

## The National Green Tribunal, India: Decision- Making, Scientific Expertise and Uncertainty\*

### Introduction

This paper traces and evaluates how, by an Act of the Indian Parliament, a symbiotic relationship has been created between legal and scientific experts operating as joint decision-makers and adjudicators of environmental conflicts within the context of the National Green Tribunal (NGT) India. The robust application of environmental principles, particularly a 'strong precautionary principle', has promoted a response that tackles serious threats to human health or to the environment. The NGT decisions, through expansive rationale and innovative judgments, extend beyond the 'courtroom door' thereby resulting in external social and economic consequences.

The involvement of experts and expert knowledge in policy and decision-making commands a place in academic discourse.<sup>1</sup> The importance of experts is recognised because,

[e]xperts define the regime of truth; they tell us what the world looks like, identify and quantify relevant variables, provide statistical measurements and risk analyses, and solve the equations that indicate the path towards increasing the aggregate level of well-being . . . [experts] define the system'.<sup>2</sup>

Consequently, scientific expertise may provide appropriate solutions to technical or complicated environmental problems. Nevertheless, the relationship between science and politics is problematic and subject to wide-spread debate.<sup>3</sup> This paper does not address the challenging issues within the sociology

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<sup>1</sup> Buchanan, A and Keohane, R O (2003) 'The legitimacy of global governance institutions' 20(4) *Ethics and International Affairs* 405–438; Steffek, J (2003) 'The legitimation of international environmental governance' 9(2) *European Journal of International Relations* 249–276; Kronsell, A and Backstrand, K (2010) 'Rationalities and forms of governance: a frame-work for analysing the legitimacy of new modes of governance' in K Backstrand, J Khan, A Kronsell and E Lovbrand (eds), *Environmental Politics and Deliberative Democracy* (Edward Elgar) 28–43; Jasanoff, S (2011) 'Quality control and peer review in advisory science' in J Lentsch and P Weingart (eds), *The Politics of Scientific Advice* (CUP) 19–35

<sup>2</sup> Lawrence, J (2014) 'The structural logic of expert participation in WTO decision-making processes' in M Ambrus, K Arts, E Hey and H Raulus (eds), *The Role of 'Experts' in International and European Decision-Making Processes* (CUP) 173–193, 186

<sup>3</sup> Limoges, C (1993) 'Expert knowledge and decision-making in controversy contexts' 2(4) *Public Understanding in Science* 417–426; Oreskes, N and Conway, E (2010) *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming* (Bloomsbury); Sprujit, P, Knol, A B, Vasileiadou, E, Devilee, J, Leuret, E and Petersen, A C (2014) 'Roles of scientists as policy advisers on complex issues: a literature review' 40 *Environmental Science and Policy* 16–25

of knowledge that include the multiple roles of the expert vis-à-vis policy creation and its promotion; the relationship of science and policy has generated a body of lively and disparate opinion and literature that is beyond the scope of this paper. Nor does the paper consider the relationship or functionality of expert witnesses introduced to the courtroom to promote the cases of litigants. The author accepts that there may be several, alternative or competing scientifically-based solutions to a problem, rather than a solitary solution: 'the solution'. These solutions may be advanced to the court by retained expert witnesses or scientifically-based evidence may be generated within the court by 'in-house' scientific experts. This paper considers the NGT's efforts to reach decisions by centralising scientific experts, as full court members, within the decision-making process thereby promoting a collective, symbiotic, interdisciplinary bench that seeks to harmonise legal norms with scientific knowledge

### **The National Green Tribunal: jurisdiction and powers**

The NGT India is a creation of a statute; its jurisdiction, powers and procedures are construed and applied according to the language of the National Green Tribunal Act 2010 (NGT Act). The NGT is empowered to decide cases relating to environmental protection and the conservation of forests and other natural resources (including the enforcement of any legal right relating to the environment) and to give relief and compensation for damages to persons and property. The NGT has wide original, appellate and special jurisdiction in relation to environmental matters. The original jurisdiction<sup>4</sup> is exercised in civil cases in relation to a substantial question relating to the environment<sup>5</sup>. This includes the enforcement of any legal right relating to the environment and such questions that arise out of the implementation of the enactments specified in Schedule I to the Act.<sup>6</sup> The subject matter of an original application should therefore be a civil case and relate to a substantial question concerning the environment. The appellate jurisdiction is controlled under section 16 of the NGT Act. The Tribunal is the appellate authority competent to decide questions of law and fact against orders and decisions passed by authorities under the enactments specified in Schedule I. The power is of a wide and overriding nature and may be exercised *ex debito justitiae* (that is, in the interests of justice). An aggrieved person has the right to approach the Tribunal under its original or appellate jurisdiction, and it is important to note that the 'aggrieved person' in environmental matters has been given a liberal and flexible interpretation. In environmental matters, the damage is not necessarily confined to the local area as the effects of environmental degradation might have far-reaching consequences going beyond the immediate locality. Therefore, an aggrieved person need not be a resident of the local area: any person – whether a resident of that area or not and whether personally, directly or otherwise aggrieved – may approach the

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<sup>4</sup> National Green Tribunal Act 2010 (India) ('NGT Act') s 14

<sup>5</sup> NGT Act s 2(m) classifies 'substantial question relating to environment' under two heads: first, where there is a direct violation of a statutory duty or environmental obligation which is likely to affect the community; and, second, where the environmental consequences relate to a specific activity or a point of source

<sup>6</sup> The enactments in NGT Act sch 1 include the Water (Prevention and Control of Pollution) Act 1974; the Water (Prevention and Control of Pollution) Cess Act 1977; the Forests (Conservation) Act 1980; the Air (Prevention and Control of Pollution) Act 1981; the Environment (Protection) Act 1986; the Public Liability Insurance Act 1981; and the Biological Diversity Act 2002

Tribunal.<sup>7</sup> Section 15 of the NGT Act provides the Tribunal with special jurisdiction to order relief and compensation to victims of pollution and other environmental damage arising under the enactments specified in Schedule I, for restitution of damaged property and for restitution of the environment in such areas as the Tribunal may think fit. Thus, the dimensions and areas in which the NGT may exercise jurisdiction are broadly based.

### **The National Green Tribunal and Scientific Expertise**

#### *Epistemic community*

A unique feature of the NGT's adjudicative process involves judges working alongside scientific experts with environmental knowledge as joint decision-makers of equal standing. The benefit of this multi-faceted, multi-skilled body produces a coherent and effective institutional mechanism to apply complex laws and principles in a uniform and consistent manner while simultaneously reshaping the approach to solve the environmental problem at its source rather than being limited to pre-determined remedies.<sup>8</sup> The combination of legal, scientific and technical expertise has a dynamic impact on the content and development of environmental policies and law.

Experts are 'central', not 'marginal', to the NGT's normative structure. For the current purpose, the terms 'expert' and 'expertise' do not include judicial members, but refer to the technical members exercising specialised scientific knowledge, including environmental sciences, environmental studies, environmental engineering, technology, ecology, forestry, plant sciences, soil sciences, zoology and related categories. Experienced scientists, practising ecologists and natural resource managers are considered experts.<sup>9</sup> Thus, scientific expertise and its input into decision-making are vital to the character, decisions and working practices of the NGT.<sup>10</sup>

A scientific consensus that applies regulations and promotes scientific input focusing upon environmental sustainability and human welfare creates the 'epistemic community'. The 'community' is comprised of neutral scientific experts as active contributors within a decision-making legal forum: the NGT. The engagement of the NGT's scientific experts in the decision-making process is akin to Peter Haas<sup>10</sup> theoretical concept of 'epistemic communities' operating within an environmental regime. Peter

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<sup>7</sup> *Amit Maru v MoEF* Judgment 1 October 2014, *Goa Foundation v Union of India* Judgment 18 July 2013, *Vimal Bhai v Ministry of Environment and Forests* Judgment 14 December 2011 and *Betty C Alvares v State of Goa* Judgment 14 February 2014

<sup>8</sup> Gill, G N (2016) 'Environmental justice in India: The National Green Tribunal and expert members' 5(1) *Transnational Environmental Law* 175–205

<sup>9</sup> Drescher, M, Perera, A H, Johnson, C J, Buse, L J, Drew, C A and Burgman, M A (2013) 'Towards rigorous use of expert knowledge in ecological research' 4(7) *ECOSPHERE* 1–26

<sup>10</sup> Haas, P M (2014) 'Ideas, experts and governance' in M Ambrus, K Arts, E Hey and H Raulus (eds), *The Role of 'Experts' in International and European Decision-Making Processes* (CUP) 19–43; Haas, P M (2007) 'Epistemic

Haas describes distinctive features of 'epistemic communities' as:

[n]etworks . . . often transnational – of knowledge-based experts with an authoritative claim to policy relevant knowledge within their domain of expertise. Their members share knowledge about the causation of . . . phenomena ... and a common set of normative beliefs about what actions will benefit human welfare in such a domain. Members are experts with professional training who enjoy social authority based on their reputation for impartial expertise.<sup>11</sup>

The 'epistemic qualities' of the NGT experts, as competent individuals recognised as national and international experts in different environmental areas, promotes independence from any party line, organisational bias or corporate association. The NGT benches include scientists with expertise in environmental sciences, environmental engineering, environmental governance, environmental safeguards, industrial and urban environmental management, urban environmental pollution, environmental law and policy, and forestry. The status of NGT experts as 'nationally and internationally recognised specialists' can be judged by external indicators, including previous appointments to high-level committees, representing India in environmental issues, drafting and negotiating multilateral environmental agreements, peer-reviewed publications and recognition through professional awards.<sup>12</sup> The NGT constitutes an interdisciplinary decision-making body with the expert members working alongside legally qualified judges.

#### *Use of Scientific Expertise*

The NGT experts apply a scientific problem-solving approach to the decision-making process that subsequently filters through to improve environmental management.<sup>13</sup> The use of scientific expertise manifests in three ways-

*Compliance assessment within statutory environmental parameters:* this includes cases where procedural technicalities have been ignored, short-circuited or mis-stated to circumvent the law for extra-legal economic benefit. The NGT scientific experts play a crucial role in the application of cumulative environmental impact assessments (CEIAs) to strike the balance between developmental interest and environmental protection. The ability to incorporate cumulative effects analysis into the development of alternatives for an EIA can minimise negative cumulative effects, promote resource sustainability and make room for future development. In India, there have been serious failures regarding CEIA studies rendering this crucial process meaningless. This resulted in the violation of the September 2006 EIA Notification, wherein Form 1 section asks for a CEIA. On occasions, the Ministry of Environment and Forests (MoEF) Environmental Appraisal Committee has taken a 'casual approach' and

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communities' in D Bodansky, J Bruneel and E Hey (eds), *Oxford Handbook of International Environmental Law* (OUP) 791–806

<sup>11</sup> Haas, P M (2016) *Epistemic Communities, Constructivism, and International Environmental Policy* (Routledge) para 2.1

<sup>12</sup> [www.greentribunal.gov.in](http://www.greentribunal.gov.in)

<sup>13</sup> Gill, G N (2017), *Environmental Justice in India: The National Green Tribunal* (Routledge, UK)

granted EC for projects without performing due diligence.<sup>14</sup> For example, in *Prafulla Samantray v Union of India*<sup>15</sup> (the POSCO case) the issue before the NGT was opposition to the proposed POSCO project, involving the construction of an integrated steel plant with a service seaport at Paradip in the Jagatsinhpur district of the state of Orissa. The government of Orissa agreed to facilitate the project and assist the POSCO multinational steel company, based in South Korea, to obtain a no objection certificate and environmental clearance in the minimum time. The POSCO port was to be located at the mouth of an estuary, one of the most dynamic and fragile coastal ecosystems in the State. The construction of the proposed plant and port threatened the area's unique biodiversity and anticipated the dislocation and displacement of the long-standing forest-dwelling communities. The NGT allowed the matter in favour of the petitioners and observed:

We have kept in mind the need for industrial development, employment opportunities created by such projects that involve huge foreign investment, that any development should be within the parameters of environmental and ecological concerns and satisfying the principles of sustainable development and precautionary measures. An examination of the entire scheme revealed that a project of this magnitude particularly in partnership with a foreign country has been dealt with casually, without there being any comprehensive scientific data regarding the possible environmental impacts. No meticulous scientific study was made on every aspect of the matter leaving lingering and threatening environmental and ecological doubts unanswered.<sup>16</sup>

Accordingly, the NGT suspended the approval granted to POSCO and directed the MoEF to conduct a fresh review. Factors were to include the siting of the project, present pollution levels, impact on surrounding wetlands and mangroves and their biodiversity, risk assessment with respect to the proposed port project, impact of source of water requirements under competing scenarios, and evaluation of the zero-discharge proposal. The Tribunal required a comprehensive and integrated EIA based on at least one full year of baseline data, especially considering the magnitude of the project and its likely impact on various environmental attributes in the ecologically sensitive area. The initial clearance was set aside as 'arbitrary and illegal' and 'vitiating in the eyes of law'.<sup>17</sup>

Policy creation: this innovative NGT development moves traditional, single issue, legal dispute 'adjudication' between disputing parties beyond the 'courtroom door' in its implicit and sometimes explicit creation of scientifically justified policy that seeks to ensure minimal damage to the environment and protect society's wider interests. The scientific experts apply constructive interpretation to expand the scope of rules and regulations if the activity is injurious to public health and environment. Such an interpretation serves the public interest in contrast to the private or individual interest. For example, in

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<sup>14</sup> *T Muruganandan v MoEF* (Judgment 11 November 2014); *Samata v Union of India* (Judgment 13 December 2013)

<sup>15</sup> Judgment 30 March 2012

<sup>16</sup> *Prafulla Samantray v Union of India*, *ibid*, para 7

<sup>17</sup> *Prafulla Samantray v Union of India*, *ibid*, para 6.9; also see *Krishni Vigyan Arogya Sanstha v MoEF* (Judgment 20 September 2011)

*Asim Sarode v. Maharashtra Pollution Control Board*<sup>18</sup> the NGT identified the absence of notified standards for used tyre disposal. Open tyre burning is toxic and mutagenic and emissions include pollutants such as particulates, carbon monoxide, sulphur oxides, oxides of nitrogen and volatile organic compounds. Depending on the length and degree of exposure, the adverse health impacts include irritation of the skin, eyes, and mucous membranes, respiratory effects, central nervous system depression, and cancer. Stock-piled used tyres can also be a health hazard as they become breeding grounds for diseases and can even catch fire. Accordingly, the NGT directed the regulatory agencies to urgently develop regulations dealing systematically with the issue based on the 'life cycle approach', considering the pollution potential, data on tyre generation, technology options, techno-economic viability and the social implications based on the principles of sustainable development and the precautionary principle.

Again, in *Haat Supreme Wastech Limited v State of Haryana*<sup>19</sup> the NGT expanded the scope of rules relating to bio-medical waste treatment plants. The Bio-Medical Waste (Management and Handling) Rules 1998 are silent about whether the establishment and operation of a treatment plant requires environmental clearance. Bio-medical waste by its very nature is hazardous. A medical waste incinerator may release into the air a wide variety of pollutants including dioxins, furans, metals (including lead, mercury, cadmium), particulate matter, acid gases, etc. These have serious adverse consequences for safety, public health and the environment. The Tribunal directed that it is mandatory to obtain environmental clearance for the treatment plants. This requirement, when properly carried out, would help to ensure an appropriate analysis of the suitability of the location and its surroundings, the impact on public health, and a more stringent observation of parameters and standards by the project proponent.

*Evolving challenges:* India's response to the cross-sectoral nature of complex environment issues, incorporating economic development policies, is an on-going challenge. Unsustainable use of natural resources not only undermines the resilience of ecosystems, it also has both direct and indirect implications for health and living standards. Pre-planning for environmental issues through policy interventions and financial commitments at the project-planning stage of development projects is an important way to minimise adverse environmental impacts. In *Narmada Khand Swabhiman Sewa v Madhya Pradesh*<sup>20</sup> the experts suggested the introduction of policy change to integrate aspects of biodiversity protection and commercial activities in the Bio-sphere Reserves (BRs), critically assessing sustainability, accompanied by a set of related quantitative, qualitative or descriptive attributes by preparing a landscape plan based on the principle of precaution and sustainable development. Bio-sphere reserve is a UNESCO international designation for representative parts of natural and cultural landscapes extending over large areas of terrestrial or coastal/marine ecosystems or a combination thereof. BRs are not declared or notified under any Ministry of Environment and Forest law and thus no legal issues are involved. In this case, an application was led by a social-activist organisation against mining activities in the sensitive Achanakmar-Amarkantak BR. The organisation contended that mining

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<sup>18</sup> Judgment 6 September 2014

<sup>19</sup> Judgment 28 November 2013

<sup>20</sup> Judgment 1 October 2014

would cause irreparable damage to the ecology, flora and fauna, besides polluting the river Narmada that originates there. The NGT observed that mining and other related industries negatively impact, directly and indirectly, on biodiversity and communities, though they can make a significant contribution to sustainable development when environmental, social and corporate governance issues are effectively managed. Preparation of a detailed landscape plan was required, followed by a detailed EIA study to ensure ecological integrity is maintained.

The NGT's scientific experts and the use of their knowledge within a judicially controlled forum offers an internalised, accountability-focused approach whereby a diverse set of actors, such as governmental and local authorities, companies and multinational corporations, are restrained from compromising human welfare and the ecology.

### *Scientific Expertise and Uncertainty*

The NGT experts are mandated to participate in the passing of orders, decisions and awards in conformity with sustainable development, and the precautionary and polluter pays principles.<sup>21</sup> The three principles underpin India's environmental jurisprudence, yet each recognised principle carries with it the possibility of challenges and differing interpretation. In terms of implementation, the precautionary principle is preferred over the polluter pays principle. The polluter pays principle is difficult and complex mainly due to the problem of identification of the polluters and apportioning their responsibilities. Further, the monetary compensation may not fully make up for ecological loss or loss of resources such as ground water, top soil, biodiversity and therefore, in reality to some degree the polluter never pays the real cost of the pollution, even if some restitution or compensation is possible.<sup>22</sup>

Since its initial formulation, the concept of precaution has faced the challenge of establishing a consensual interpretation of core meaning and the means for predictable and effective implementation.<sup>23</sup> Principle 15 of the Rio Declaration and the Wingspread Statement<sup>24</sup> are usually considered as standard examples of the principle but with some differences. For instance, Principle 15 provides for action to regulate risks of serious and irreversible damage under conditions of scientific uncertainty (weak version characterised by high epistemic threshold of evidence and preference to risk management) whereas the Wingspread Statement extends the scope of the principle to threats of harm to human health or the environment, and removes the qualifier of severity of harm being considered (strong version with low epistemic threshold of evidence and tend towards risk prevention).<sup>25</sup> Another

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<sup>21</sup> NGT Act, s 20; *M.P. Patil v. Union of India* Judgment 13 March 2014

<sup>22</sup> See above Gill n. 13

<sup>23</sup> Bodansky, D 'Scientific uncertainty and the precautionary principle' 33(7) *Environment* 4–44; Dovers, Stephen R and Handmer, John W (1999) 'Ignorance, sustainability, and the precautionary principle: towards an analytical framework' in R Harding and E Fisher (eds), *Perspectives on the Precautionary Principle* (Federation Press); Fisher, E (2002) 'Precaution, precaution everywhere: developing a "common understanding" of the precautionary principle in the European Community' 9(1) *Maastricht Journal of European and Comparative Law* 7

<sup>24</sup> <http://sehn.org/wingspread-conference-on-the-precautionary-principle/>

<sup>25</sup> Garnett, K and Parsons, D J (2016), 'Multi-case review of the application of precautionary principle in European

difference is about the legal status of the principle- Rio Declaration employs 'precautionary approach' whereas the Wingspread statement mentions 'precautionary principle.'<sup>26</sup> Though the precautionary principle's international legal status is an open question, at the domestic level national and cultural differences influence its meaning, interpretation and usage. Factors like 'attitudes to risk management, the role of science and scientists in decision-making processes, openness of decision-making processes, nation's economy including level of "development" and nature of "natural environment" affect the application of the precautionary principle.'<sup>27</sup>

In the Indian context, the principle involves three conditions<sup>28</sup>:

1. state government and statutory authorities must anticipate, prevent and attack the causes of environmental degradation;
2. 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;
3. the 'onus of proof' is on the actor or developer/industrialist to show the actions are environmentally benign.

The precautionary principle acts as an environmental safeguard to achieve sustainable development. The NGT declared the precautionary principle an integral part of national environmental law:

The applicability of [the] precautionary principle is a statutory command to the Tribunal while deciding or settling disputes arising out of the substantial questions relating to environment. Thus, any violation or even an apprehended violation of this principle would be actionable by any person before the Tribunal. Inaction in the facts and circumstances of a given case could itself be a violation of the precautionary principle, and therefore bring it within the ambit of jurisdiction of the Tribunal, as defined under the NGT Act.<sup>29</sup>

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Union law and case law' *Risk Analysis* 1-15; Sandin P. (1999), 'Dimensions of the precautionary principle' *Human and Ecological Risk Assessment; An International Journal* 5(5) 889-907; EC. Communication from the Commission on the Precautionary Principle (2000) Brussels: Commission of the European Communities; SEHN (1998), Wingspread Consensus Statement on the Precautionary Principle; Sachs, N (2011), 'Rescuing the strong precautionary principle from its critics' *University of Illinois Law Review* 1285-1338

<sup>26</sup> Ahteensuu, M. (2007) "Rationale for taking precautions: normative choices and commitments in the implementation of the precautionary principle". *Risk & Rationalities* (Conference Proceedings), Queens' College, Cambridge, UK

<sup>27</sup> Harding, R and Fisher, E (eds) (1999) *Perspectives on the Precautionary Principle* (Federation Press) page 14

<sup>28</sup> *M C Mehta v Union of India* (2004) 12 SCC 118; *Research Foundation for Science v Union of India* (2005) 13 SCC 186; *Karnataka Industrial Area Development Board v C Kenchappa* (2006) 6 SCC 371; *AP Pollution Control Board I v Professor M V Nayadu* (1999) 2 SCC 718; *AP Pollution Control Board II v Prof M V Nayadu* (2001) 2 SCC 62; *T N Godavarma Thirumalpad v Union of India* (2002) 10 SCC 606; *Tirupur Dyeing Factory Association v Noyal River Ayacutdars Protection* (2009) 9 SCC 737; *M C Mehta v Union of India* (2009) 6 SCC 142; *In re Delhi Transport Department* (1998) 9 SCC 250

<sup>29</sup> *Goa Foundation v Union of India* Judgment dated 18 July 2013 at para 42

Within the NGT, the precautionary principle is regarded as a determinative norm that allows the experts and judges to examine the probability of environmental degradation and resulting harm that may occur from a proposal. The application of the precautionary principle in the NGT involves well-crafted scientific knowledge supporting prevention and prohibition of harm, and a commitment to dealing with risks. For the expert members, the application of the precautionary principle in decision-making is based upon the following processes and principles:<sup>30</sup>

1. Precautionary measures should not be based on speculative, hypothetical or educated guesses or academic considerations;
2. A 'strong' version of the principle is evident in the NGT decisions. To activate precautions, actions are based on scientific information and analysis of possible risks to human health and environment, albeit tentative, inconclusive or in dispute;
3. The tentative, inconclusive or disputed scientific information creates uncertainty in relation to gaps in data and/or poor data, ignorance, faulty models, scientific inconsistency and disagreement on the nature of risk;
4. Lower epistemic threshold of evidence is required for the application of the principle, though one finds different standards of proof and informal scientific levels of certainty;
5. The availability of merits review to the NGT promotes judicial application of the principle. As a merits court, the NGT becomes the primary decision-maker and can undertake in-depth scrutiny which involves not only law, but also the technical evaluation underpinning a decision;
6. Adoption of a variety of procedures, including investigative and stakeholder consultation processes helps in the application of the principle. The on-spot site inspection by the expert members helps to compare and contrast contradictory claims, positions and reports filed by the parties. The stakeholder consultative process is applicable to cases of wider ramification involving major issues like river cleaning or air pollution;
7. The strong application of the principle leads to different directions/regulatory actions including prohibition, restriction, warning requirements, phase out or extra scientific information; and
8. More importantly, depending on experts' epistemic qualities and input, the degree of precaution reflects a proactive approach to improve environmental management through policy prescription and creation.

The principle in India mandates well-judged usage in favour of observing, preventing and mitigating potential threats. Indeed, modern risk factors become more complex, far-reaching and adversely affect public health and environment. It is employed as a tool within Indian environmental jurisprudence for making better health and environmental decisions.

The influential role of the precautionary principle is based upon the crucial link between life and a healthy environment as enshrined in Article 21 of the Constitution of India<sup>31</sup> and its subsequent

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<sup>30</sup> See above Gill n 13 at 122-127

<sup>31</sup> Article 21 of the Constitution of India states: 'no person shall be deprived of his life or personal liberty except according to procedure established by law.' See Articles 48 A and 51A (g) Constitution of India; *Virender Gaur v*

recognition in the preamble of the NGT Act. A proper and healthy environment enables people to enjoy a quality life that is a consequence of the right guaranteed under Article 21.<sup>32</sup> Having regard to the right to life under Article 21, the most vital necessities, namely air, water and soil, cannot be misused or polluted to reduce the quality of life of others. Risk of harm to the environment or to human health is decided in the public interest. This principle is thus invoked and followed by expert and judicial members as a normative commitment. It thereby directs them to offer scientifically based structural solutions and policies that respond creatively to weak, ineffective regulation and even in the absence of regulation.

## **Conclusion**

The engagement of the NGT's scientific experts in the decision-making process as 'constructive science scholars' has contributed to the development of environmental jurisprudence. That environmental jurisprudence not only encompasses legal doctrines but also science-based knowledge, resulting in the solution of domain-specific problems. The experts formulate policies and may assist regulatory agencies to implement these policies, thereby exercising both a problem-solving and a policy-creation function. Thus, the jurisdiction and activities of the NGT through the exercise of a 'strong' precautionary principle, supported by the extensive reach of Article 21 of the Constitution of India, result in a dynamic decision-making process wherein environment, health and public interest are given due consideration.

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*State of Haryana* (1995) 2 SCC 577; *Municipal Corporation of Greater Mumbai v Kohinoor* 34 CTNL *Infrastructure* (2014) 4 SCC 538; *In re Noise Pollution* AIR 2005 SC 3136; *Intellectual Forum, Tirupathi v State of AP* (2006) 3 SCC 549.

<sup>32</sup> *Vardhman Kaushik v Union of India* (Judgment 10 November 2016); *Court on its Own Motion v State of Himachal Pradesh* Judgment 4 February 2014; *M/S Sterlite Industries Ltd v Tamil Nadu Pollution Control Board* (Judgment 8 August 2013)

