

DISCUSSION PAPER

# **The significance of climate litigation for the political debate on Loss&Damage**

Laura Schäfer, Vera Künzel and Christoph Bals

## Brief Summary

Loss and damage (L&D) due to climate change impacts is already a reality for many people, especially the most vulnerable. So far, there is no prospect of sufficient financial support for dealing with actual L&D within the climate regime (UNFCCC). Where international climate diplomacy doesn't advance, affected people start to take the legal avenue to address the problem of L&D. Based on this assessment, this paper analyses the status quo of international climate change litigation, revealing how the current court cases are turning an abstract risk of climate claims into a concrete one. Resultant risks for fossil fuel industry directors, boards, regulators, investors, shareholders, and insurers are outlined – underlining that it is high time for companies and the financial system to consider the concrete litigation risks in their current activities and decisions. The paper concludes that the climate change lawsuits increase the pressure to reach political solutions for addressing L&D as it cannot be of interest that each individual major polluters is brought to justice. Insurance schemes could be operationalized to involve polluters in dealing with the costs of L&D.

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# 1 Dealing with loss and damage – A lack of action and support

**For many people around the globe, loss and damage (L&D) due to climate change impacts is already a reality.** Slow onset impacts like sea level rise and glacier melting as well as extreme weather events like heavy floods and storms pose a direct threat to people's lives and livelihoods, putting their human rights at risk. These impacts have in some cases already gone beyond the ability of communities to adapt. It is expected that L&D from climate change will increase dramatically, especially in the poorest parts of the world whose contributions to global emissions are negligible. First and foremost, addressing L&D requires effective mitigation action and adaptation measures to minimize the impacts to societies. However, historical greenhouse gas emissions and locked in investments into fossil fuel industries have already committed us to a certain level of climate related L&D (e.g. even if we stop emissions now, sea level will rise during the next centuries). Moreover, not all climate change impacts can be successfully adapted to. Taking these limitations of preventing and managing climate impacts into account, it appears essential to address the residual L&D which cannot be avoided through mitigation and adaptation efforts, especially for particularly vulnerable countries and people. In dealing with the actual climate change impacts, the residual L&D, affected developing countries need financial support.

**There are three international principles that mandate the (financial) support of affected developing countries in dealing with L&D:** First, the "*polluter-pays principle*"<sup>1</sup> which is anchored as Principle 16 in the Rio Declaration (1992). Second, the "*no-harm rule*" saying that States are duty-bound to prevent, reduce and control the risk of environmental harm to other states. Where harm is caused there is an obligation to cease wrongful conduct and to make full reparation for any injuries caused. The no-harm rule is a widely recognized principle of customary international law and is also anchored in Principle 2 of the Rio Declaration 1992. Third, the principle of „*Common but differentiated responsibilities and respective capabilities*“ (CBDR) anchored in UNFCCC Art 3.1 saying that “the Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof”<sup>2</sup> Based on these principles and due to their extraterritorial obligations e.g. defined in the Covenant for Economic, Social and Cultural Rights<sup>3</sup>, states have a legal obligation to stop damaging and protect the affected or, if this is not possible, indemnify them.

**By embedding adaptation and L&D under the UN climate regime (UNFCCC, Paris Agreement), a process at the international level that addresses the problem of climate impacts was established.** This process based on the three principles above. The Warsaw International Mechanism (WIM) for L&D anchored the topic within the international climate regime, providing the legitimization to explore approaches to address climate induced harm conditioned by limitations of mitigation and adaptation strategies. The Mechanism is mandated for three things: a) to enhance

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<sup>1</sup> The Polluter Pays Principle: National authorities should endeavour to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment.

<sup>2</sup> UNFCCC 1992.

<sup>3</sup> Art.2.1 focuses on extraterritorial rights: “Each State Party to the present Covenant undertakes to take steps, individually and through international assistance and co-operation, especially economic and technical, to the maximum of its available resources, with a view to achieving progressively the full realization of the rights recognized in the present Covenant by all appropriate means, including particularly the adoption of legislative measures.”

Available at: <http://www.ohchr.org/EN/ProfessionalInterest/Pages/CESCR.aspx>. [22.02.2018].

knowledge, b) strengthen dialogue and coordination as well as c) enhance action and support, including finance for L&D. With the Paris Agreements Article 8, L&D was anchored as a standalone topic under UNFCCC, presenting a milestone in the debate on L&D and fulfilling a key demand of the most vulnerable States.

**However, in 2018 we still face a lack of adequate action and support for L&D under the UNFCCC.** While in general, the need for fair burden-sharing and technical as well as financial support is accepted, there is limited progress on how to provide adequate funding to deal with L&D in developing countries. Although the support architecture under UNFCCC has seen major developments in the past decade, so far there is no funding mandate under the UNFCCC for responding to losses and damages related to climate change. In particular, rehabilitation and reconstruction activities as well as measures to deal with residual risks have very limited funding opportunities under the UNFCCC's financial mechanism.<sup>4</sup> And while the WIM succeeded in enhancing knowledge on L&D, the third element of its mandate (action and support) came off badly so far. Five years after its establishment, the key activities on L&D financing are an expert dialogue on ways for facilitating the mobilization and securing of expertise and enhancement of support, including finance to inform a technical paper<sup>5</sup> as well as a submission to the Executive Committee on types of activities to address L&D that need funding.

**The reasons for the lack of adequate action and support for L&D have deeper roots within the climate regime.** Article 9 of the Paris Agreement promotes finance for many climate-related actions, but does not mention L&D. Moreover, the UNFCCC still lacks an official definition of L&D which, according to adaptation finance experience, is a challenge for defining funding options.<sup>6</sup> That means – at present, there are no mechanisms, based on the three international principles mentioned above (polluter pays, no-harm, CBDR), to adequately support affected people in dealing with actual L&D. As there is no prospect of sufficient financial support for responding to L&D based on the Paris Agreement, affected people and countries strike out in a new direction and rely on the legal system.

## 2 Legal avenues for L&D support – Claiming polluters' responsibility

**Where international climate diplomacy doesn't advance, affected people start to take the legal avenue to address the problem of L&D.** They go to court, claiming the responsibility of large emitters to climate change in terms of liability for L&D. Based on COP decision 1/CP.21, the Paris Agreement and its article 8 on loss and damage don't "involve or provide a basis for any liability or compensation" (§51).<sup>7</sup> However, the COP decision "cannot exclude the application of the general

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<sup>4</sup> MCII 2018.

<sup>5</sup> Called the "Suva expert dialogue" on ways for facilitating the mobilization and securing of expertise and enhancement of support, including finance. More information available at: [https://unfccc.int/files/meetings/bonn\\_nov\\_2017/in-session/application/pdf/cp23\\_auv\\_i7.pdf](https://unfccc.int/files/meetings/bonn_nov_2017/in-session/application/pdf/cp23_auv_i7.pdf).

<sup>6</sup> Richards/Schalatek 2017.

<sup>7</sup> This article is a negotiation compromise for including loss and damage in the Paris Agreement. It mainly reflects concerns by some developed country Parties, that a loss and damage article is seen as an admission of liability for climate loss and damage, potentially resulting in claims for compensation (Sharma et al. 2016).

rules on liability and compensation between states”<sup>8</sup> – hence, the formulation doesn’t apply to other international duties, international law and national legal systems.

**Recent years have seen an increase in climate-related litigation claims** being brought before the courts by states, municipalities, public interest organizations and property owners.<sup>9</sup> As of 2017, almost 900 climate change cases had been filed in 24 countries. The majority of cases (654) were filed in the U.S., over 230 cases were filed in all other countries combined.<sup>10</sup> Recent court filings show five trends regarding the purposes of climate change litigation (UNEP 2017):

- holding governments to their legislative and policy commitments;
- linking the impacts of resource extraction to climate change and resilience;
- establishing that particular emissions are the averaged cause of particular adverse climate change impacts;
- establishing liability for failures (or efforts) to adapt to climate change;
- applying the public trust doctrine to climate change.

In this paper, we will focus on the third purpose: establishing that particular emissions are the averaged cause of particular adverse climate change impacts, aiming at emitters to stop disruptive action or make compensatory and adaptive action.

**One of these cases was brought to court by the Peruvian farmer Saúl Luciano Lliuya.** In 2014, he filed a claim against the German energy company RWE. Lliuya’s house is located in Huaraz, a town in a valley underneath the glacial lake Palcacocha. The plaintiff claims that CO<sub>2</sub> emissions by the defendant have contributed to climate warming and thereby to accelerated glacial melting and a dangerous increase of the lake’s water volume.<sup>11</sup> An avalanche of glacial ice could trigger an outburst flood from the lake, causing damage to his house and home town of Huaraz.<sup>12</sup> To prevent the danger, the water level of the glacier lake has to be reduced and the existing dam has to be strengthened. The claim aims at RWE to make an averaged contribution to the costs of protection measures against a Glacial Outburst Flood (GLOF) to reduce the risk of flooding.<sup>13</sup> RWE is the largest CO<sub>2</sub> emitter in Europe – the companies’ contribution is asked to be proportionate to its share in historical CO<sub>2</sub> emissions which is approximately 0.5 %<sup>14</sup>.

**Lliuya’s case is part of a worldwide trend.** Only recently, *New York City* filed a federal lawsuit against the five largest investor-owned fossil fuel producers. It seeks the costs, the city had incurred and would continue to incur to protect itself and its residents from the impacts of climate change (BP, Exxon Mobil, Chevron, ConocoPhillips und Shell).<sup>15</sup> Also, the *city of Richmond, California*,<sup>16</sup> filed a suit against the five major oil companies, seeking to collect billions of dollars in damages to pay

<sup>8</sup> Sharma et al. 2016. For an in depth analysis of COP decision 1/CP.21 Art. 8 see Lees 2016.

<sup>9</sup> Seley/Dudley 2016.

<sup>10</sup> Burger/ Gundlach (2017). See also Climate Law and Litigation Database by Grantham Research Institute (LSE) for worldwide data without US, available at: [www.lse.ac.uk/GranthamInstitute/climate-change-laws-of-the-world/](http://www.lse.ac.uk/GranthamInstitute/climate-change-laws-of-the-world/). And Climate Change Litigation Database by Columbia Law School for US data, available at: <http://wordpress2.ei.columbia.edu/climate-change-litigation/us-climate-change-litigation/>.

<sup>11</sup> Frank 2017.

<sup>12</sup> Frank/Bals/Grimm 2017.

<sup>13</sup> Germanwatch 2017.

<sup>14</sup> RWE AG is the largest CO<sub>2</sub> emitter in Europe which is responsible for 0,47% of global CO<sub>2</sub> emissions based on the so-called Carbon Major’s report (Heede 2014).

<sup>15</sup> See New York Times 10 January 2018: <https://www.nytimes.com/2018/01/10/nyregion/new-york-city-fossil-fuel-divestment.html>.

<sup>16</sup> See Twitter: <https://twitter.com/billmckibben/status/955559500345479168>.

for city efforts to cope with the effects of climate change. And on the Philippines, a *human rights commission* is assessing whether the collective contribution to global warming by 47 global coal, cement, oil and gas companies has violated Filipinos' basic rights to life, water, food, sanitation, adequate housing and self-determination – in particular through the L&D caused by superstorm Haiyan in 2013. The companies under investigation include some of the world's biggest fossil fuel producers, such as ExxonMobil, Chevron, Shell, Rio Tinto and Total.

**The prospects of success are very different in the single cases.** The cases are often compared to the court proceedings against the Tabaco industry, where companies also had known for a long time about the harmful effects of their products.<sup>17</sup> The companies tried to disguise their knowledge until the 1990s, where so many lawsuits against large tobacco companies were pending in the U.S. that the companies agreed to a settlement costing them at least \$206 billion<sup>18</sup>.

**In the case of Saúl Luciano Lliuya, a preliminary success was achieved in November 2017.** After the court of first instance (the district court Essen) had rejected the claim for protection measures on legal grounds, Lliuya appealed the judgement. He argued that there is a scientifically provable causal chain between the CO<sub>2</sub> emissions from RWE power plants as well as the danger he is facing and that there is no legal reason why a large emitter such as RWE should be exempted from its climate-related legal responsibility regarding the increasing threat to his property. On 13th November 2017, the Higher Regional Court Hamm held the oral hearing of the appeal. The court rejected the judgement of the court of first instance and followed Lliuya's legal reasoning in all points. It also rejected RWE's claim that the law doesn't cover climate change since it's too "complex" and since everyone emits greenhouse gases. The court not only accepted to negotiate the case but also sees the legal causality of RWE as co-contributor to the risk in Huaraz as given. In the upcoming evidentiary phase, the scientific causality has to be proven.

**The climate change lawsuits raise the issue of responsibility of polluters to climate change in terms of liability for L&D.** For the case of Saúl Luciano Lliuya, the Higher Regional Court established that generally, responsibility of a large emitter for damage or risks in foreign countries exists as long as science can prove partial causation. This must now be determined for the concrete location by scientists to the conviction of the court. The court also generally accepted climate models as tools for giving legal evidence. The Intergovernmental Panel on Climate Change (IPCC) has already predicted that risks associated with extreme events will continue to increase the global mean temperature rise.<sup>19</sup> And in the IPCC fifth assessment report, there is a "very high degree of confidence" in the attribution of climate change to the glacier retreat in the Andes in South America. While the link between climate change and certain weather events is for principle reasons difficult to prove, researchers have quantified the contributions of industrialized and developing nations' historical emissions to global surface temperature rise. Recently, a team of researchers also quantified the contribution of individual emitters to global warming and rising sea levels. 90 major industrial carbon producers contributed up to 50 % of the rise in global mean surface temperature and up to 32 % of global sea level rise.<sup>20</sup> Attribution studies like this lay the groundwork for tracing emissions sourced from industrial carbon producers to specific climate impacts, especially to slow onset impacts like desertification, sea level rise or glacier melting. Moreover, more and more reports are disclosing that carbon mayors had early knowledge of climate change risks, failing on opportunities to act on those risks and often even actively undermining an adequate public debate.<sup>21</sup>

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<sup>17</sup> Olszynski et al. 2017; Leonard et al 2016.

<sup>18</sup> Called the Tobacco Master Settlement Agreement 1998. After this agreement, there were still claims filed – most recently successfully in the case of US vs. Philip Morris in 2009. See: <http://www.publichealthlawcenter.org/topics/tobacco-control/tobacco-control-litigation/united-states-v-philip-morris-doj-lawsuit>.

<sup>19</sup> IPCC 2014.

<sup>20</sup> Eckwurzle et al. 2017.

<sup>21</sup> E.g. evidence for the oil industry in CIEL 2017.

### 3 High time for polluters to consider litigation risks and take action

**Climate change brings a variety of risks for emitters, accountants, investors and governments.** In 2015, Mark Carney, the Governor of the Bank of England, listed three channels through which climate change can affect financial stability: physical, liability and transition risks.<sup>22</sup> For liability risks he referred to the “impacts that could arise tomorrow if parties who have suffered loss or damage from the effects of climate change seek compensation from those they hold responsible. Such claims could come decades in the future, but have the potential to hit carbon extractors and emitters –and, if they have liability cover, their insurers –the hardest.”<sup>23</sup> Carney was referring to a very abstract risk of climate claims (“decades in the future”).

**However, the current climate change lawsuits are turning an abstract risk of climate claims into a very concrete one.** In the case of Saúl Luciano Lliuya, the court established that generally, responsibility of a large emitter for damage or risks in foreign countries exists. The financial crisis of 2008 and 2009 was a reminder of what damage it can cause if banks and investors ignore business risks, resulting in increased demand for transparency from organisations on their risk management practices. G20 states have set up a task force on climate-related financial disclosure (TCFD), aiming at investigating the effects of climate change on companies.<sup>24</sup> In their final report, they conclude that one important climate related risks is litigation or legal risks. The task force assumes that “as the value of L&D arising from climate change grows, litigation risk is also likely to increase”<sup>25</sup>. It therefore warns that many organisations incorrectly perceive the implications of climate change to be long term and thus not necessarily relevant to decisions made today.

**Climate litigation poses direct risks to fossil fuel industry directors, boards, regulators, investors, shareholders, and insurers.** The risks include i. a.:<sup>26</sup>

1. **Risk of investment:** When the companies’ investments into major greenhouse gas (GHG) projects (mining, drilling and burning) are challenged based on climate change grounds.
2. **Risk of money damages and injunctive relief:** The risk of companies having to pay for the damages caused by their GHG emissions and orders to stop climate damaging activities. According to many legal systems, companies are obliged to create accruals for risks from ongoing or pending legal proceedings. The amount is based on the estimated amount of damage that the defendant may have to pay. <sup>27</sup> Due to these accruals, companies can lose value, being a decisive factor for investors of all kind. Moreover, the emitters face the risk of high costs when science can prove partial causation and claims are successful. Depending on the financial volume of claims, these costs might constitute a threat to their solvency.
3. **Insurance risk:** This category encompasses problems regarding the availability of insurance coverage for growing defence costs from climate change lawsuits as well as coverage

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<sup>22</sup> See: Carney 2015. Carney describes physical risks as the impacts today on insurance liabilities and the value of financial assets that arise from climate- and weather-related events, such as floods and storms that damage property or disrupt trade. He describes transition risks as the financial risks which could result from the process of adjustment towards a lower-carbon economy. Changes in policy, technology and physical risks could prompt a reassessment of the value of a large range of assets as costs and opportunities become apparent.

<sup>23</sup> Ibid.

<sup>24</sup> See: <https://www.fsb-tcfd.org/about/>.

<sup>25</sup> TCFC 2017.

<sup>26</sup> Burton 2013.

<sup>27</sup> E.g. regulated under German law in § 249 I HGB.



for potential liabilities (e.g. the indemnification of damages awarded for property loss and or bodily harm). Therefore, climate litigation can have a huge impact on the insurability of companies.<sup>28</sup>

4. **Risk of human rights violations:** The risks for corporations and governments of being held responsible for human rights abuses due to emissions from fossil fuels. Fossil fuel extraction and use can lead to number of human-rights violations, including the rights to life, water and sanitation, food, health, housing, self-determination, culture and development.

**It is high time for companies and the financial system to consider the concrete litigation risks in their current activities and decisions. For different actors this would mean:**

- **Large emitters.** Listed companies have a legal obligation to disclose climate change related information in line with the TCFD-recommendations (including their strategies how to align their business model with the goals as set out in the Paris Agreement) and regularly inform their shareholders and regulators about the risk of claims.<sup>29</sup> If they fail to disclose this type of information, they could incur liability to shareholders, lenders, investors, insurers or to independent third parties. For example, according to EU law<sup>30</sup> a company must disclose all information that could affect the values of the shares to the shareholders. This information allows equity security holders to evaluate the market value of their assets at any time. Some large emitting companies already took first steps in this direction. Already in mid-2017, Chevron admitted that climate factors could pose significant liability and regulatory risks to its financial returns. The company informed its investors that climate-related lawsuits and tighter restrictions on carbon emissions could have a significant impact on its bottom line.<sup>31</sup>
- **Investors** have to take into account the risk of climate claims for large emitter and incorporate the assessment of potential costs of such legal liabilities when considering investments in companies that are large emitters. Investors such as **pension funds and life insurances** have legal duties to manage the risks affecting their portfolio and cannot afford to treat climate change as a distant possibility. According to the European Solvency II Directive they have to invest all their assets in accordance with the "prudent person principle". This includes first, that they shall only "invest in assets and instruments whose risks the undertaking concerned can properly identify, measure, monitor, manage, control and report" and second, that all "assets shall be invested in such a manner as to ensure the security, quality, liquidity and profitability of the portfolio as a whole".<sup>32</sup> At the same time, investors have to report on their strategies to reduce climate risk exposure along the TCFD-recommendations. First reactions by investors can already be observed: When the Higher Regional Court Hamm decided last autumn to take evidence in the Lliuya versus RWE case, the prices of the German electricity companies fell on the stock exchange.<sup>33</sup>
- **Rating agencies and auditors** need to consider liability risks in their ratings and reports as these can affect the capacity and willingness of a company to meet its financial commitments in many ways.<sup>34</sup>

<sup>28</sup> Malloy/Sylvester 2010.

<sup>29</sup> For global standards in corporate governance – OECD, 'OECD Principles of Corporate Governance', <http://www.oecd.org/daf/ca/corporategovernanceprinciples/31557724.pdf>.

<sup>30</sup> EU Prospectus Directive 2010/73/EU.

<sup>31</sup> Cuff/Murray 2017.

<sup>32</sup> Solvency II Directive 2009.

<sup>33</sup> NTV 30.11.2017. Available at: [https://www.n-tv.de/wirtschaft/wirtschaft\\_der\\_boersen\\_tag/Klimaklage-aus-Peru-belastet-Versorger-Aktien-article20161005.html](https://www.n-tv.de/wirtschaft/wirtschaft_der_boersen_tag/Klimaklage-aus-Peru-belastet-Versorger-Aktien-article20161005.html).

<sup>34</sup> S&P Global 2017.

- **Insurance companies** need to assess if they exclude climate related lawsuits from companies' insurance coverage. And the insurance industry is well aware of the possibility of climate lawsuits. Already in 2008, Swiss Re said that they might be forced to approach Exxon Mobil and say "Since you don't think climate change is a problem, and you're betting your stockholders assets on that, we're sure you won't mind if we exclude climate related lawsuits from your D&O [director and officers] insurance."<sup>35</sup> Moreover, insurance companies could seek subrogation for monies paid to insured victims of climate change disasters.<sup>36</sup>

## 4 Climate change litigation as a call for political solutions

**The climate change lawsuits increase the pressure to reach political solutions for addressing L&D.** Chapter 3 demonstrated how the current court cases are turning an abstract risk of climate claims into a very concrete one. Based on the existing court cases, this risk applies to a multitude of countries around the world since Saúl Luciano Lluyia's lawsuit can act as a model for similar lawsuits in other countries. In fact, more than 50 jurisdictions worldwide have the same or a very similar material legal basis used for Lluyia's case. For states, however, it cannot be of interest that each individual major polluters is brought to justice. A political solution is needed that holds emitters accountable for their contribution to climate change and regulates how polluters have to indemnify countries and people affected by their historic and current emission. Simultaneously, the political solutions need to provide incentives for emitters to stop contributing to climate change by changing their core business and thus their business models.

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<sup>35</sup> Elliot 2006.

<sup>36</sup> Burton 2013.

**Overview – Climate change litigation as a call for political solutions to address L&D and the role of climate risk insurance <sup>37</sup>**



**There are various instruments available that can be used to involve polluters in dealing with the costs of L&D.** One promising instrument can be found in the insurance context. Climate risk insurance solutions are facilitative mechanisms that provide post-disaster financial support against the loss of assets, livelihoods, and lives at an individual, community, national and regional level. Insurance thereby protects insured from the economic implications of actualized risks. But research shows that insurance related tools can also provide support before a disaster strikes: ex-ante, where they create a space of certainty within which investments, planning and development activities can be undertaken<sup>38</sup>. This space of certainty might allow for improved ex-ante planning and decision-making<sup>39</sup>. Moreover, if designed in a smart way, insurance related instruments can play a role as messenger of climate change risks or impacts through its terms and price signals – thereby incentivizing risk reduction behaviour.<sup>40</sup> However, premium costs represent a major obstacle regarding

<sup>37</sup> Source: Author's own.

<sup>38</sup> MCII 2016.

<sup>39</sup> Schaefer/Warner/Kreft 2018.

<sup>40</sup> Ibid.

the accessibility of insurance products in developing countries, especially for the poor who are faced by existential risks. Therefore, measures to increase affordability for poor and vulnerable people and countries are a precondition for the success of an insurance scheme and essential with regard to concerns of equity.

On that basis, **insurance schemes could be operationalized to involve polluters in dealing with the costs of L&D.** A solution where all polluters pay seems to be fairer than litigation cases focused only on few companies – and as soon as litigation cases are won by people affected by climate risks, politicians will feel more urgency to act in this direction (see overview on page 11). Parts of the income of a CO<sub>2</sub>-price could be used to co-finance insurance solutions for those people who can't afford the full premium. Collected by the states, the money would be made available for the capitalization of regional or global risk pools, reinsurance of those pools or co-financing premiums for poor people. Some ideas on how such a mechanism could look like have already been developed, but need to be further developed with view to their operationalizability.<sup>41</sup> The supported insurance schemes could be organized by the state (macro level) or as mutual systems of cooperatives or communities (meso level). The African Risk Capacity (ARC) is one example for such a system.<sup>42</sup>

**L&D from extreme-weather events for the most vulnerable population could be covered with this approach.** But classical insurance is not appropriate or generally feasible for slowly developing and foreseeable events or processes that happen with high certainty under different climate change scenarios. However, the losses from long-term foreseeable risks, such as sea level rise, desertification and the loss of glaciers and other cryospheric water sources, are already increasing and estimated to be very substantial in the future. So far, fund based solutions are discussed as functional equivalents to insurance for such cases. More research is needed on this topic to come up with intelligent solutions. The WIM should invite researchers, civil society, insurers etc. to present possible solutions. Think tanks should also come up with practicable solutions for slow onset risks.

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<sup>41</sup> See MCII 2008; Webster/Clarke 2017.

<sup>42</sup> See: <http://www.africanriskcapacity.org/>.

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