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Empowering Vulnerable Communities in Climate Litigation: The Indian Application of the Precautionary Principle

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Abstract

Of the several structural challenges faced by vulnerable communities pursuing climate litigation, lack of financial resources and access to technical expertise are colossal, particularly in the Global South. In that, addressing the problem of proof in climate litigation requires securing scientific evidence of harm. While attribution science has improved over the years, it is relatively weaker in the context of Global South and vulnerable communities, including the non-human environment. Further, gathering any scientific evidence requires access to both financial resources and specialist scientific knowledge. A lack of these undermines a plaintiff's right of access to justice, rendering them more vulnerable to climate change. The chapter presents a doctrinal response and a potential litigation strategy to address these challenges: the Indian iteration of the precautionary principle. Existing literature suggests the application of the principle to address the problem of proof. The principle allows regulatory action in supervening scientific uncertainty. However, the burden to prove 'scientific uncertainty' still rests on the plaintiff. Addressing this in environmental public interest litigation, the Indian Supreme Court has reversed the burden of proof. It requires the defendant to prove that the impugned activity is environmentally benign. By relieving the plaintiff from shouldering the evidentiary burden, the Indian iteration of the principle eases the aforementioned structural barriers and facilitates access to justice. Therefore, it is an instrumental litigation strategy for climate litigants from vulnerable communities across the Global South.

Keywords

Precautionary Principle; India; Burden of Proof; Climate Litigation; Vulnerable Communities; Global South.

1 Introduction

Much like other forms of environmental litigation, climate litigation involves complex questions of science and law. Especially, failure-to-mitigate litigation is riddled with such questions (hereinafter 'mitigation litigation').[1] In that in mitigation litigation the plaintiff is required to prove not only that an injury/risk of injury arises from global climate change, but also that the defendant's (in)action is contributing to climate change.[2] However, this is inherently difficult to demonstrate, given the multiplicity of contributing factors and the non-linearity of causation.[3] This is known as the problem of proof (hereinafter 'proof problem'),[4] While there have been significant developments in attribution science to address this, specific harms of climate change, especially in the Global South, have been relatively difficult to prove.[5] Thus, climate litigants often have to grapple with scientific uncertainty.

Accordingly, access to specialist scientific knowledge and adequate financial resources are key to initiating and pursuing climate litigation.[6] Reportedly, the inadequate availability of these is a barrier to successful litigation for climate litigants located across the Global South.[7] This is particularly challenging when litigants either belong to socially vulnerable communities, or are protecting interests of other vulnerable entities like the non-human environment.[8] This chapter provides a doctrinal response to these structural barriers faced by climate litigants in the Global South. It proposes a litigation strategy, i.e., employing the Indian Supreme Court's iteration of the precautionary principle ('Indian iteration'). While the strategy is useful for climate litigants in general, it is the most instrumental for litigants from vulnerable communities or those protecting interests of the non-human environment.

Generally, it is argued that the precautionary principle is useful in addressing the proof problem by allowing regulatory action even in situations of scientific uncertainty.[9] However,

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[1] See generally, Mike Burger and others, 'Climate Science and Human Rights: Using Attribution Science to Frame Government Mitigation and Adaptation Obligations' in César Rodríguez-Garavito (ed), *Litigating the Climate Emergency* (CUP, 2022) < https://doi.org/10.1017/9781009106214.015>. Burger and others note the difference between the causation analysis in failure-to-mitigate cases and failure-to-adapt cases. They note that while the former require plaintiff's access to both impact and source attribution science, the latter only requires access to impact attribution science.

[2] Ibid.

[3] See infra, section 2.

[4] A detailed explanation of the problem of proof follows in section 2. Proof problem is another expression for the 'problem of proof', a term used by Omuko in Lydia Akinyi Omuko, 'Applying the Precautionary Principle to Address the "Proof Problem" in Climate Change Litigation' (2016) 21(1) Tilburg Law Review 52.

[5] Jacqueline Peel, 'Issues in Climate Litigation' (2011) 1 CCLR 17, 19 <https://doi.org/10.21552/CCLR/2011/1/162>.

[6] ibid; Joana Setzer and Lisa Benjamin, 'Climate Litigation in the Global South: Constraints and Innovations' (2020) 9(1) TEL 77, 95-96 <https://doi.org/10.1017/S2047102519000268>; Patrick Toussaint, 'Loss and Damage and Climate Litigation: The Case for Greater Interlinkage' (2020) 30 Review of European, Comparative and International Environmental Law 16-33, 20 <https://doi.org/10.1111/reel.12335>. Toussiant cites the existence of robust scientific evidence as a precondition to successful litigation.

[7] 'Environmental Rule of Law: First Global Report' (UN Environment Programme, 2019), 185. See also, 'Environmental Rule of Law: Tracking Progress and Charting Future Directions' (UN Environment Programme, 2023) 128.

[8] See infra, section 2, which explains this further in light of the vulnerability theory.

[9] See for e.g., Jacqueline Peel, 'Precaution' in Lavanya Rajamani and Jacqueline Peel (eds), *Oxford Handbook of International Environmental Law* (2nd edn, OUP 2021), 304. Peel notes that 'the concept of precaution seeks to

this does not ease the aforementioned structural barriers. While it lowers the standard of proof required to prove the harm, the plaintiff continues to bear the burden of proof. Access to specialist scientific knowledge and adequate financial resources remain key in discharging this burden. Addressing this, the Indian iteration of the principle goes a step ahead. It unequivocally and unconditionally reverses the burden of proof.[10] This has been termed the 'special burden of proof in environmental cases' by the Indian Supreme Court.[11] Here, the plaintiff is only required to establish a scientifically uncertain, 'justified concern' of harm or threat of harm. Once that is accomplished, the burden of proof reversed. Accordingly, by relieving the plaintiff from shouldering the evidentiary burden, the Indian iteration of the principle eases the aforementioned structural barriers.

A few caveats to this argument must be elaborated pre-emptively. First, as will be discussed in section 6, the Indian iteration of the principle suffers from inconsistent application.[12] Repeatedly, the judiciary has conflated the principle with the principle of prevention, applying it even where there is no scientific uncertainty. As a result, sporadically, subordinate courts have conditioned its application to providing robust scientific evidence.[13] If this becomes the norm, inter alia, it could defeat the utility of the principle for climate change litigation.

Second, the chapter suggests the adoption of the precautionary principle driven strategy only in cases where scientific evidence is inaccessible, unavailable, inadequate or inconclusive. As will be elaborated in section 2, this is the case in mitigation litigation initiated in the Global South and/or by vulnerable communities.[14] Until attribution science and access to it improves,[15] the strategy suggested in this chapter could be adopted.

Lastly, third, the aforementioned structural barriers are not specific to climate litigation or to India. Lack of specialist scientific knowledge and adequate financial resources has been identified as the most widespread problem plaguing environmental litigation generally in the Global South.[16] Therefore, the litigation strategy proposed in this paper has relevance beyond India, and for environmental litigation too.

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guide the development and application of international environmental law where there is scientific uncertainty', thus indicating that scientific uncertainty is at the core of all versions.

[10] See, *Vellore Citizens Welfare Forum v Union of India*, 1996 5 SCC 647 ('Vellore'). In this case, the Indian Supreme Court imported the precautionary principle, and laid down its key elements. These have been explained in detail, in section 3.2 below.

[11] *A.P. Pollution Control Board v Prof MV Naidu* , 1999 2 SCC 718, title to para 36 ('AP Pollution Control Board').

[12] See below section 6.

[13] See below section 6.

[14] See below section 6.

[15] See n 9. Noting the inadequacy in attribution science in the Global South, authors call for an increased focus on the Global South.

[16] See for e.g., Gastón Medici-Colombo and Thays Ricarte, 'The Escazú Agreement Contribution to Environmental Justice in Latin America: An Exploratory Empirical Inquiry through the Lens of Climate Litigation' (2023) Journal of Human Rights and Practice 1-22, 8 <https://doi.org/10.1093/jhuman/huad029>. This article is a part of a special issue, which provides a comprehensive review of procedural and structural barriers in environmental and climate litigation in the Global South generally. See, Melanie Jean Murcott and Maria Antonia

The chapter will continue as follows. Section 2 outlines the structural barriers that climate litigants face in the Global South. Using the vulnerability theory, it explains how these barriers are particularly colossal for certain communities due to their pre-existing capacity constraints. Thereafter, the section briefly discusses the existing institutional responses. Since the Indian iteration of the principle emerges from its international counterpart, Section 3 explains the international iteration of the principle. It sheds light on different courts' iterations of the principle, and the ways in which they fail to address the structural barriers. Section 4 presents the key argument of the paper, i.e., that the Indian iteration of the precautionary principle is a meritorious litigation strategy. Section 5 explains the iteration and its utility in easing the barriers. However, this iteration suffers from an inconsistent judicial application. This leads to Section 6, which outlines the limitations of the argument. Section 7 concludes.

2 Structural barriers faced by climate litigants in Global South: A vulnerability framing

Environmental litigants in the Global South face several structural challenges which impede their access to justice.[17] Of these, limited access to technical expertise and financial resources is particularly colossal in the context of mitigation litigation.[18] It suffers from a pre-existing problem, i.e., the proof problem.[19]

Briefly, the proof problem requires the plaintiff to prove that the impugned harm is due to climate change, to which the defendant's emissions have contributed.[20] Proving the former requires access to impact attribution science and the latter requires access to source attribution science. Establishing this chain of causation, however, is the 'most difficult challenge' faced by plaintiffs in climate litigation.[21] This stems from gaps or uncertainties in climate science; particularly source attribution science is relatively weaker.[22] Further, even impact attribution studies have focused on ascertaining global/regional impacts of climate change, as opposed to particular local impacts.[23] Lastly, generally, Global South has received lesser attention, and suffers from an inadequacy of studies.[24] Such lack of evidence to prove particular harm is an obstacle in successful climate litigation in the Global South.[25] In fact, it could be exploited by the defendants in denying liability for harm.[26] Access to specialist scientific knowledge and financial resources are key to addressing the proof problem. Accordingly, the absence of these poses a colossal challenge for climate litigants in the Global South.

Tigre (eds.), *Developments, Opportunities, and Complexities in Global South Climate Litigation* (forthcoming 2024).

[17] UNEP 2019 (n 7).

[18] Setzer and Benjamin (n 6).

[19] ibid. They do not refer to the proof problem per se, however, note that climate litigation involves a policy-science nexus and the lack of specialist knowledge to litigants in Global South, poses a challenge.

[20] Peel, 'Issues in Climate Litigation' (n 3), 18-21.

[21] ibid 17, 19.

[22] See above section 1.

[23] See above section 1

[24] Supra above section 1.

[25] Peel, 'Issues in Climate Litigation' (n 5)

[26] Peel, 'Precaution' (n 9) 306. Peel notes that uncertainty may be caused due to several reasons, including, gaps in knowledge.

For socially marginalized communities, the lack of specialist scientific knowledge and financial resources particularly challenging. First, social identities such as gender, class, caste, indigeneity, race, and age make individuals face disproportionate impacts of climate change.[27] Thus, inter alia, women, children, the elderly, and indigenous peoples, are often more vulnerable to climate change than others. Indeed, in its latest guidance on the concept of climate risk, the Intergovernmental Panel on Climate Change (IPCC) recognizes that potential climate risk varies based on vulnerability of the affected person.[28] Yet, despite their disproportionate vulnerability, scientific knowledge of the *specific* impacts of climate change on vulnerable communities is inadequate.[29] Scientific studies have focused on human vulnerability to climate change in general, as opposed to studying the specific impacts of climate change on uniquely vulnerable groups.[30] Second, vulnerable communities often sit at the intersection of social and economic marginalization, further amplifying their marginalization.[31] As the *Global Climate Litigation Report* notes, in these pre-existing circumstances of socio-economic marginalization, lack of adequate financial resources and scientific knowledge are a particularly high barrier.[32] Thus, while litigants in the Global South generally face these barriers, litigants from vulnerable communities are at a greater disadvantage.

Another entity disproportionately vulnerable to climate change is the non-human environment, including non-human animals and natural resources.[33] IPCC echoes this; it defines 'risk' as including potential adverse impacts on ecological systems, and highlights that 'risk management' must address them too.[34] Despite this, non-human interests are perhaps the least represented in mainstream climate change discourse today.[35] Unsurprisingly, impacts of

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[27] The vulnerability theory terms these as 'social and constructed vulnerability'. See, for e.g., Milka Sormunen, 'Rethinking Effective Remedies to the Climate Crisis: a Vulnerability Theory Approach' 24 (2023) Human Rights Review 171-192 <https://doi.org/10.1007/s12142-023-00686-4>; Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2022 – Impacts, Adaptation and Vulnerability: Working Group II Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press 2023) 1467 (IPCC 2022); Birsha Ohdedar, 'Climate adaptation, vulnerability and rights-based litigation: broadening the scope of climate litigation using political ecology' (2022) 13(1) Journal of Human Rights and Environment 137-156 <https://doi.org/10.4337/jhre.2022.01.06>.

[28] Intergovernmental Panel on Climate Change (IPCC), 'The concept of risk in the IPCC Sixth Assessment report: a summary of cross-Working Group discussions' (4 September 2020) 5 (IPCC Risk 2020).

[29] ibid, Sormunen. See also, Jorge E. Vinuales, 'Legal Techniques for Dealing with Scientific Uncertainty in Environmental Law', (2021) 43 Vanderbilt Law Review 437, 500 <https://scholarship.law.vanderbilt.edu/vjtl/vol43/iss2/4>. Writing in the context of the Inuit petition, Vinuales provides an excerpt from the interview of the former chair of Inuit Circumpolar Conference, which points toward the gap in attribution science regarding the specific impacts of climate change on vulnerable communities.

[30] IPCC 2022 (n 27) 1467-1468, the Report underlines the need for a more nuanced understanding and examination of vulnerable groups, including, women, poor and disadvantaged, in vulnerability and risk assessment.

[31] Socio-economic class has been seen as an external factor contributing to increased social vulnerability. See, I.M. Otto and others, 'Social vulnerability to climate change: a review of concepts and evidence' (2017) 17(6) Regional Environmental Change 1651–1662 <https://doi.org/10.1007/s10113-017-1105-9>.

[32] *Global Climate Litigation Report: 2023 Status Review* (UN Environment Programme, 2023) 27.

[33] Milka Sormunen, 'Rethinking Effective Remedies to the Climate Crisis: a Vulnerability Theory Approach' 24 (2023) Human Rights Review 171-192 <https://doi.org/10.1007/s12142-023-00686-4>

[34] IPCC Risk 2020 (n 27) 6.

[35] See generally, Brian G. Henninh and Zack Walsh (eds), *Climate Change Ethics and the Non-Human World* (Routledge, 2020) 49; See also, Nuria Almiron and Catia Faria, 'Climate Change Impacts on Free-Living

climate change on non-human environment have not been fully accounted for in attribution studies.[36] Further, the limited, available studies have focused primarily on impacts on biodiversity,[37] with 'little focus…given to *individual* animals and *their* flourishing or well-being'.[38] This lack of scientific studies may impede climate litigation for protecting more-than-human interests. In light of the aforementioned barriers, pursuing such litigation may be particularly difficult for litigants in the Global South.

Institutional responses to these barriers have focused on providing financial, technical, and strategic support to these litigants. Philanthropists have extended financial and technical expertise, while NGOs from the Global North have provided strategic support.[39] In this context, this chapter suggests a doctrinal response to ease these barriers, i.e., the Indian iteration of the precautionary principle.

The Indian iteration of the principle is built upon the principle's international iterations. A pre-requisite to fully appreciating the former is understanding the latter. Accordingly, the next section discusses the international iteration of the precautionary principle, and its utility for litigants in the Global South.

3 Internationally accepted iteration and its limited utility for climate litigants from vulnerable communities in Global South

One of the most contested principles of environmental law, the precautionary principle is anchored in several international legal instruments, including, the Rio Declaration,[40] and the United Nations Framework Convention on Climate Change (UNFCCC).[41] The most widely accepted iteration comes from the Rio Declaration:[42]

> In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.[43]

Nonhuman Animals. Challenges for Media and Communication Ethics' (2019) 7(1) Studies in Media and Communication 2019 <https://core.ac.uk/download/pdf/228084307.pdf> accessed 3 May 2024.

[36] IPCC 2022 (n 27).

[37] See, for e.g., IPCC 2022 (n 27).

[38] Rebekah Humphreys, 'Suffering, sentientism, and sustainability: An analysis of a non-anthropocentric moral framework for climate ethics' in Climate Change Ethics and the Non-Human World (Brian G. Henninh and Zack Walsh (eds), Routledge 2020) 49.

[39] Setzer and Benjamin (n 4) 96; Jacqueline Peel & Jolene Lin, 'Transnational Climate Litigation: The Contribution of the Global South' (2019) 113(4) American Journal of International Law 679 < https://doi.org/10.1017/ajil.2019.48>.

[40] UNGA, 'Rio Declaration on Environment and Development' (12 August 1992) A/CONF.151/26 (Vol. I) ('Rio Declaration') principle 15.

[41] United Nations Framework Convention on Climate Change (adopted 20 January 1994) A/RES/48/189 art 3(3).

[42] Several scholars refer to this version as the most widely accepted, cited, and uncontroversial. See, for e.g., Lavanya Rajamani, 'The Precautionary Principle' in Shibani Ghosh (ed), *Indian Environmental Law* (Orient Black Swan, 2019).

[43] Rio Declaration (n 40).

Though the principle has different variations,[44] one element is common to all. That is, allowing regulatory measures to prevent potential harms to environmental and human health, even when scientific evidence regarding the harm is uncertain.[45] While the level of harm and the nature of risk varies in different versions,[46] if there is prevailing scientific uncertainty, the principle allows regulatory action precluding the activity.

Drawing upon this common element, Peel and Omuko have argued that the principle may be applied to deal with the proof problem in climate litigation.[47] Its application allows courts to lower the evidentiary standards with respect to proof of harm.[48] Thus, where attribution science cannot provide conclusive evidence of climate harm, applying the precautionary principle will allow courts to regulate the impugned activity.

Arguably, for climate litigants in the Global South, this only alleviates part of the problem, i.e., it lowers the standard of proof required by accepting proof that is not scientifically certain.[49] *However, they still bear the burden of proving the threat and need to support it with a certain level of scientific evidence* (emphasis).[50] In other words, they must prove the threat of harm through scientific evidence. Thus, the evidentiary burden rests with the plaintiff. As noted in section 2, particularly in climate litigation, such evidence may not always be readily accessible or easily comprehensible. Accessing and comprehending it may require both financial resources and technical expertise. In such cases, the structural barriers faced by vulnerable communities in the Global South limit the utility of the internationally accepted iteration of the precautionary principle.

Few of the earlier iterations of the principle go a step ahead and reverse the burden of proof.[51] For example, the World Charter for Nature states that in case of activities that pose a significant risk to nature, the project proponent shall demonstrate that expected benefits outweigh the potential damage to nature.[52] In case of scientific uncertainty regarding such impacts, the activity will not be allowed. Therefore, the Charter contains a clear mandate for reversing the burden of proof, requiring the proponent to alleviate the scientific uncertainty. If they fail to do so, a threat of harm is presumed, and the activity is not allowed. Similarly, while

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[44] For an overview of different versions, see, Cass Sunstein, 'The Paralyzing Principle' 25 Regulation 33 <https://www.cato.org/sites/cato.org/files/serials/files/regulation/2002/12/v25n4-9.pdf> accessed 22 June 2023.
[45] Peel, 'Precaution' (n 9).
[46] Sunstein (n 38).
[47] Peel, 'Issues in Climate Litigation' (n 5) 20; See also, Omuko (n 4).
[48] ibid. Both Peel and Omuko argue that the principle may allow the court to accept more general evidence of harm as probative of specific, local harm. Thus, arguably, it considerably lowers the standard of proof that must be met by the plaintiff.
[49] See, Peel, 'Issues in Climate Litigation' (n 5) 20. Discussing versions of the principle that do not reverse burden of proof, Peel notes that they allow the Court to accept probative evidence. Arguably, therefore, the onus to provide such evidence rests with the plaintiff.
[50] See for e.g., infra n 50-56. In the Pulp Mills case, the Court refused to reverse the burden of proof and required the plaintiff to provide evidence of threat of harm.
[51] See for e.g., UNGA, 'World Charter for Nature' (1982) A/RES/37/7; Wingspread Statement on the Precautionary Principle (Wingspread Conference Centre, Racine, Wisconsin, 1998) <http://www.gdrc.org/ugov/precaution-3.html>.
[52] ibid, World Charter for Nature, principle 11.

applying the principle in the *Bluefin Tuna* case, ITLOS also potentially reversed of burden of proof,[53] though not in clear terms.[54] Here, the Tribunal passed an interim order precluding Japan from increasing its total allowable catch. It did so on grounds of scientific uncertainty regarding the impact of such an increase.[55]

Be that as it may, dominant international instruments do not ascribe to reversing the burden of proof.[56] In fact, internationally, the approach toward the reversal of the burden of proof has been rather adverse. For example, in the context of the International Court of Justice (ICJ), the most recent explicit (in)application of the principle was in the *Pulp Mills* case.[57] Here, the Court unequivocally rejected the reversal of the burden of proof.[58] While noting that the precautionary approach may apply in interpreting the relevant treaty between the parties, it held that reversal of the burden of proof does not follow from such application.[59] In fact, it even refused to lower the standard of proof, requiring Argentina to provide 'convincing', 'clear', and 'conclusive' evidence that mills cause environmental damage.[60] Yet another example is the European Union. Despite being known for its proactive application of the principle, the European Commission has expressed strong reservations against reversing the burden of proof in every case; it limits the reversal of the burden of proof on a case-to-case basis.[61] In Australia, reversal of the burden of proof is conditional on the litigant having to meet a high threshold for establishing threat and scientific uncertainty.[62]

Accordingly, the internationally accepted iteration of the precautionary principle has limited utility in easing the aforementioned barriers. It addresses the proof problem by allowing regulatory action in the face of scientific uncertainty.[63] However, the plaintiff is still required

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[53] *Southern Bluefin Tuna* (*New Zealand v Japan*, *Australia v Japan*) (Provisional Measures, Order of 27 August 1999) ITLOS Reports 1999, 89 (Bluefin Tuna).

[54] ibid, Separate Opinion Judge Liang, para 21. In a separate opinion, Judge Liang states that the Tribunal did not reverse the burden of *per se*. See also, Daniel Kazhdan, 'Precautionary Pulp: Pulp Mills and the Evolving Dispute between International Tribunals over the Reach of the Precautionary Principle' (2011) 38 Ecology Law Quarterly 527 < https://doi.org/10.15779/Z38084Q>.

[55] ibid, paras 73, 74, and 80. In two consecutive paras, the Tribunal takes note of conflicting scientific evidence provided by the parties. Subsequently, it indicates a situation of supervening scientific uncertainty, albeit not in these terms-it acknowledges, '…the Tribunal cannot conclusively assess the scientific evidence provided by the parties.'

[56] See above x.

[57] The Court's current position on reversal of burden of proof seems to be the one expressed in Pulp Mills. See, Peel, 'Precaution' (n 7) 317. Peel considers ICJ's position in international disputes as the one indicated in Pulp Mills.

[58] See generally, Kazhdan (n 54). Kazdhan, in fact, terms ICJ's interpretation of the principle as 'The New Precautionary Principle'.

[59] *Pulp Mills on the River Uruguay* (*Argentina* v *Uruguay*) (Judgement) [2006] ICJ Rep 113, 71.

[60] Kazhdan (n 54) 545.

[61] Commission of the European Communities 'Communication on the Precautionary Principle' (Brussels, 2 February 2000) COM(2000)1 final, 20-21. See also, Sonia Boutillon, 'The Precautionary Principle: Development of an International Standard' (2002) 23 Michigan Journal of International Law 429, 467. However, the European Court of Justice seems to be more relaxed in its application, although not as much as India. See, *Mehmat* Suat Kayikci, 'The Burden of Proof within the Scope of the Precautionary Principle: International and European Perspectives' (2012) <http://dx.doi.org/10.2139/ssrn.2101613> accessed 22 June 2023.

[62] See, Telstra Corporation Limited v Hornsby Shire Council [2006] 146 LGERA 10; Jacqueline Peel, 'When (Scientific) Rationality Rules: (Mis)Application of the Precautionary Principle in Australian Mobile Phone Tower Cases' (2007) 19(1) Journal of Environmental Law 103.

[63] Peel, 'Issues in Climate Litigation' (n 5) 20; See also, Omuko (n 4).

to procure scientific evidence to prove harm, though such evidence may be inconclusive. Thus, while it lowers the evidentiary standard, it does not shift the evidentiary burden. This is only partly useful for litigants in the Global South because they still need to secure access to scientific expertise and adequate financial resources to discharge the evidentiary burden. As will be elaborated in sections 4 and 5, this is where the Indian iteration of the principle becomes instrumental.

4 Indian Iteration of the Precautionary Principle: A systematic reversal of the burden of proof

The Indian Supreme Court's proactive approach in environmental cases has allowed it to lay down new legal principles, and facilitate environmental justice through innovative methods.[64] One such innovation is the Indian iteration of the precautionary principle. Since India follows a common law system, judicial decisions are a source of law, and binding on the Court itself and on all subordinate courts and tribunals. Therefore, the Indian iteration of the principle is very much a part of Indian environmental law.

Despite the contested status of the principle in international law, the Indian judiciary in *Vellore Citizens Welfare Forum v Union of India*[65] adopted the principle as a 'part of the environmental law of the country'.[66] Subsequently, in *A.P. Pollution Control Board v Prof MV Naidu*,[67] the Court elaborated on the different elements of the principle.

While adopting the principle in *Vellore*, the Court did not import it as such. Instead, it provided an iteration of the principle that was specific to the country's 'municipal law.'[68] Drawing upon different iterations,[69] the Court defined the principle as:

> (i) Environment measures by the State Government and the statutory Authorities must anticipate, prevent, and attack the causes of environmental degradation.
>
> (ii) Where there are threats of serious and irreversible damage, lack of scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
>
> (iii) The "[o]nus of proof" is on the actor or the developer/industrialist to show that his action is environmentally benign. [70]

Thus, the Court identified four elements for the operation of the precautionary principle. First, the impugned activity must give rise to threats of serious and irreversible damage. Second, prevailing scientific evidence regarding such threats must be insufficient, i.e., there must be scientific uncertainty regarding such threats. Third, any measures may be taken to prevent such

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[64] Geetanjoy Sahu, 'Implications of Indian Supreme Court's Innovations for Environmental Jurisprudence', (2008) 4(1) Law, Environment and Development Journal 3-19, 1.
[65] Vellore (n 10).
[66] ibid para 13, 14.
[67] AP Pollution Control Board (n 11).
[68] Vellore (n 10) para 11.
[69] The principle is a combination of the weak and strong versions. For further discussion, see Rajamani (n 42).
[70] Vellore (n 10) para 11.

damage. Fourth, the burden of proof is reversed. That is, the burden of proof that the activity is environmentally benign is on the project proponent/defendant. It is the fourth element that arguably, eases the structural challenges outlined above.

Each element outlined above was elaborated in *A.P. Pollution Control Board*.[71] This seminal interpretation has been followed in subsequent decisions. With respect to the reversal of the burden of proof, the Court indicates the fulfilment of certain pre-conditions. The litigant is required to prove three related elements regarding the impugned,[72] i.e., (i) there should be an identifiable risk of harm, (ii) the impugned harm should be serious or irreversible, and (iii) the risk of harm should be scientifically uncertain.

As regards to the first element, the Court has not specifically delineated what constitutes 'identifiable risk.' However, the following jurisprudence indicates what it entails:

> The principle of precaution involves the *anticipation* of environmental harm and taking measures to avoid it or to choose the least environmentally harmful activity…Precautionary duties must not only be triggered by the *suspicion* of concrete danger but also by *([j]ustified*) *concern* or risk potential.[73]

It appears that the Court has set a very low bar with respect to the standard of risk, which needs to be met to trigger the precautionary principle. In that, any *anticipatory* harm, *suspicion* of concrete danger, or even a *justified concern* may be enough to trigger the application of the principle. Therefore, arguably, to satisfy the first element of establishing an 'identifiable risk', the litigant only needs to show that there is a 'justified concern' about the occurrence of the impugned harm.[74]

The second element, i.e., the identifiable risk that should relate to a *serious or irreversible harm,* must also be met by the litigant prior to the reversal of the burden of proof. The Court does not clarify what constitutes serious or irreversible harm. However, it provides non-exhaustive illustrations like, 'extinction of species, widespread toxic pollution in major threats to essential ecological processes.'[75] If a Court were to say, consider, whether the impacts of climate change would constitute 'serious or irreversible damage', it could interpret this by applying the principle of *ejusdem generis*.[76] On such interpretation, the impacts of climate change would readily meet this threshold.

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[71] AP Pollution Control Board (n 11) paras 27-41.
[72] ibid paras 38-39.
[73] ibid para 35.
[74] One could argue, using the excerpt above, that 'identifiable risk' translates into establishing a 'non-negligible' risk. However, that would be incorrect. Non-negligibility is a standard that the Court has set for the defendant. That is, the defendant must prove the *absence of a non-negligible risk* or a reasonable ecological or medicinal concern. The remaining text from the excerpt clarifies this. See, ibid para 39.
[75] ibid para 38.
[76] The doctrine of ejusdem generis is a well-entrenched canon of interpretation often used by the Indian judiciary to interpret statutory provisions. To see an illustrative list of cases where the Indian judiciary has applied ejusdem generis, see, *Dr. T.N. Parameswara Kurup v State of Kerala*, WP(C) No.19429/2014, judgement dated 3 August 2021, Kerela High Court. Notably, though the text at hand is an excerpt from a judicial decision, the text is

Regarding the third element, there is no threshold prescribed for the level of scientific uncertainty to be proved.[77] The Court has applied the principle at various levels of 'scientific uncertainty'.[78] From cases where the threat of harm is 'possible or worth researching' (scientific uncertainty) to cases where it is 'rigorously proven' (practically no scientific uncertainty), the principle has been applied.[79] In fact, the Court considers inadequate scientific evidence constituting scientific 'uncertainty' too.[80] Therefore, it considers scientific uncertainty as a spectrum or a sliding scale. Arguably, as long as the litigant may prove *some* level of scientific uncertainty, the standard will be met.

Therefore, as soon as the litigant can establish: (i) the presence of scientifically uncertain, (ii) justified concern(s), and/ (iii) serious or irreversible harm, the Court presumes the presence of non-negligible risk of harm. Automatically, the burden of proof shifts on the defendant. Then, the defendant must prove the absence of non-negligible risk. In other words, the defendant must prove the absence of a 'reasonable ecological or medical concern.'[81]

Indian iteration interprets the reversal of the burden of proof in a rather unique way. As noted earlier, internationally, courts have either refused to shift the burden, selectively shifted it, or set very high thresholds to trigger its shift.[82] However, the Indian iteration sets a fairly low bar to trigger the reversal of the burden of proof. These low thresholds do not require the plaintiff to provide robust scientific evidence of the risk of serious or irreversible harm. Rather, the plaintiff is only required to show a justified concern of the threat of serious or irreversible harm, and scientific uncertainty regarding it. Notably, the plaintiff is not required to show any particular level of scientific certainty, but rather some scientific uncertainty or even inadequacy of science.[83] Thus, in India's iteration of the principle, a justified concern of harm, backed by conflicting scientific reports, or even inadequacy of data, may trigger a reversal of the burden of proof.

In what ways does this iteration ease the structural barriers faced by climate litigants from vulnerable communities in the Global South? To answer this question, the following

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'legislative' in nature. In other words, the Court is laying down law, not simply interpretating it. Thus, arguably, ejusdem generis could be applied in interpreting it.

[77] In its exposition of each of the elements, the Court does not prescribe a threshold for scientific uncertainty. See generally, AP Pollution Control Board (n 9), paras 27-41.

[78] For a comprehensive list of cases and analysis, see, Gitanjali Gill, 'Precautionary principle, its interpretation and application by the Indian judiciary: 'When I use a word it means just what I choose it to mean-neither more nor less' Humpty Dumpty' (2019) 21(4) Environmental Law Review, 292 < https://doi.org/10.1177/1461452919890283>.

[79] ibid.

[80] See generally, AP Pollution Control Board (n 11) paras 27-30. While this interpretation has been critiqued by Rajamani (n 42), it may not be entirely incorrect. In that, for example, Peel 'Precaution' (n 9), notes that scientific uncertainty may emerge from inter alia, inaccurate or inadequate models, theories and methods (methodological uncertainty).

[81] AP Pollution Control Board (n 11) para 39.

[82] See above text to n x-x.

[83] See above text to n x-x.

section explains the impacts of reversing the burden of proof and cases where it has been successfully done.

5 The utility of the Indian iteration for climate litigants from vulnerable communities in the Global South

While the Indian iteration may facilitate climate litigation initiated by any litigant, it is particularly useful for climate litigants from vulnerable communities in the Global South. First, it directly eases the structural barriers faced by vulnerable communities. Second, it provides a level playing field for the parties by addressing information asymmetries. Third, enabled by the special tool of public interest litigation, this innovative iteration has been a judicial strategy to protect and futureproof underrepresented human and ecological interests.

5.1 Easing the structural barriers faced by vulnerable communities

A direct impact of reversing the burden of proof is that it eases the structural barriers faced by vulnerable communities in the Global South. First, by systematically shifting the burden of proof in all cases, the Court has relieved the plaintiff from shouldering the evidentiary burden.[84] Second, such reversal is virtually unconditional, i.e., it does not require the plaintiff to establish any high standard of threat or provide conclusive evidence of scientific uncertainty.[85] Arguably, this may ease the pressure of acquiring access to specialist scientific expertise and evidence. Concomitantly, to some extent, it may also ease the financial constraints faced by the plaintiff.

5.2 Providing a level playing field by addressing information asymmetries

Reversal of the burden of proof is deemed to bear significant merit in cases where 'asymmetries exist between the information about risk available to different parties in a dispute.'[86] Such information asymmetries are inherent in climate litigation initiated by vulnerable communities in the Global South. In part, this asymmetry is a result of the pre-existing capacity constraints, and the structural barriers faced by vulnerable communities.[87] Additionally, attribution science has disparately focused on the Global North.[88] As noted earlier, this has resulted in gaps in scientific evidence available for the Global South,[89] and particularly the specific impacts faced by vulnerable communities in the region.[90]

The need to address such information asymmetries and provide a level playing field have been the grounds for the Court to reverse the burden of proof. The Court has developed this jurisprudence in cases where underrepresented interests were at stake, i.e., interests of

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[84] See above section 2.
[85] See above section 4.
[86] Carl F Cranor, 'Asymmetric Information, the Precautionary Principle, and Burdens of Proof' in Carolyn Raffensperger and Joel A Tickner (eds), *Protecting Public Health and the Environment: Implementing the Precautionary Principle* (Washington DC: Island Press, 1999) 74.
[87] See Section 2.
[88] See Section 2.
[89] See Section 2.
[90] See Section 2.

vulnerable communities and/or the environment.[91] In such cases, the Court argues, it would be unfair to require the party seeking to preserve the environment in its prevailing state, to shoulder the evidentiary burden.[92] Rather, the party seeking to undertake a potentially harmful activity should bear the said burden.[93]

Understood in this context, arguably, the Court's entire rationale for reversing the burden of proof is to address the power and information asymmetries that exist between the parties.[94] In other words, it is to provide a level playing field to litigants from vulnerable communities.

5.3 Easing access to justice for vulnerable communities

As noted earlier, financial constraints and lack of specialist scientific expertise impediment access to justice.[95] Through its innovate jurisprudence in developing the Indian iteration of the precautionary principle, the Court has eased access to justice for vulnerable communities. To that end, by reversing the burden of proof, the Court has relived the plaintiff from need to access specific scientific expertise. To a certain extent, this eases the financial burden on the plaintiff.

Furthermore, the Court has also futureproofed vulnerable communities against information asymmetries and procedural barriers that they may face while litigating environmental or climate harm. In that the precautionary principle was developed in a public interest litigation (PIL), a tool to ease access to justice for socio-economically marginalized communities.[96] Notably, PILs have been particularly instrumental in securing environmental interests of vulnerable communities. [97] First, by relaxing the rule of *locus standi*, they allow a public-spirited individual to initiate litigation on behalf of such communities and to protect their interests.[98] Second, PILs have allowed Indian courts the flexibility to internalize and apply international environmental law principles even in the absence of legislative and executive action. The Court has used these opportunities to developed iterations that cater to protecting the underrepresented interests of vulnerable communities.[99] The successful transplant of the

[91] For example, in both Vellore Citizens and A.P. Pollution Control Board, the interest at stake was protecting water sources against potential industrial pollution. The water sources provided water to neighbouring villages and cities for domestic and other uses.
[92] AP Pollution Control Board (n 11) para 37.
[93] ibid.
[94] This conclusion is supported by the decision of the National Green Tribunal too, where the Tribunal noted the importance of reversing of burden of proof in environmental cases because it would unfair to ask the "common citizen" to provide scientific and technological information to preserve the status quo. See, *Pandurang Sitaram Chalke and Anr v State of Maharashtra*, OA No. 14/2012, judgment dated 01 October 2013, NGT (Western Zone Bench) ('Pandurang'). See also, Rajamani (n 27). Rajamani's interpretation of the Pandurang case, supports this analysis.
[95] See section 2.
[96] Gitanjali Nain Gill, 'Human Rights and the Environment in India: Access through Public Interest Litigation' (2012) 14 Environmental Law Review 200, 202 <https://doi.org/10.1350/enlr.2012.14.3.158>.
[97] Gill, 'Human Rights and the Environment in India' (n 96) 203.
[98] UNEP 2019 (n 7) 185.
[99] For a critical overview, see, Aparna Chandra, India and international law: formal dualism, functional monism' (2017) 57 Indian Journal of International Law 25-45; Lavanya Rajamani, 'International Law and the

precautionary principle into the Indian environmental jurisprudence is a case-in-point. This can be replicated in other common law jurisdictions to ease access to justice for vulnerable communities.

5.4 Examples of application of the principle and the reversal of the burden of proof

Having explained the Indian iteration of the principle, this section discusses the cases in which the judiciary has operationalized it. Notably, the principle has been applied in several environmental cases by the Supreme Court, the National Green Tribunal, and various high courts. This section discusses three cases. These have been selected balancing the following four criterion.

First, only mitigation cases have been considered because as mentioned above, the proof problem is glaring in them.[100] In these cases, the defendant's (in)action is challenged on grounds that, inter alia, it contributes to climate change, injuring or posing risk of injury to the petitioner. Thus, a link between the injury/risk of injury, climate change, and the defendant's (in)action is required to be proven.[101] Therefore, access to both impact attribution and source attribution science is required to address the proof problem in such cases.[102]

Second, either the petitioner or the court has discussed the climate-related impacts of the impugned activity, even if such discussion is at the periphery.[103] Peripheral cases have been categorized as climate litigation in pioneering literature on climate litigation in the Global South.[104] In that climate concerns in the Global South are often based in wider concerns like human rights, land-use and natural resources management. In such cases the core issues are, constitutional right, human rights, and land rights; climate arguments only appear in the periphery.[105] Over fifty nine percent of the cases in the Global South fall within this category.[106] Thus, while selecting relevant cases, peripheral litigation has been considered and used.

Third, the case should include an application of the precautionary principle and reversal of the burden of proof. Fourth, the case should concern itself with protecting the interests of vulnerable communities or entities.

Of the three cases which will be discussed in this section, two are climate cases. These are *Karnataka Industrial Area Development Board v C Kenchappa* (KIADB),[107] and *Society*

Constitutional Schema' in Sujit Choudhry et al. (eds), The Oxford Handbook of the Indian Constitution (OUP, 2016).

[100] See section 2.

[101] See section 2.

[102] See section 2.

[103] Peripheral cases are those where, 'climate issues are subsidiary to other arguments, or one of many arguments or issues raised in a dispute.'

[104] Peel and Lin (n 39)

[105] ibid.

[106] ibid.

[107] 2006 6 SCC 371 ('KIADB').

For Protection of Environment and Biodiversity v Union of India (Construction Industry case).[108] They have been either categorized as peripheral cases in existing literature,[109] or listed in climate litigation databases.[110] In both cases the court discussed the potential climate impacts of the impugned activity.[111]

The third case being discussed here is an environmental litigation, and only makes a passing reference to climate change. Yet, it is being discussed because it consists of an explicit and exemplary application of the precautionary principle and reversal of burden of proof.[112] Further, it also reflects the latest jurisprudence on the principle. This is the case of *T.N. Godavarman v Union of India* ('Godavarman').[113]

5.4.1 Climate cases using the precautionary principle

In the Construction Industry case, the issue before the National Green Tribunal was the 2016 Draft Environmental Impact Assessment Notification.[114] The Notification exempted building and construction projects from the requirement of procuring an environmental clearance.[115] In other words, it allowed such projects to be implemented without a comprehensive EIA. The applicant argued that this amendment ignored the precautionary principle.[116] Further, they argued that unregulated construction activity would cause irreversible environmental damage, and have serious repercussions for climate change.[117] In its decision, the Tribunal discussed the climate impacts of rampant construction activity. It noted that, inter alia, construction activity consumes enormous resources and has a significant energy footprint.[118] Further, it contributes 22 percent to the country's annual GHG emissions.[119] Per the Tribunal, any provision allowing unregulated construction activity would violate India's international commitments under the Rio Declaration 1992, and the Paris Agreement of 2015.[120]

Applying the precautionary principle, the Tribunal established scientific uncertainty and reversed the burden of proof, though not in as clear terms. With respect to scientific uncertainty, it noted that allowing projects without impact assessments would be in derogation

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[108] Original Application No. 677 of 2016 (M.A. No. 148/2017) ('Construction Industry case').
[109] Peel and Lin (n 39). It must be noted that in the Global South, the lines between climate cases and environmental cases may be blurry. As Lin and Peel note, climate concerns are often based in wider concerns like human rights, land-use and natural resources management. Therefore, here, climate change issues are raised at the periphery in cases where the core issues are, for e.g., constitutional right, human rights, and land rights. Regardless, such cases have also been categorized as climate cases by Peel and Lin.
[110] Sabin Centre for Climate Change Law, 'Global Climate Litigation Database' <https://climatecasechart.com/non-us-jurisdiction/india/> access 13 May 2024.
[111] See n.
[112] Kanika Jamwal and Aastha Kapoor, 'Resolving the conundrum on the precautionary principle' (*Mongabay India*, 28 July 2022) accessed 13 May 2024.
[113] 2022 LiveLaw SC 467 <https://www.livelaw.in/pdf_upload/467-tn-godavarman-thirumulpad-v-union-of-india-9-may-2022-417221.pdf> ('TN Godavarman').
[114] Construction Industry case (n 108) paras 1-4.
[115] ibid.
[116] ibid, para 4.
[117] ibid, paras 2 and 5.
[118] ibid, para 18.
[119] ibid.
[120] ibid, para 31.

of the precautionary principle.[121] Arguably, its underlying rationale was that the absence of a comprehensive impact assessment itself indicates a state of scientific uncertainty.[122] In other words, until detailed studies are not conducted, impacts of a project on ecologically and environmentally vulnerable areas are invariably unknown. Thus, they are 'uncertain'.

The Tribunal also reversed the burden of proof. It highlighted that the defendant had not based its decision any scientific studies.[123] Per the Tribunal, relaxation of the EIA requirement was contingent on providing scientific proof that the said activity would improve environmental quality.[124] Since the defendant had failed to consider and/or present any such data, the impugned amendment could not be allowed.[125] Notably, the Tribunal did not require the applicant to prove the adverse impacts of unregulated construction on climate and ecology. Rather, it placed the burden of proof on the defendant to prove that the activity was beneficial for all facets of the environment. Since the defendant was unable to do so, the Tribunal quashed the impugned provisions of the Notification. Further, importantly, the Tribunal's understanding and framing of vulnerability in this case includes more-than-human environment. While considering the impacts of the impugned activity it takes into account both the ecology, and the human environment.[126]

In the *KIADB* case, the Court was faced with the question of allowing the conversion of agricultural land for industrial use, and for the establishment of industries. The impugned lands were used for grazing cattle, agriculture, and residential purposes by rural communities in the area. The Karnataka Industrial Areas Development Board (KIADB) acquired these lands and sought to convert them for industrial use.

Agriculturalists from the affected villages petitioned in the High Court of Karnataka, arguing that any such conversion would prevent them from grazing their cattle and that the establishment of industries would adversely affect the environment and ecology of the region. The High Court quashed the allotment orders. Against this decision, KIADB appealed in the Supreme Court. In the Supreme Court, the respondent-agriculturalists argued that conversion of land without prior impact assessment could have adverse impacts on the environment and ecology.[127] Though not *per se*, arguably, the respondent-agriculturalists highlighted a state of scientific uncertainty regarding the impacts of the acquisition.

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[121] ibid para 15.
[122] See, Kanika Jamwal and Charu Sharma, 'The curious case of "violation": deconstructing the procedure under the Draft Environmental Impact Assessment Notification 2020', 6(1) Indian Law Review 96, 105 < https://doi.org/10.1080/24730580.2021.1992576>. The authors explain how absence of a comprehensive impact assessment may constitute a situation of 'scientific uncertainty'. See also, Jacqueline Peel, Peel notes that uncertainty may arise from, inter alia, 'gaps in knowledge (epistemic uncertainty), inaccurate or inadequate models, theories and methods (methodological uncertainty), or vagueness, context dependence, ambiguity, indeterminacy of theoretical terms, and under-specificity in natural and scientific language (linguistic uncertainty).' Arguably, therefore, absence of comprehensive EIA may result in epistemic uncertainty and methodological uncertainty both.
[123] Construction Industry case (n 108) para 18.
[124] ibid.
[125] ibid.
[126] ibid para 15.
[127] KIADB (n 107) paras 27-28.

In its decision, the Supreme Court disallowed any further land acquisitions and conversion without scientifically ascertaining the ecological and climate impacts of the same. Notably, it placed this burden of proof on the appellant Board. It held that prior to acquiring and converting any land, the Board must carry out the relevant impact assessments. In reaching this decision, the Court relied on, inter alia, the precautionary principle.[128] It explained the relationship between rampant development and industrialization and global warming.[129] Thereafter, it extensively discussed the adverse impacts of climate change. With this background, it expounded the key elements of the principle, i.e., anticipatory regulatory action in the face of scientific uncertainty, and reversing the onus of proof.

Like in the Construction Industry case, the Court did not establish scientific uncertainty in clear terms. However, it considered the absence of comprehensive impact assessment equivalent to scientific uncertainty.[130] This becomes evident from the Court's extensive discussion regarding the adverse impacts of climate change, followed by a discussion on the precautionary principle.[131] Arguably, per the Court, given the catastrophic effects of climate change, any activity that could cause it must not be allowed unless proved otherwise. In other words, scientific uncertainty regarding the environmental and ecological impacts of an activity must be alleviated before it is allowed. In this context, then, the Court goes on to mandate prior impact assessments and shifts the burden of proof on to the appellant-Board.

Therefore, in both the foregoing cases, as soon as the petitioner established a justified concern and prevailing scientific uncertainty, the courts applied the precautionary principle. In doing so, they presumed a threat of serious or irreversible harm and placed a ban on the impugned activity. Reversing the burden of proof, it required that the defendant must procure scientific evidence which can alleviate the scientific uncertainty and refute the presumption of harm.

5.4.2 Godavarman: Supreme Court's recent jurisprudence on the precautionary principle

As mentioned earlier, in both the climate cases discussed above, while the principle was applied and the burden of proof was reversed, this was not done explicitly. A notable example of the application of the precautionary principle is the *Godavarman* case. The case also reflects the Supreme Court's most recent jurisprudence on the precautionary principle.

In *Godavarman*, one of the petitioners, the Goa Foundation, is a voluntary organization of environmentalists in the state of Goa. In this case, it challenged the approval granted by the Standing Committee of National Board for Wildlife (NBWL) for doubling of a railway line in Goa. The defendant project proponent was Rail Vikas Nigam Limited (RVNL). The proposed railway line passed through protected forests, non-protected forests, and a major tiger

[128] KIADB (n 107) paras 77-79 and 99.
[129] KIADB (n 107) paras 41-42.
[130] This falls within the realm of epistemic uncertainty. See, Peel, 'Precaution' (n 9).
[131] KIADB (n 107) paras 41-65.

corridor.[132] The petitioners argued that doubling the line would lead to severe environmental degradation. With respect to its climate impact, they argued that the project would cause massive deforestation, which would have an adverse impact on the climate and temperature of the protected areas.[133]

Goa Foundations' primary claim was that the approval was granted without a comprehensive impact assessment of the project. This claim was supplemented by references to a preliminary report,[134] that underlined the aforementioned adverse impacts. Furthermore, the report also casted a shadow of doubt on the impact assessment that had been carried out by the project proponent.[135] For example, the petitioners contested the proponent's assessments on the basis of which project had been proposed. Through their own preliminary report, they argued that this assessment was unreasonable, unsound, and not based on facts.[136] Drawing on this, they called for more detailed impact assessments to be undertaken.[137]

Accordingly, it seems that the petitioners' primary strategy was to establish a state of scientific uncertainty regarding the impacts of the project. To that end, they underlined the absence of a comprehensive impact assessment and casted a shadow of doubt on the existing assessments. Additionally, they established the likelihood/risk of harm. The absence of a comprehensive impact assessment itself indicates a state of scientific uncertainty.[138] In other words, until detailed studies are not conducted, the impacts will invariably be unknown, and thus 'uncertain'. To exacerbate this uncertainty, they casted doubt upon the existing impact studies that were being relied upon by the defendant RVNL. Therefore, the petitioner met both the pre-conditions for application of the precautionary principle. That is, establishing an identifiable risk, which is scientifically uncertain.

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[132] Godavarman (n 113) para 21.
[133] Godavarman (n 113) para 14.
[134] ibid paras 9, 10, 11(vii). These references were made by the second petitioner, Central Empowered Committee (CEC), a panel constituted by the Supreme Court of India to monitor compliance with Court's environmental law orders and place non-compliance cases before it. In this case, the CEC outlined the potential or likely threat of the project on the environment. Its report was preliminary in nature in that it referred to the need for detailed impact assessment studies to be carried out. One notes here that the CEC is outlining preliminary and 'likely' impacts simultaneously calling for independent and detailed impact assessments.
[135] See, for e.g., Godavarman (n 113) paras 9, 14.
[136] See for e.g., ibid paras, 11(iv) and 11(vii).
[137] ibid para 7 for contentions by Goa Foundation. See also, ibid para 10, CEC's report was based in NTCA's report which itself called for more detailed impact assessment to be undertaken.
[138] See, Kanika Jamwal and Charu Sharma, 'The curious case of "violation": deconstructing the procedure under the Draft Environmental Impact Assessment Notification 2020', 6(1) Indian Law Review 96, 105 < https://doi.org/10.1080/24730580.2021.1992576>. The authors explain how absence of a comprehensive impact assessment may constitute a situation of 'scientific uncertainty'. See also, Jacqueline Peel, Peel notes that uncertainty may arise from, inter alia, 'gaps in knowledge (epistemic uncertainty), inaccurate or inadequate models, theories and methods (methodological uncertainty), or vagueness, context dependence, ambiguity, indeterminacy of theoretical terms, and under-specificity in natural and scientific language (linguistic uncertainty).' Arguably, therefore, absence of comprehensive EIA may result in epistemic uncertainty and methodological uncertainty both.

Noting the potentially adverse impacts of the project on, inter alia, climate and temperature,[139] in its decision, the Supreme Court relied on the precautionary principle.[140] It took note of the scientific uncertainty regarding the harm, and presumed threat of harm, and reversed the burden of proof.

With respect to scientific uncertainty, through various instances, the Court took note of the absence of comprehensive assessments, and conflicting evidence. It noted that the actual loss of wildlife habitat was not accounted for.[141] Further, it took note of the conflicting reports regarding the practicality of the proposed mitigation measures proposed.[142] It also called for an independent assessment of the need for the project, given the contested nature of the assessments presented by the proponent.[143] Lastly, regarding the impacts of the project, the Court held that a detailed assessment and analysis of the impacts of the project was required.[144] In light of this scientific uncertainty, it presumed a threat of harm and suspended the project until the defendant submitted fresh, detailed impact assessment studies. Thus, it reversed the burden of proof, requiring RVNL to alleviate the scientific uncertainty regarding the project.[145]

Indian judiciary's jurisprudence on the precautionary principle stands out because it unabashedly reverses the burden of proof in all cases of scientific uncertainty. Additionally, the pre-conditions that need to be met to trigger the reversal have a fairly low threshold. As the foregoing examples illustrate, there is no fixed (or high) threshold of 'scientific uncertainty' that must be proved. Lack of comprehensive impact assessments or providing conflicting reports is enough to prove scientific uncertainty and trigger the reversal of the burden of proof.

However, as the next section discusses, the principle's application has been far from consistent, potentially impeding its utility in climate litigation.

6 Limitations of the argument

While the Indian judiciary has been able to sustain its interpretation of the principle, reversal of the burden of proof and the conditions precedent to it, its application has been rather inconsistent. In separate studies, Rajamani and Gill have argued that the Court has applied the precautionary principle even where there is no scientific uncertainty or where clear evidence of harm is available.[146] In such cases, instead of reversing the burden of proof, the Court has engaged in a cost-benefit analysis based on the available scientific evidence.[147] Effectively, the burden of proof is shared by the parties, as opposed to it being reversed.[148] Normatively, by

[139] Godavarman (n 113) para 22.
[140] ibid para 19.
[141] ibid para 21.
[142] ibid.
[143] ibid.
[144] ibid para 22.
[145] ibid para 23.
[146] See, Rajamani (n 39); Gill's quantitative analysis in Gill, 'Precautionary principle'(n 96).
[147] Rajamani (n 39).
[148] ibid. Though Rajamani does not per se argue that the burden of proof is shared, she highlights that the Court engages in a cost-benefit analysis on the basis of available scientific evidence. Here, she highlights that the defendant is only expected to weigh in. Thus, arguably, both parties shoulder the evidentiary burden, and not just the defendant.

allowing the precautionary principle to operate even in cases of scientific certainty, it has conflated it with the principles of prevention and sustainable development.[149] Overall, this application is counterintuitive, and dilutes the principle.

Further, this poses a challenge when providing strong scientific evidence becomes a precondition to the application of the precautionary principle itself. In other words, when the very application of the principle is subjected to providing robust scientific evidence of the threat of harm. In such cases, the burden of proof is not reversed, rather it is shared by the parties. Therefore, it defeats the value of the principle as a tool for climate litigants from vulnerable communities. In that, by requiring them to provide robust scientific evidence and shoulder the evidentiary burden, it does not ease the structural challenges mentioned above.

The possibility of this precondition being introduced in the precautionary principle is not hypothetical. Indeed, the National Green Tribunal has introduced the need for robust scientific evidence as a prerequisite to the application of the precautionary principle.[150]

However, in so far as the Supreme Court is concerned, no such pre-condition has been introduced. Further, interpretatively, the Court has stayed firm on its commitment to the application of the principle in scientific uncertainty and reversal of the burden of proof. In fact, as noted above, in the most recent jurisprudence on this point, i.e., *Godavarman*, the Court has reinforced its long-standing position on the principle. That is, any justified concern of harm, even if scientifically uncertain, will trigger the application of the principle. In such cases, the burden of proof is reversed, the defendant must prove that the activity is environmentally benign. As far as this interpretation is applied in its true spirit, the principle will serve as a useful strategy for vulnerable communities litigating climate harms in the Global South.

7 Conclusion

As a strategy for climate litigation, the precautionary principle has been widely discussed in this chapter. Increasingly, with advancements in attribution science, its value has been debated. However, for vulnerable communities in the Global South, not only is attribution science scant, but access to it is itself precarious. In that, accessibility hinges on both the presence of specialist scientific knowledge and financial resources. Litigants in the Global South operate with limited availability of these. Often, such challenges impede them from successfully initiating and pursuing climate litigation.

In such cases where scientific evidence is unavailable, inconclusive, or inaccessible, the Indian iteration of the precautionary principle is a useful litigation strategy. Unlike its international counterparts, this iteration unequivocally raises a presumption of harm and reverses the burden of proof. Such reversal hinges only on establishing a *prima facie* case, a requirement that is fulfilled by meeting a fairly low standard of proof. Thus, this iteration

[149] ibid.

[150] See, for e.g., *M/s Sterlite Industries (India) Ltd Thoothukudi v The Chairman Tamil Nadu Pollution Control Board, Chennai*, Appeal No. 22/2013 (SZ) and Appeal No. 23/2013 (SZ), judgment dated 8 August 2013, NGT (Principal Bench).

exempts the plaintiff from shouldering or discharging any evidentiary burden. In doing so, it eases the structural barriers, becoming a meritorious litigation strategy for climate litigants from vulnerable communities located across the Global South.

Thus, given the vitality of this iteration, it is crucial that its inconsistent application is regularised by the Indian Supreme Court. Subordinate judiciary's practice of conditioning its application on robust scientific evidence should be explicitly set aside at the next opportunity.