction tax, fossil fuel extraction levy, cat bonds, international (solidarity) aviation levies and an international (solidarity) shipping levy.

³⁵ Carbon pricing, financial transaction tax, cat bonds, international (solidarity) aviation levies, and DFC swaps.

Table 5: Ranking of instruments to raise L&D finance, ordered by highest total score.

Instrument	Total	Average rating	Adequacy	Predictability		Feasibility		Fairness	
	(max. 35)	(max. 5)	The instrument can raise a significant financial volume.	The timeframe of the revenues (or funds) from the instrument can be specified with a high degree of confidence.	The revenues (or funds) from the instrument will remain constant or increase over time.	The instrument can be easily introduced and implemented.	The instrument is likely to generate support from both developed and developing countries.	The funding generated by the instrument would come from the (current and historic) largest greenhouse gas emitters (both countries and companies).	Funding would come from entities or individuals with above-average resources and not the most vulnerable people and communities.
Carbon pricing	28.70	4.10	4.42	3.77	4.23	3.96	4.04	4.08	4.20
Debt-for-climate swaps	26.06	3.72	3.24	3.12	3.74	3.75	3.63	3.17	3.79
International (solidarity) aviation levies	25.70	3.67	3.69	3.77	3.68	3.80	3.42	3.69	4.00
International (solidarity) shipping levy	25.40	3.63	3.84	3.48	3.63	2.92	2.68	3.65	4.12
Special Drawing Rights (SDRs)	25.37	3.62	4.08	3.59	2.96	3.23	2.70	4.12	4.15
Fossil fuel extraction levy	24.84	3.55	3.73	3.22	3.27	2.58	2.56	4.12	4.54

Instrument	Total	Average rating	Adequacy	Predictability		Feasibility		Fairness	
	(max. 35)	(max. 5)	The instrument can raise a significant financial volume.	The timeframe of the revenues (or funds) from the instrument can be specified with a high degree of confidence.	The revenues (or funds) from the instrument will remain constant or increase over time.	The instrument can be easily introduced and implemented.	The instrument is likely to generate support from both developed and developing countries.	The funding generated by the instrument would come from the (current and historic) largest greenhouse gas emitters (both countries and companies).	Funding would come from entities or individuals with above-average resources and not the most vulnerable people and communities.
Catastrophe bonds	24.44	3.49	3.80	3.46	3.37	3.58	3.33	3.96	4.20
Subsidised catastrophe insurance	24.37	3.48	3.76	3.62	3.35	3.32	3.31	3.84	4.21
Financial transaction tax	24.32	3.47	3.92	3.50	3.30	3.25	3.40	3.86	4.14
(Global) Wealth tax	24.01	3.43	3.50	3.33	3.23	3.70	3.48	3.52	3.61

5. Key findings and recommendations

The L&D agenda is currently at a critical juncture. Within the deliberations of the Transitional Committee, developing countries are advocating for a USD 100 billion a year by 2030 as a baseline target for L&D finance (Lo 2023b). This stands against the USD 400 billion a year floor discussed in the context of this research report, which is four times the current total international climate finance target and thus would require innovative sources of funding. At the same time, given the ‘polycrisis’, the world is currently facing, there is a huge uncertainty on how to ensure that finance to respond to L&D is adequate, predictable, and additional. The challenge remains to determine the most appropriate instrument or combination of instruments for the provision of this finance, who will provide it, and where it will be used.

This research report discussed promising instruments to raise finance to address L&D from climate change, in the context of increasing debt burdens particularly for developing countries. Given the urgent need to ramp up L&D finance, it is important to understand the advantages and limitations of various instruments proposed. We therefore aimed at contributing to this knowledge by analysing the advantages and limitations of these instruments to help identify the most promising ones.

First, we assessed ten L&D finance instruments based on extensive desk research and four widely agreed on criteria: adequacy, predictability, feasibility, and fairness. Secondly, we asked L&D finance experts from both Global North and South to score these ten instruments across the four criteria, which had been translated into seven indicators. Across three of the four criteria, carbon pricing was rated the most promising instrument, except for fairness. Special Drawing Rights (SDRs) and Fossil fuel extraction levy came close second and third although they scored low on some of the assessment indicators. A (global) wealth tax, on the other hand, scored the lowest overall., which is a surprising outcome probably explained by assumptions about the political economy of getting such an instrument introduced. The assessment presented in this research report reiterates that some operationally feasible potential sources of finance exist, but all face a varying degree of political uncertainty.

At the Transitional Committee meetings and workshops held in the course of 2023, some countries have expressed concerns over proposals of sources of funding for the L&D fund from taxes and levies that are yet to receive international agreement (UNFCCC 2023 e). As demonstrated in Chapter 3, other countries are cautious about instruments that could shift tax burdens to developing countries or hinder economic development. Other fundamental challenges have also been discussed, including jurisdictional issues on which multilateral entity would have the control of these instruments and how to gain political acceptance on using domestic revenues internationally. While valid, they should not obscure the intended goals of the discussions.

We would like to stress, that **complexity should not be assumed solely because an instrument could theoretically be complex**. The Transitional Committee can use its mandate to make recommendations for consideration and adoption by COP 28 and CMA 5 to raise awareness and promote understanding among countries and stakeholders on the proposed instruments. A well-informed international community can help drive the successful adoption and implementation of the financial instruments and raise finance for L&D.

A necessary condition for achieving L&D finance in the order of magnitude required to address L&D properly is **mustering of massive political will**. This will be a task of an entire generation and requires patience as well as boldness and creativity.

Considering there is ‘no-one-size-fits-all’ instrument and given their different structural designs, **a combination of financial instruments will likely be required to effectively address the four criteria** discussed in the scope of this research report. Moreover, this would ensure the finances raised from these instruments can **respond to the wide range of actions that encompass addressing L&D** including, the immediate and long-term needs related to economic L&D, NELDs, sudden and slow onset climatic events. This needs to build on financial system reform, e.g.,

as proposed by the Bridgetown Initiative and contingent on willingness to **cooperate by different players in the international financial architecture** including the G20 and institutions like the IMF, the World Bank, the OECD and private creditors. This is crucial to develop common frameworks for instruments such as DFC swaps that restructure debt.

It is recommended that **countries pursue immediately realisable options** which can ensure that urgent L&D finance needs of the most climate vulnerable are met. Instruments such as a levy on aviation have been tried and tested and can be expanded in the context of L&D. Additionally, countries may consider the **use of pilots to further inform the international community of what workable solutions of the proposed instruments could look like**, identify practical questions, and speed up implementation ahead of a multilateral agreement under the PA.

The threat of a sovereign debt crisis has been exacerbated by economic shocks from the COVID-19 pandemic and Russia's invasion in Ukraine. While there is recognition on the urgency of the debt crisis, we recommend that the discussions leading up to and at COP 28/CMA 5 on how to operationalise new funding arrangements for L&D ensure climate vulnerable developing countries **are not trapped in unsustainable debt**.

The deliberations of the Transitional Committee also demonstrate the decades-long disagreements over who should take responsibility for the adverse impacts of climate change. Continuous emphasis should be made to **embed the sources of L&D finance in equity, the polluter pays principle and the UNFCCC principle of 'Common but Differentiated Responsibilities and Respective Capabilities'**.

The instruments presented in this research report have been discussed alongside their potential and pitfalls including their inefficiencies or potential for misuse, e.g., in the case of DFC swaps if not well designed. As such, it will be necessary for **guardrails to be implemented including the development of systematic monitoring and accountability measures** to ensure funds raised from these instruments are used effectively for L&D. Such measures can also work towards increasing the confidence on the instruments to raise L&D finance. Moreover, as the landscape of climate change and its impacts is continuously evolving, **regular assessments of the financial instruments' effectiveness will further ensure they remain relevant and impactful**.

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Annex A: List of fundable actions to address L&D

	Sudden onset events	Slow onset events
Preparation and planning		
	Risk assessment and planning tools such as risk profiling and modelling, identifying risk to physical and livelihood assets, people and nature. Forecasting and early warning systems allowing planning for pre and post event actions. Contingency planning. Community-based activities to create scenarios and options to be made use of during and after climate impacts.	Risk assessment and planning tools such as risk profiling and modelling, identifying risk to physical and livelihood assets, people and nature. Forecasting systems and development of scenarios. Long-term institutional strengthening and planning processes. Education and awareness programmes. Community-based activities to create scenarios and options to be made use of during and after climate impacts.
Economic loss and damage		
Ahead of impact of climate change event	Financial protection – social protection and other safety nets to help manage the risks of extreme weather events. Insurance to provide compensation. Support for alternative livelihoods – to build new skills, opportunities and resources to establish alternative livelihoods.	Livelihood diversification with reskilling and support for alternative livelihoods. Planned relocation/migration. Physical infrastructure adjustments.
During/following climate change event or impact	Emergency response – humanitarian and other relief immediately following an emergency to provide temporary and transitional assistance. Recovery and rehabilitation – rebuilding economic, physical, social, cultural and environmental assets, systems and activities, aligning with the principles of sustainable development and 'build back better' to avoid or reduce future climate risk. Support for alternative livelihoods – to build new skills, opportunities and resources to establish alternative livelihoods.	Livelihood diversification with reskilling and support for alternative livelihoods. Social protection measures such as compensation.

Non-economic loss and damage		
Ahead of climate change event impact	Forecasts and weather information services in disaster prone areas to allow people to evacuate. Development of facilities to reduce future disaster risk, e.g., high points and refuges in coastal areas or areas prone to flooding, rescue services.	Investment to safeguard cultural heritage (e.g., restoring or rehousing artefacts); support for intangible cultural heritage e.g., documentation.
During/following climate change event or impact	Measures to address migration – finance to support safe and dignified movement of people forced to move due to climate change, including both planned relocation and displacement. Reparations to help ensure future wellbeing following loss. Recognition and repair of loss (whether or not accompanied by financial payments). Active remembrance (e.g., through museum exhibitions, school curricula). Counselling. Official apologies. Conservation and restoration of ecosystems and biodiversity.	Measures to address migration – finance to support safe and dignified movement of people forced to move due to climate change, including both planned relocation and displacement. Recognition and repair of loss (whether or not accompanied by financial payments). Active remembrance (e.g., through memorial sites, monuments and museum exhibitions, ongoing awareness and education programmes school curricula). Counselling. Official apologies. Conservation and restoration of ecosystems and biodiversity.

Source: adapted from Richards et al. (2023, p.32), Shawoo et al. (2021).

Annex B: Full list of instruments considered to raise L&D finance

As mentioned above, the full list of instruments initially considered by us to raise L&D finance goes beyond the ten assessed instruments. These ten³⁶ have been selected by us based on our expert judgment, building on the seven alternative sources of finance assessed in detail by Richards et al. (2023). One factor for exclusion of instruments was that domestically raised revenues overwhelmingly tend to be used domestically. For example, for **(global) fossil fuel subsidy reform**, which has been included by Richards et al. (2023), as of now there is no evidence where the savings were used to finance climate-related measures (incl. L&D) outside the domestic borders. Financial volume and (un)predictability were two other factors based on which we excluded instruments. Consequently, **crowdfunding**, the **share of proceeds** on transactions of the Voluntary Carbon Market and Article 6.2 of the Paris Agreement,³⁷ and a **windfall tax on fossil fuel profits** were excluded. **Legal instruments** could not be included, e.g., **climate-resilient debt clauses** in sovereign loan agreements (incl. commercial debt) as Barbados has been spearheading them.³⁸ We did not include them solely because they cannot be assessed based on the four criteria stated above.

Beyond the list of instruments discussed by Richards et al. (2023) we include carbon pricing, catastrophe bonds, debt-for-climate swaps, Special Drawing Rights and subsidised catastrophe insurance: All of them have been discussed repeatedly during **meetings and workshops of the Transitional Committee** (most of which the authors attended in-person or online), were referred to in the **Transitional Committee's Synthesis report**³⁹ on L&D funding arrangements and innovative sources or in working papers of the **Transitional Committee's Technical Support Unit**.⁴⁰

³⁶ Climate damages tax, windfall tax on the fossil fuel industry, international shipping levy, aviation frequent flyer levy, global wealth tax, financial transaction tax and redirecting fossil fuel subsidies.

³⁷ The rules for Article 6.4 introduced a 5% transaction fee on traded credits, used to finance the Adaptation Fund under the UNFCCC to help developing countries adapt to climate change. See further <https://unfccc.int/process-and-meetings/the-paris-agreement/article-64-mechanism>

³⁸ The Asian Development Bank, the European Bank for Reconstruction and Development and the European Investment Bank highlighted to be exploring this option as part of their L&D-related work at the Special Meeting on Loss and Damage of the Climate Ambition Summit at the 78th United Nations General Assembly in New York in September 2023. See <https://media.un.org/en/asset/k17/k17kggiyei>

³⁹ See https://unfccc.int/sites/default/files/resource/TC2_SynthesisReport.pdf

⁴⁰ See for example https://unfccc.int/sites/default/files/resource/Final_Draft_5b_TSU.pdf and https://unfccc.int/sites/default/files/resource/Final_Draft_5c_TSU.pdf

Annex C: Current L&D finance pledges, as of August 2023

Regional/National/Sub-national	Quantity	Additionality
Austria	EUR 50 million (from 2023 till 2026)	No
Belgium	EUR 2.5 million	No
Canada	EUR 22.8 million (USD 24 million)**	No
Denmark	EUR 13 million (DKK 100 million)	Yes
European Commission, EU	EUR 60 million (over an unspecified number of years)	No
France	EUR 20 million	No
Germany	EUR 170 million	No
Ireland	EUR 10 million	No
Luxembourg	EUR 10 million (over 5 years)	N/A
New Zealand	EUR 11.4 million (USD 12 million)	No
Scotland^{*40}	EUR 8.2 (GBP 7 million)***	No
Spain	EUR 2 million	N/A
UK	EUR 24.3(GBP 20.7 million)***	N/A
US	EUR 22.8 million (USD 24 million)**	N/A
Wallonia*	EUR 3 million	Yes

Source: Authors' elaboration, based on Richards et al. (2023) and L&D Collaboration (2023).

Notes: *: Non-UNFCCC state level governments; **: Based on the OECD (2023) average exchange rate in 2022. ***: Based on the European Central Bank (2023) exchange rate in 2022.

⁴⁰ Another EUR 28.1 million (GBP 24 million) have been promised specifically for three African countries (Rwanda, Malawi and Zambia) (The Independent 2023), but no further information has been publicly available.

Annex D: Survey on Loss and Damage Finance: What are the most promising instruments?

Introduction

Perspectives Climate Research is currently conducting a **study on the landscape of proposed financial instruments to address loss and damage (L&D)** associated with climate change impacts that can help close the L&D finance gap. In this context, we are conducting a **survey with experts on L&D finance** to gather information on which financial instruments are likely to be the most promising ones based on four broad criteria: adequacy, predictability, feasibility, and fairness. These criteria are based on the principles of the UNFCCC as well as the Paris Agreement and the COP 27 decision text.

We would ask you to provide your expert judgement **by 31 August**. The completion of the survey should not take more than 15-20 minutes of your time. The results of the survey will be anonymized and included in our upcoming report on L&D finance.

<https://forms.microsoft.com/Pages/ResponsePage.aspx?id=-77iz6GpGEK3UlbVWDkEbmVxc0CKx0FKjD4DBqmPHDBUNKJOMII2R0tUTEFBV01XWUHJVk8yQ1EyRS4u>

If you have any questions, please don't hesitate to get back to us at schmidt@perspectives.cc or ombuya@perspectives.cc.

Please forward the link or the email to other experts in your network.

Thank you very much for your collaboration.

Max Schmidt & Sherri Ombuya,

on behalf of Perspectives Climate Research

1. If you want to receive the report once it is published, please enter your email address below.

Regarding your professional background

2. What is your name and institutional affiliation?
3. Please indicate which world region you represent.
4. In what type of organization do you work?
5. Please rate: I have a solid and up-to-date understanding of the current discussions on L&D finance (1 = strongly disagree, 2 = somewhat disagree, 3 = neither agree nor disagree, 4 = somewhat agree, 5 = strongly agree)

Explainer: Overview of the 10 L&D finance instruments to be scored

Carbon pricing: Carbon pricing aims at reducing greenhouse gas (GHG) emissions by assigning a cost to carbon dioxide. It can be implemented through either a carbon tax, where a fixed price per ton of CO₂ is levied, or a cap-and-trade system, where emission permits are traded in a regulated market. In the context of L&D, carbon pricing provides economic incentives for industries to mitigate their emissions and revenues generated can be earmarked for L&D actions.

Catastrophe bonds: Catastrophe bonds are financial instruments used by governments and organizations to transfer the risk of natural disasters, such as hurricanes or earthquakes to investors. If a predefined catastrophic event occurs, the bond's principal may be forgiven, or the issuer may not have to repay the investors. In relation to L&D, catastrophe bonds can be employed to raise funds for post-disaster recovery and support communities affected by extreme weather events.

Debt-for-climate swaps: Debt-for-climate swaps involve converting a portion of a country's debt into investments in climate-beneficial projects. In this mechanism, a creditor nation forgives or restructures a debtor nation's debt in exchange for the debtor nation's commitment to invest in climate actions. Thus, this instrument incentivizes climate action in countries with a high debt burden and could reduce future losses and damages.

Financial transaction tax: A financial transaction tax is a small levy imposed on financial transactions, such as stock trades and currency exchanges. The tax is aimed at curbing speculative trading and generating revenue for public purposes, part of which can be allocated to address L&D.

Fossil Fuel extraction levy: A fossil fuel extraction levy is a fee imposed on companies or countries that extract and produce fossil fuels. The levy aims to internalize the environmental costs associated with fossil fuel extraction and consumption. In the context of L&D, this instrument could contribute to financing initiatives that address the impacts of climate change.

(Global) Wealth tax: A global wealth tax is a proposed levy on the accumulated wealth of the richest individuals worldwide. The tax aims to reduce wealth inequality and generate funds for various public goods, including climate-related projects. In the discussions on L&D finance, a global wealth tax may be considered as a potential source of funding to support vulnerable communities and countries affected by climate change.

International (solidarity) aviation levies: International aviation levies are fees or taxes imposed on international flights or aviation-related activities. They aim to offset aviation's carbon footprint and support climate initiatives. In relation to L&D, these levies could be used to raise L&D funds for vulnerable communities and countries impacted by climate change.

International (solidarity) shipping levy: Similar to aviation levies, an international shipping levy would be imposed on international maritime transport to address its carbon emissions. In relation to L&D, such a levy may help finance measures to address climate-related impacts on vulnerable communities and countries.

Special Drawing Rights (SDRs): SDRs are international reserve assets created by the International Monetary Fund (IMF) to supplement member countries' official reserves. SDR allocations provide additional liquidity to countries during financial crises or emergencies. While SDRs themselves may not directly relate to L&D, the reserve assets could be voluntarily redistributed from high-income IMF members to climate-vulnerable low- and middle-income IMF members.

Subsidized catastrophe insurance: Subsidized catastrophe insurance involves governments or organizations providing financial assistance or reduced premiums for insurance policies covering catastrophic events, such as hurricanes or floods. By subsidizing insurance coverage, this instrument helps vulnerable communities and countries recover from climate-related disasters and can be relevant for L&D finance as a risk management tool.

Proposed financial instruments to address loss and damage

For each of the following 7 statements, please rate each instrument (ordered alphabetically). Please choose the answer that best matches your expert judgement.

1. The instrument can raise a significant **financial volume**. (1 = strongly disagree, 2 = somewhat disagree, 3= neither agree nor disagree, 4 = somewhat agree, 5 = strongly agree, N/A = no scoring due to lack of familiarity with the instrument)
2. The **timeframe** of the revenues (or funds) from the instrument can be specified with a high degree of confidence. (1 = strongly disagree, 2 = somewhat disagree, 3= neither agree nor disagree, 4 = somewhat agree, 5 = strongly agree, N/A = no scoring due to lack of familiarity with the instrument)
3. The revenues (or funds) from the instrument will remain **constant or increase** over time. (1 = strongly disagree, 2 = somewhat disagree, 3= neither agree nor disagree, 4 = somewhat agree, 5 = strongly agree, N/A = no scoring due to lack of familiarity with the instrument)
4. The instrument can be **easily introduced and implemented**. (1 = strongly disagree, 2 = somewhat disagree, 3= neither agree nor disagree, 4 = somewhat agree, 5 = strongly agree, N/A = no scoring due to lack of familiarity with the instrument)
5. The instrument is likely to generate **support from both developed and developing countries**. (1 = strongly disagree, 2 = somewhat disagree, 3= neither agree nor disagree, 4 = somewhat agree, 5 = strongly agree, N/A = no scoring due to lack of familiarity with the instrument)
6. The funding generated by the instrument would come from the (current and historic) **largest greenhouse gas emitters** (both countries and companies). 1 = strongly disagree, 2 = somewhat disagree, 3= neither agree nor disagree, 4 = somewhat agree, 5 = strongly agree, N/A = no scoring due to lack of familiarity with the instrument)
7. Funding would come from entities or individuals with above-average resources and **not the most vulnerable people and communities**. (1 = strongly disagree, 2 = somewhat disagree, 3= neither agree nor disagree, 4 = somewhat agree, 5 = strongly agree, N/A = no scoring due to lack of familiarity with the instrument)
8. If you have any other comments or suggestions, please add them below.

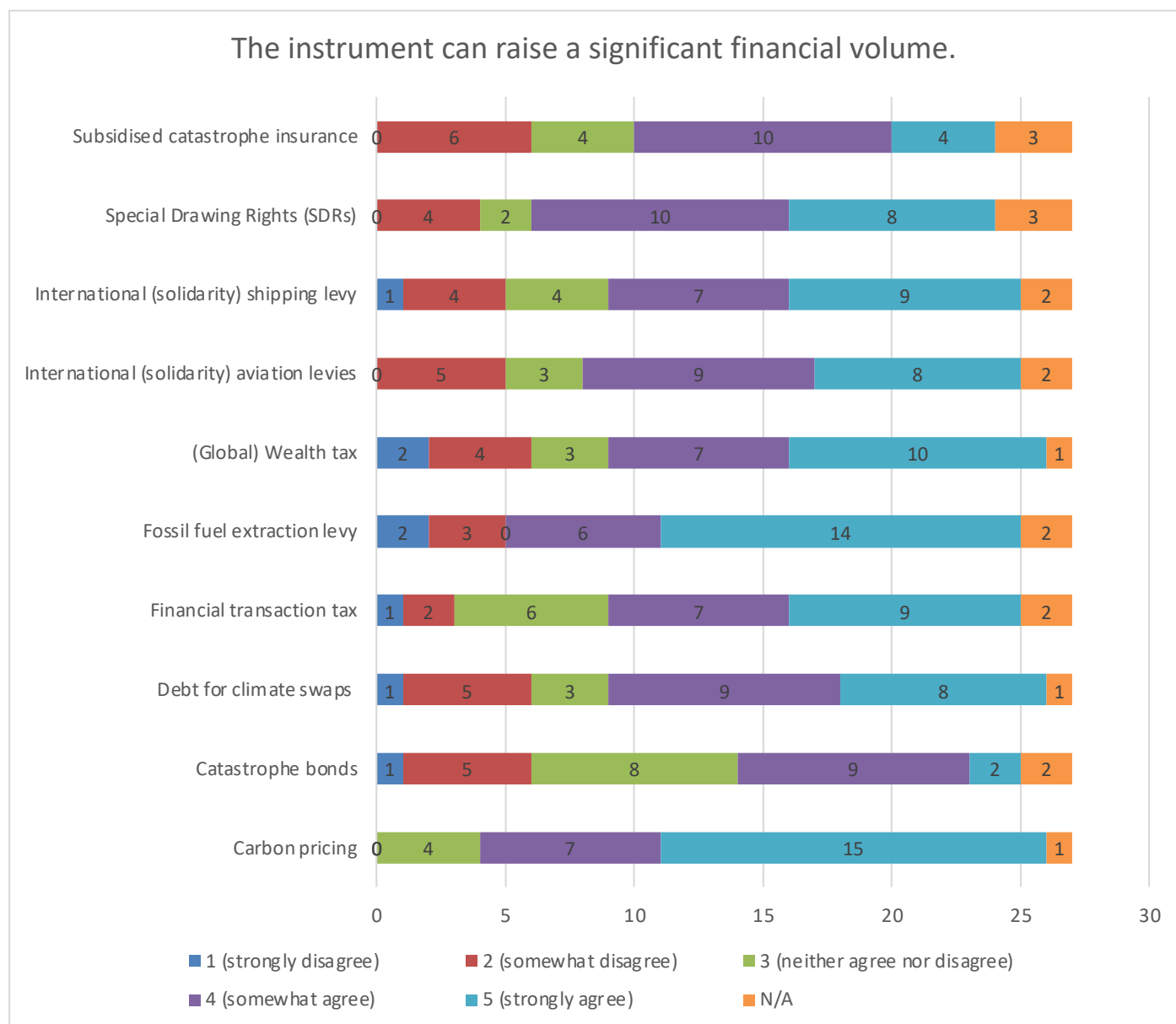
Thank you for taking the survey!

Please feel free to forward the survey link or the email to other experts working on loss and damage.

If you entered your email address above, you will hear back from us shortly.

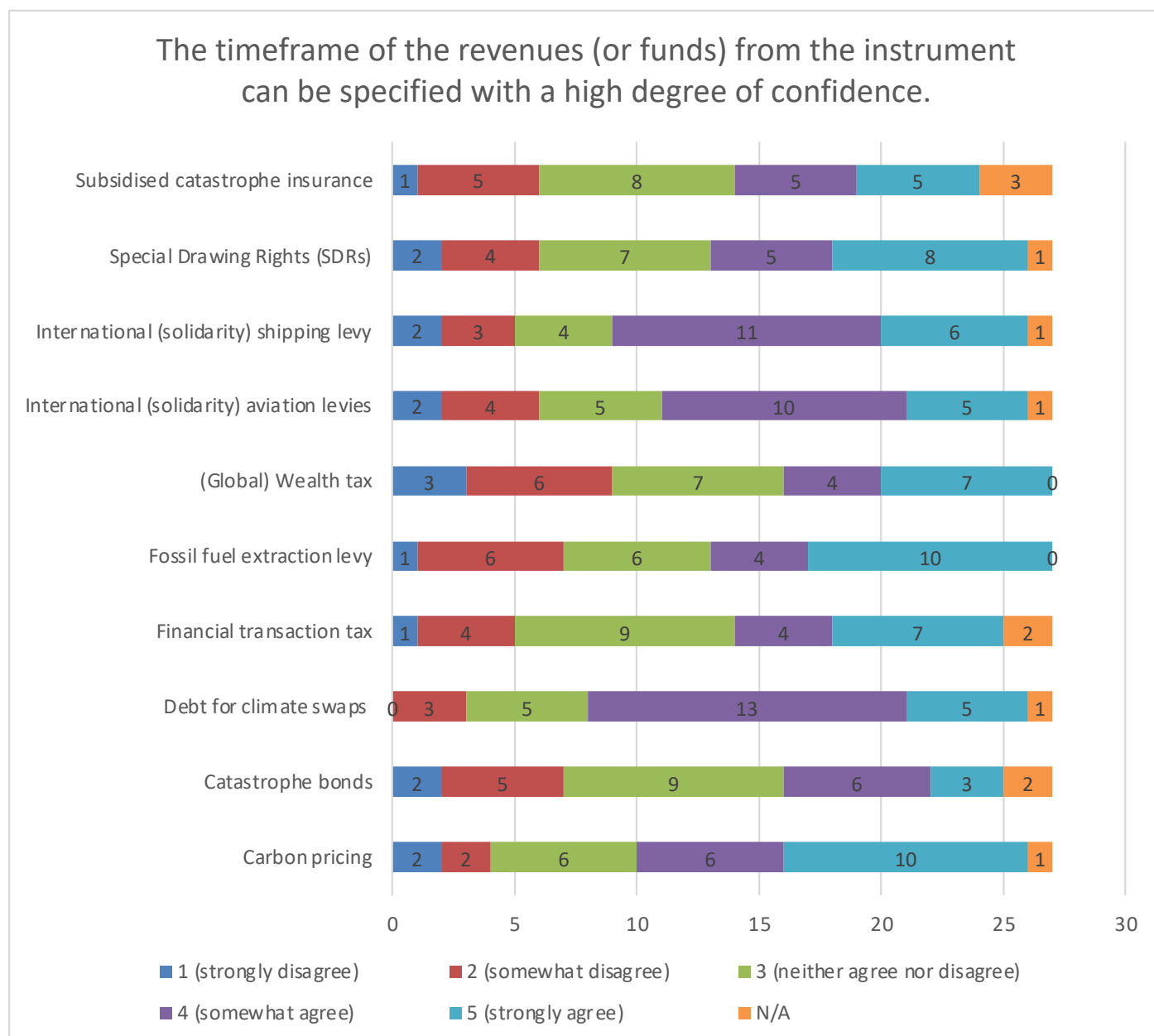
Annex E: Complementary analysis of the expert survey

Figure 3: Survey results – Financial volume.



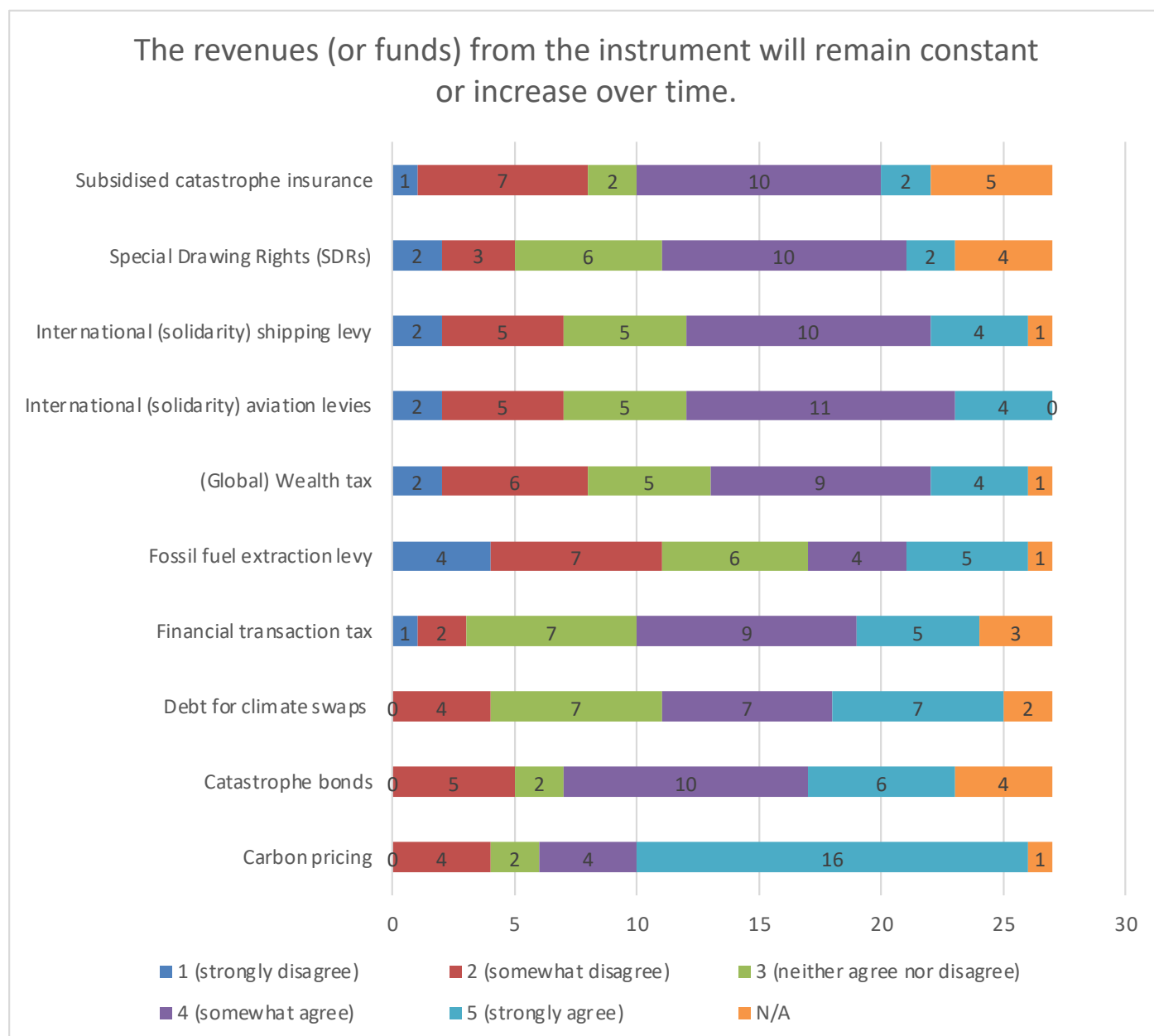
Source: Authors' elaboration.

Figure 4: Survey results – Predictability (1/2).



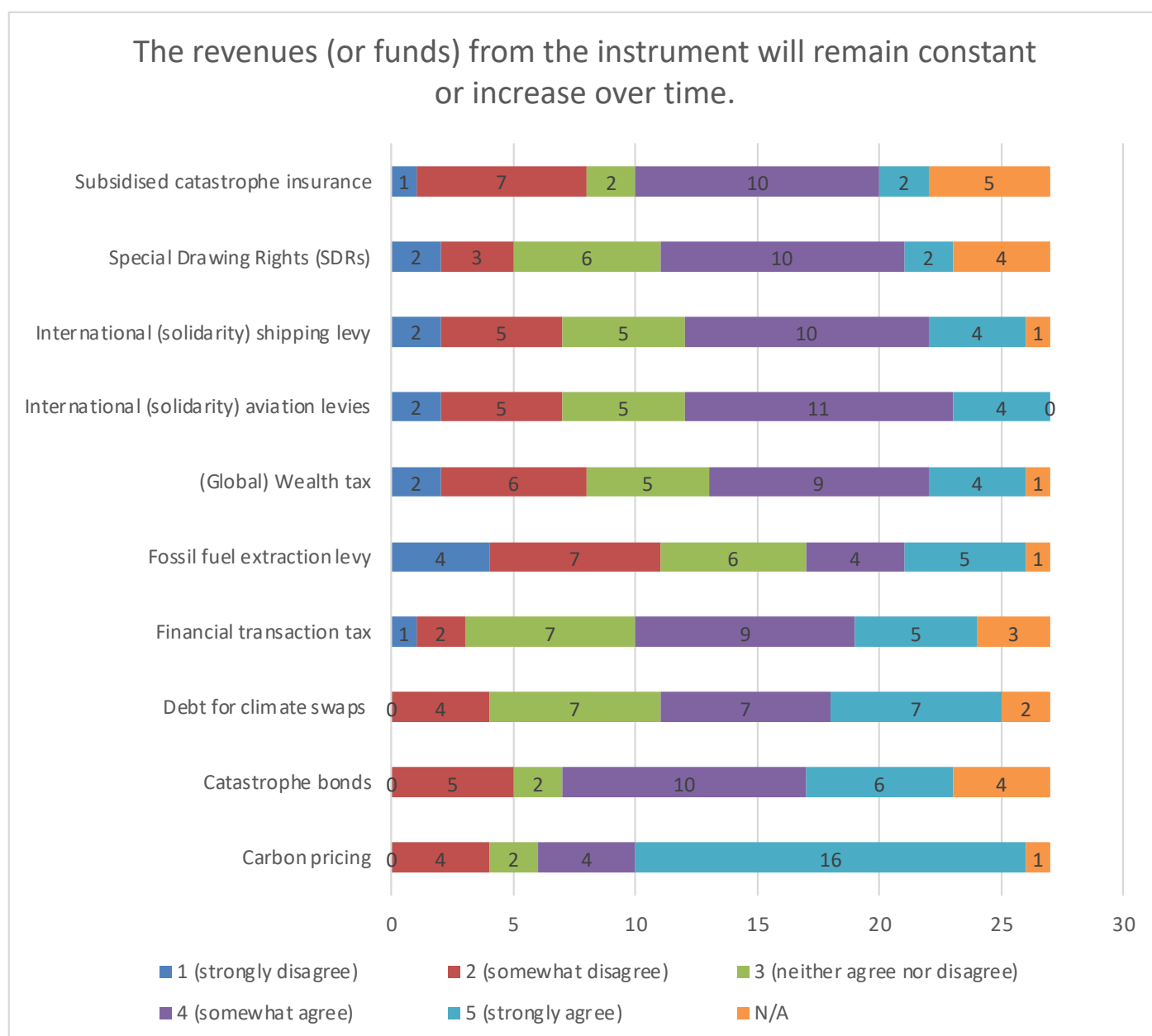
Source: Authors' elaboration.

Figure 5: Survey results – Predictability (2/2).



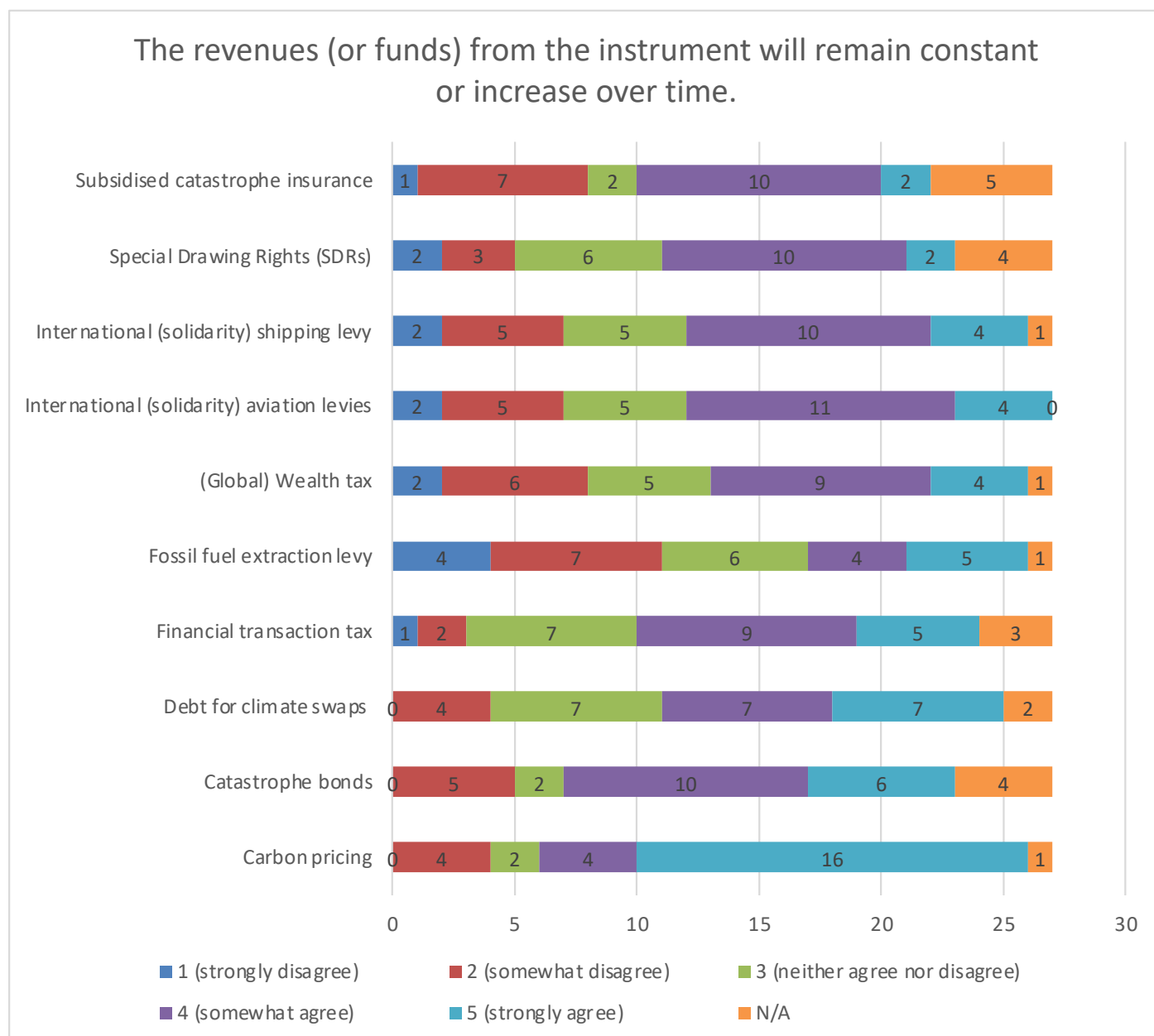
Source: Authors' elaboration.

Figure 6: Survey results – Feasibility (1/2).



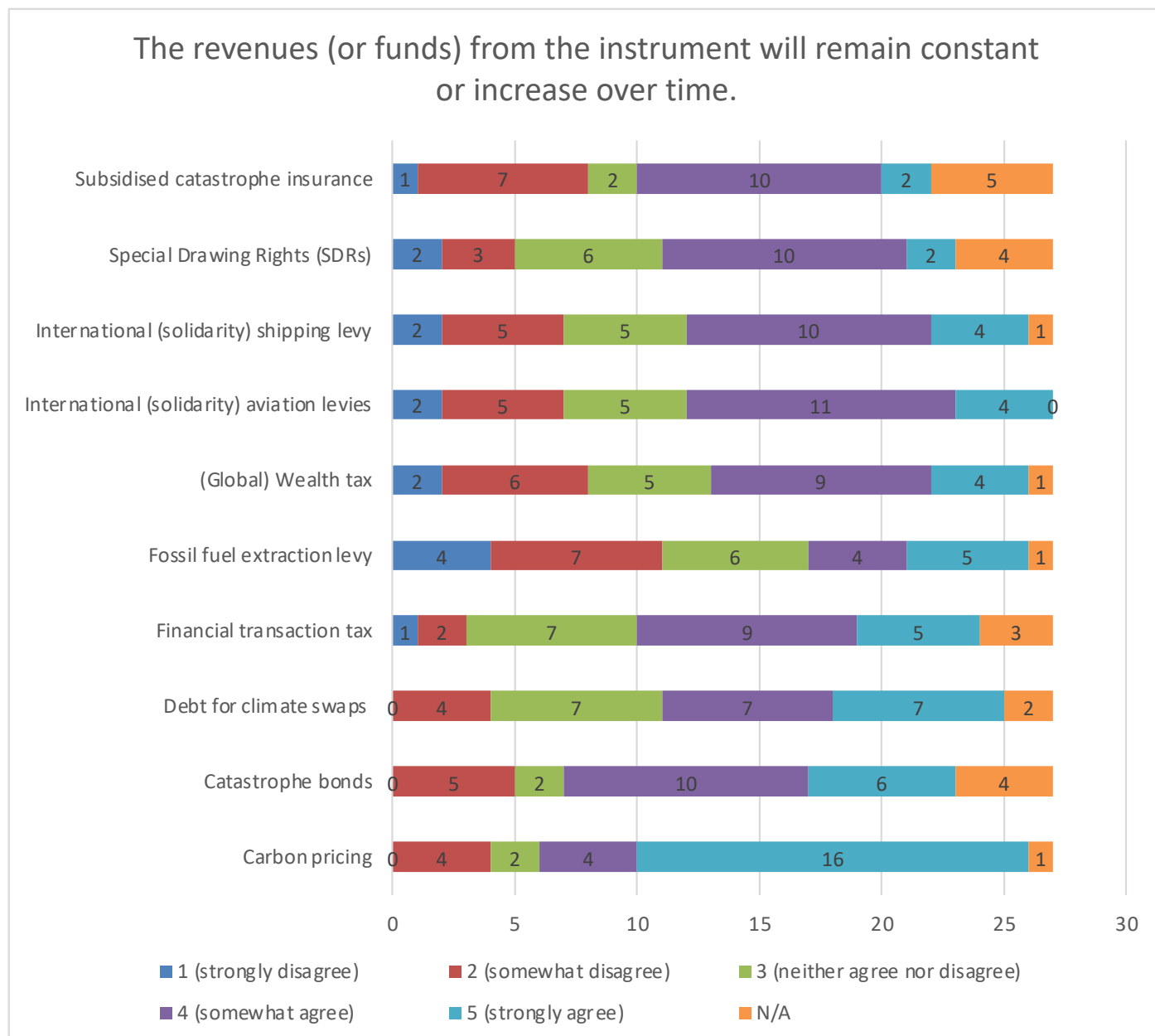
Source: Authors' elaboration.

Figure 7: Survey results – Feasibility (2/2).



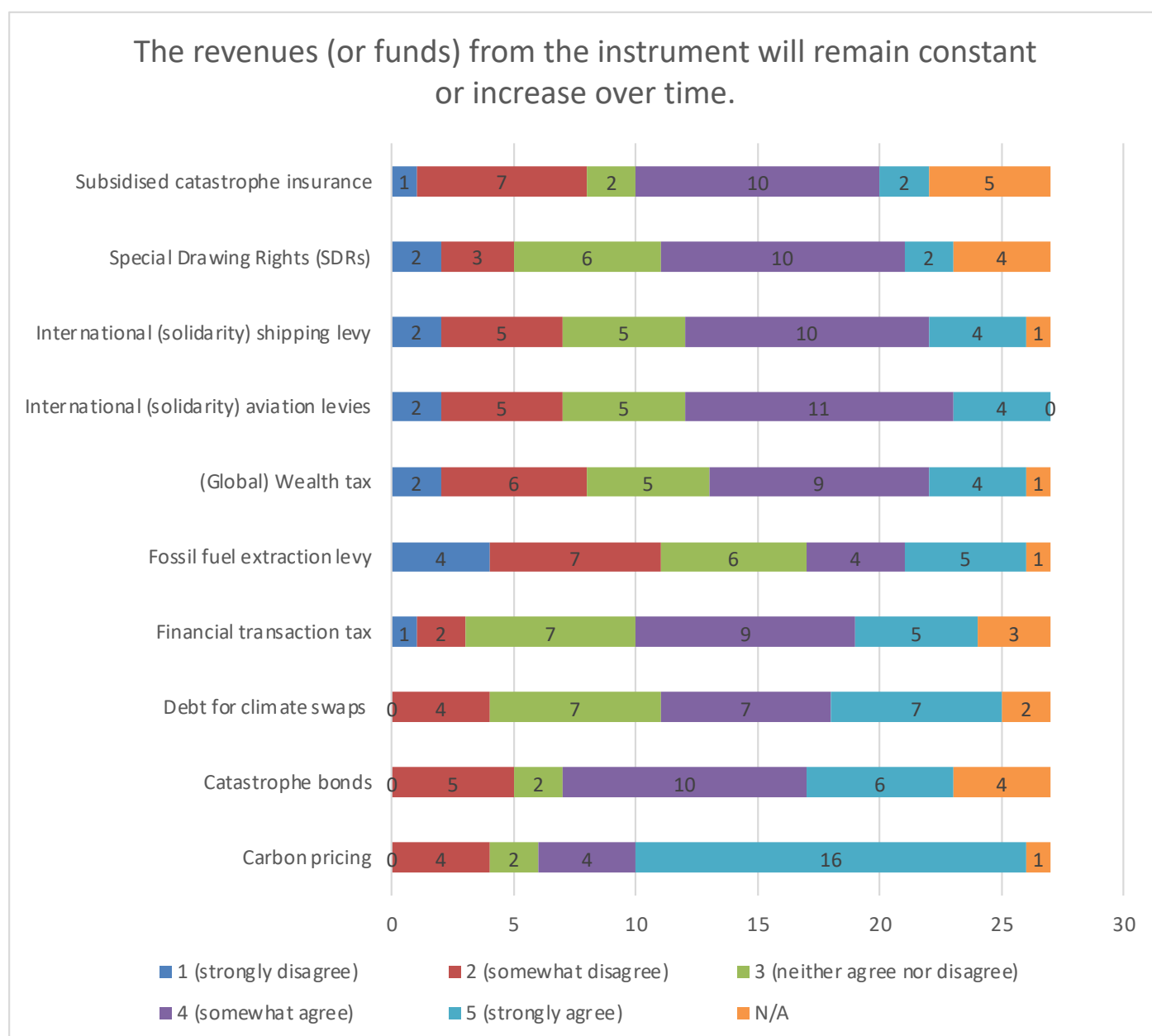
Source: Authors' elaboration.

Figure 8: Survey results – Fairness (1/2).



Source: Authors' elaboration.

Figure 9: Survey results – Fairness (2/2).



Source: Authors' elaboration.



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