

THE JUDICIAL DEVELOPMENT OF ECOLOGICALLY SUSTAINABLE DEVELOPMENT*

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THE ROLE OF THE JUDICIARY

1. Introduction

The concept of ecologically sustainable development (ESD) or sustainable development has been around for at least three decades. In the international arena, the concept has appeared, under various names, in multilateral environmental agreements, soft law instruments, and international policies, plans and programs. Nation states have incorporated the concept into domestic legislation and articulated some of its constituent principles. Executive governments have applied the concept and its principles in decision-making concerning the environment. Notwithstanding this recognition, the concept of ESD still remains elusive. Many questions remain unanswered by the actions of nation states, and of their legislatures and executives.

The judiciaries of the world have, through their decisions, cast some light on the concept and have answered to varying degrees some of the questions about the concept of ESD and the principles of ESD and how and when they should be applied. These judicial decisions have explicated the spare skeleton of ESD, filled the interstices, and put flesh on the skeleton. In these ways, judicial decisions are developing a body of jurisprudence on ESD.

The development of a body of ESD jurisprudence is the product of judicial decision-making. It was not its purpose. Courts have neither a policy agenda nor a legislative rule making function. Courts are reactive not proactive institutions. Courts ordinarily do not seek out disputes to resolve. They await and resolve only disputes that parties elect to bring to the court. Their function is adjudication.

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2. The process of adjudication

The process of adjudication of disputes can result in the development of the law, including jurisprudence on ESD. This can occur at each of the three steps involved in the adjudication of a dispute according to law: finding the law, interpreting the law and applying the law. Finding the law involves ascertaining which of the many rules in the legal system is to be applied or, if none is applicable, reaching a rule for the case on the basis of existing materials in the legal system. Interpreting the law involves interpreting the rule so found, by determining its meaning as it was framed and with respect to its intended scope. Applying the law involves the application of the rule so found and interpreted to the dispute at hand.¹ These three steps interrelate. The functions of finding the law, interpreting the law and applying the law cannot be separated.²

Through the first two steps of the adjudicative process of finding and interpreting the law, courts have developed the concepts and principles of ESD. The jurisprudential explanation by which this occurs differs. Positivistic jurisprudence, such as that espoused by HLA Hart, accepts that judges may legitimately fill in the gaps left by rules by using their discretion. In any legal system, there will always be unregulated cases in which, on some issue, no decision either way is dictated by the pre-existing settled law. If in such cases the judge is to make a decision, the judge must exercise discretion and make law for the case instead of merely applying pre-existing settled law that does not fit the facts and circumstances of the case.³ These law making powers are interstitial and subject to many constraints.⁴

The distinction is between legislative and adjudicative decision-making. Courts are not legislative rule makers. However, courts do engage in rule making by adjudication. When courts are faced with a dispute over the identification and application of a legislative rule, they may generate a rule to resolve the dispute and this adjudicative rule may modify the operation of the legislative rule.⁵

This positivist approach has been challenged. Dworkin, for instance, argues that judges do not make law because all of the resources for their proper decisions are provided by the existing law as correctly understood. These resources include the explicit settled law - the rules - as well as the implicit legal principles which underlie and are embedded in the settled law. Together, these existing legal resources should be treated as making up a "seamless web".⁶ The task of judges is to understand the content of the legal system and give effect to it in their judgments to the best of their ability.⁷ This task is "interpretative" but it is also partly evaluative. It

¹ Roscoe Pound, *An Introduction to the Philosophy of Law* (Yale University Press 1954) 48. For application of this process of adjudication to environmental disputes, see Brian J Preston, 'The Art of Judging Environmental Disputes' (2008) 12 *Southern Cross University Law Review* 103, 103.

² Roscoe Pound, *The Spirit of the Common Law* (Transaction Publishers 1999) 179.

³ HLA Hart, *The Concept of Law* (2nd edn, OUP 1994) 272.

⁴ *ibid* 273.

⁵ Peter Cane, 'Merits Review and Judicial Review – the AAT as a Trojan Horse' (2000) 28 *Federal Law Review* 213, 237.

⁶ Ronald Dworkin, *Taking Rights Seriously* (Harvard University Press 1978) 115-118.

⁷ Ronald Dworkin, *A Matter of Principle* (Harvard University Press 1986) ch 5.

involves identification of the principles which both best “fit” or cohere with the settled law and legal practices of the legal system and also provide the best moral justification for them, thus showing the law in its best light.⁸

3. Developing ESD through adjudication

(a) Ascertaining the rules

Irrespective of the jurisprudential debate about whether judges interstitially make law by adjudication or find the settled legal rules and implicit legal principles within the legal system, the result is the same. By their decisions, judges identify and interpret the rules and principles that are to be applied to resolve the dispute at hand. This judicial combination of the identification and interpretation of legal rules and principles has resulted in the development of the jurisprudence on ESD.

Sometimes, the concept of ESD and its constituent principles are stated explicitly in legislation. Often, however, they are expressed in vague and open textured language. Judicial decisions interpret this open textured language and thereby give more certainty to the concept and principles of ESD. Legislation that prescribes strategic rules and regulatory rules that govern an application for the approval of, the approval of and the undertaking of activities likely to affect the environment may incorporate the concept and principles of ESD. However, they may provide little guidance on the methodology of how and when the concept and principles are to be applied. Judicial decisions can assist in explaining how and when the concepts and principles of ESD are to be applied.

Alternatively, the legislation may not explicitly refer to the concept and principles of ESD. Courts, nevertheless, have found that the concept and principles of ESD underlie and are implicit in the language of the legislation. For example, courts have interpreted the statutory consideration of the “public interest” to include the principles of ESD.⁹ Whether the references to the concept and the principles are explicit or implicit, judicial decisions thereby make or declare - depending on one’s jurisprudential viewpoint - the concept and principles of ESD to be part of the law to be applied to the dispute.

(b) Applying the rules

Apart from the two steps of finding and interpreting the law, adjudication involves the third step of applying the law found and interpreted to the dispute at hand. This third step of application of the law encompasses two stages. The first stage is to find the facts relevant to the identified rules of law. The duty of the court in determining questions of fact “is to exercise its intellectual judgment on the evidence submitted to

⁸ Ronald Dworkin, *Laws’ Empire* (Hart Publishing 1998) 90.

⁹ *Telstra Corp Ltd v Hornsby Shire Council* [2006] NSWLEC 133; (2006) 67 NSWLR 256, 268 [121]–[124]; *Minister for Planning v Walker* [2008] NSWCA 224; (2008) 161 LGERA 423, 451 [42], [43]; *Warkworth Mining Ltd v Bulga Milbrodale Progress Association Inc* [2014] NSWCA 105; (2014) 86 NSWLR 527, 587–588 [295]–[296].

it in order to ascertain the truth”.¹⁰ The second stage is to apply the identified rule of law to the facts as found. In this way “a determination of the existence or non-existence of rights, obligations and liabilities emerges to support the award or refusal of remedies as the case may be”.¹¹

At the second stage, consideration needs to be given to whether the applicable law accords a judicial discretion as to the remedy, relief or punishment - if any - to be granted by the court if, upon application of the law to the facts of the matter, a breach of the law were to be found. Judicial discretion may have its source in statute, the common law or in equity. The duty of the court in matters of judicial discretion is to exercise its moral judgment as to what is right, just, equitable or reasonable in the case.¹² The exercise of a judicial discretion permits individualisation in the application of the law.¹³

(c) Providing a remedy

In the environmental law context, legislation commonly permits a court that has found a breach of the statute to make such order as it thinks fit “to remedy or restrain the breach”.¹⁴ Such a phrase empowers the court “to mould the manner of its intervention in such a way as will best meet the practicalities as well as the justice of the situation before it”.¹⁵ The discretion extends to withholding relief if the court does not think any order is fit to remedy or restrain the breach.¹⁶

The court may take into account a range of considerations that pertain not only to the private interests of the parties and third parties but also to the public interest. A breach of a planning or environmental law involves a breach of a public duty because the orderly development of the use of the environment is in the public interest.¹⁷ Obligations imposed on public authorities to assess and approve applications under a planning or environmental law impose public duties and are important in the public interest.¹⁸ The subject matter of the litigation may also raise issues concerning the public interest. Natural resources such as the air, waterways, forests and parks can be seen, to use the language of the Roman law, as *res communis* and *res publicae*. As such they are held by the government in trust for the benefit of present and future generations.¹⁹ The notion of the public interest includes ESD. In addition, in awarding or refusing remedies, courts can, and have, applied the

¹⁰ PJ Fitzgerald, *Salmond on Jurisprudence* (12th edn, Sweet & Maxwell 1966) 70-71.

¹¹ RS French, ‘Dolores Umbridge and Policy as Legal Magic’ (2008) 82 *Australian Law Journal* 322, 328.

¹² Fitzgerald (n 10) 68-71.

¹³ Pound (n 1) 53, 56, 63.

¹⁴ For example, *Environmental Planning and Assessment Act 1979* (NSW) s 124(1).

¹⁵ *F Hannan Pty Ltd v Electricity Commission (NSW) (No 3)* (1985) 66 LGRA 306, 311.

¹⁶ *ibid*; see also *Warringah Shire Council v Sedevcic* (1987) 10 NSWLR 335, 338-341.

¹⁷ *Warringah Shire Council v Sedevcic* (1987) 10 NSWLR 335, 339.

¹⁸ *Willoughby City Council v Minister Administering the National Parks and Wildlife Act* (1992) 78 LGRA 19, 34.

¹⁹ Pound (n 2) 202-203; Joseph Sax, ‘The Public Trust Doctrine in Natural Resource Law: Effective Judicial Intervention’ (1970) 68 *Michigan Law Review* 471, 471.

concept and principles of ESD through the application of the law. In each case, courts have explained and shown how ESD works in practice.

4. The structure of this paper

This paper sketches some of the ways in which judicial decisions have found, interpreted and applied the concepts and principles of ESD in adjudicating disputes according to law. The first concerns the meaning of the concept and the principles of ESD. Do they set substantive outcomes or only processes or both? The second concerns the interrelationship between the concepts and principles of ESD, in particular how ESD is to be achieved through application of the principles of ESD. The third concerns the interpretation and explanation of the principles of ESD. The fourth concerns application of the concept and principles of ESD to differing types of disputes. In these ways, this paper explains the judicial development of ESD and its principles.

THE MEANING OF ESD

1. The importance of the language of ESD

(a) The variety of terminology

The meaning of ESD depends on the specific legislation that incorporates it. Judicial interpretation of ESD is, therefore, very dependent on the statutory language in both the provisions defining ESD and in the provisions establishing the strategic rules and liability rules that utilise ESD. It is difficult, therefore, to generalise about the meaning given to ESD by the courts.

Legislation that incorporates ESD typically describes ESD in general terms. Sometimes, the actual concept of ESD is not defined at all, although the principles of ESD may be defined.²⁰ Some legislation simply refers to the object of “the need to maintain ecologically sustainable development”²¹ or to “promote ecologically sustainable development”²² but leaves unspecified what is it that is to be maintained or promoted.

Alternatively, there may be a definition of ESD but the definition speaks in general terms of what ESD requires or how ESD is to be achieved without actually defining what ESD is. Consider three examples. First, there are legislative and policy instruments that define ESD in the terms used by the World Commission on Environment and Development (WCED) in its report *Our Common Future* as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”.²³ Second, there is legislation that

²⁰ For example, *Environment Protection and Biodiversity Conservation Act 1999* (Cth) s 3A.

²¹ *Protection of the Environment Administration Act 1991* (NSW) s 6(1)(a).

²² *Threatened Species Conservation Act 1995* (NSW) s 3(a).

²³ World Commission on Environment and Development, *Our Common Future* (OUP 1987) 44, ch 2 [1]; adopted by the United Nations General Assembly, *Report of the World Commission on*

says that ESD requires the effective integration of economic and environmental considerations in decision-making processes.²⁴ Third, there is legislation that says that ESD can be achieved through the implementation of specified principles which may be defined to be principles of ESD. These include the principle of sustainable use; the principle of integration of economic, environmental and social considerations; the precautionary principle; the principle of intergenerational equity; the principle of conservation of biological diversity and ecological integrity; and the promotion of improved valuation, pricing and incentive mechanisms, including the polluter pays principle and the user pays principle.²⁵

(b) The language of process and outcome

It is suggested that these legislative and policy approaches point to a degree of means-ends fluidity. Legislation is traditionally more concerned with means than ends. Hence, environmental legislation characteristically leaves unspecified what the end or outcome of decision-making under the legislation should be. It will, however, prescribe the process and the methodology that decision-making should follow. The end or outcome becomes clear only as a result of going through the prescribed process.²⁶

Notwithstanding this means-ends fluidity, there would appear to be a common thread that the concept of ESD does embody an outcome and this is to be achieved through implementation of the various principles of ESD.²⁷ ESD operates in legislation as “a standard of conduct or behaviour, as a standard of methodology of decision-making or as a standard of outcome or result”.²⁸ ESD, therefore, involves both a substantive outcome as well as a process to achieve that outcome. Indeed, ESD has been described as being “all about integrating process and substance with a view to achieving a single, unified objective”.²⁹

But what is the substantive outcome that ESD requires? The WCED definition in *Our Common Future* calls for development that meets the needs of the present without compromising the ability of future generations to meet their own needs. These needs of present and future generations are economic, environmental and

Environment and Development GA Res 42/187, UN GAOR, 2nd Comm, Agenda Item 82e (11 December 1987) A/Res/42/87; included by the UK Department for Communities and Local Government in the *National Planning Policy Framework* (March 2012) 2; cited in *Telstra Corp Ltd v Hornsby Shire Council* [2006] NSWLEC 133; (2006) 67 NSWLR 256, 265 [108]; *MC Mehta v Union of India* [2004] INSC 179; AIR 2004 SC 4016, 4044 [46].

²⁴ *Protection of the Environment Administration Act 1991* (NSW) s 6(2); adopted by *Environmental Planning and Assessment Act 1979* (NSW) s 4(1); *Threatened Species Conservation Act 1995* (NSW) s 4(1).

²⁵ For example, *Environment Protection and Biodiversity Conservation Act 1999* (Cth) s 3A; *Protection of the Environment Administration Act 1991* (NSW) s 6(2); *Environmental Planning and Assessment Act 1979* (NSW) s 4(1); *Threatened Species Conservation Act 1995* (NSW) s 4(1).

²⁶ DE Fisher, *Australian Environmental Law: Norms, Principles and Rules* (3rd edn, Lawbook Co 2014) 47.

²⁷ *ibid* 173, 174, 219, 331-332.

²⁸ *ibid* 219.

²⁹ Douglas Fisher, *Legal Reasoning in Environmental Law: A Study of Structure, Form and Language* (Edward Elgar 2013) 64.

social. However, economic and social needs cannot be met continuously in a deteriorating environment. Any further degradation of the earth's natural capital must be prevented for the sake of future generations. Hence, at the core of ESD is ecological sustainability. This is the outcome that ESD demands. ESD requires living within the planet's ecological limits.³⁰ ESD involves development that improves the total quality of life both now and in the future, in a way that maintains the ecological processes upon which life depends.³¹

2. Judicial analysis of the language of ESD as requiring an outcome

(a) South Africa and India

The Constitutional Court of South Africa recognised the need to protect the environment in order to achieve economic and social development:

Economic and social development is essential to the well-being of human beings. This Court has recognised that socio-economic rights that are set out in the Constitution are indeed vital to the enjoyment of other human rights guaranteed in the Constitution. But development cannot subsist upon a deteriorating environmental base. Unlimited development is detrimental to the environment and the destruction of the environment is detrimental to development. Promotion of development requires the protection of the environment, yet the environment cannot be protected if development does not pay attention to the costs of environmental destruction. The environment and development are thus inexorably linked.³²

Bosselmann has argued that ESD involves “the obligation to promote long-term economic prosperity and social justice within the limits of ecological sustainability”. The principle of sustainability is defined as “the duty to protect and restore the integrity of the Earth's ecological systems”.³³ Echoing the land ethic of Aldo Leopold, Bosselmann suggests “development is sustainable if it tends to preserve the integrity and continued existence of ecological systems; it is unsustainable if it tends to do otherwise”.³⁴

This need for maintenance of “ecological balance” led the High Court of Calcutta to issue an injunction restraining reclamation of wetlands in East Kolkata for development activities. The court recognised that sustainable development requires there to be “a proper balance between the development and the environment so that both can co-exist without affecting the other”.³⁵ The goal is “maintenance of

³⁰ The UK Government's Sustainable Development Strategy, *Securing the Future* (The Stationary Office 2005) 17.

³¹ *National Strategy for Ecologically Sustainable Development* (Australian Government Publishing Service 1992) 8.

³² *Fuel Retailers Association of Southern Africa v Director-General Environmental Management, Department of Agriculture, Conservation and Environment, Mpumalanga Province* [2007] ZACC 13; 2007 (6) SA 4 (CC), 21 [44].

³³ Klaus Bosselmann, *The Principle of Sustainability: Transforming Law and Governance* (Ashgate 2008) 53, 57.

³⁴ *ibid* 53.

³⁵ *People United for Better Living in Calcutta v State of West Bengal* AIR 1993 Cal 215, 217 [2].

ecological balance”. If development leads to ecological imbalance, the function of the court is to intervene.³⁶

Similarly, the Supreme Court of India held that sustainable development ensures that “mitigative steps are and can be taken to preserve the ecological balance. Sustainable development means what type or extent of development can take place which can be sustained by nature/ecology with or without mitigation”.³⁷ This ecological core of ESD places a first claim on the earth’s natural resources. Only when ecological needs are met should the remaining natural resources be available to supply and meet economic and social needs.³⁸

(b) New Zealand

The ecological core of ESD also sets an environmental bottom line that needs to be met. The Supreme Court of New Zealand held that the *Resource Management Act 1991* (NZ) (RMA) and the New Zealand Coastal Policy Statement (NZCPS) made under the Act established an environmental bottom line of preservation and protection of the coastal environment as part of the concept of sustainable management.³⁹ The core purpose of the RMA is to promote sustainable management of natural and physical resources.⁴⁰ “Sustainable management” is defined to mean:

managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic and cultural well-being and for their health and safety while –

- (a) sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and
- (b) safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and
- (c) avoiding, remedying, or mitigating any adverse effects of activities on the environment.⁴¹

Section 5 is “a carefully formulated statement of principle intended to guide those who make decisions under the RMA”.⁴² It is given further elaboration by section 6 of the RMA.

³⁶ *People United for Better Living in Calcutta v State of West Bengal* AIR 1993 Cal 215, 227–228 [29]–[30], 231 [40].

³⁷ *Narmada Bachao Andolan v Union of India* [2000] INSC 518; AIR 2000 SC 3751, 3804 [150]; *MC Mehta v Union of India* [2004] INSC 179; AIR 2004 SC 4016, 4044 [46].

³⁸ Volker Mauerhofer, Klaus Hubacek and Alastor Coleby, ‘From Polluter Pays to Provider Gets: Distribution of Rights and Costs under Payments for Ecosystem Services (2013) 18(4) *Ecology and Society* 41, 43.

³⁹ *Environmental Defence Society Inc v The New Zealand King Salmon Company Ltd* [2014] NZSC 38; [2014] 1 NZLR 593.

⁴⁰ *Resource Management Act 1991* (NZ) s 5(1).

⁴¹ *ibid* s 5(2).

⁴² *Environmental Defence Society Inc v The New Zealand King Salmon Company Ltd* [2014] NZSC 38; [2014] 1 NZLR 593, 618 [25].

The RMA envisages the formulation and promulgation of planning documents to give effect to the core purpose. One of the documents made to achieve the purpose of the RMA in relation to the coastal environment of New Zealand is the NZCPS.⁴³ One of the principal objectives of the NZCPS is “to preserve the natural character of the coastal environment and protect natural features and landscape values” through specified means, including identifying those areas where various forms of development would be inappropriate and protecting them from such activities.⁴⁴

This objective and these policies of the NZCPS set an environmental bottom line.⁴⁵ The NZCPS gives primacy to protecting areas of the coastal environment with outstanding natural features from the adverse effects of development, in order to promote sustainable management.⁴⁶ Any regional plan is required to “give effect to” the NZCPS⁴⁷ and any decision to change a regional plan must also give effect to the NZCPS. Hence, it was an error, in considering a plan change, to adopt an “overall judgment” approach - balancing conflicting environmental, economic and social considerations - rather than the “environmental bottom line” approach which means giving effect to the NZCPS policy of preserving the coastal environment and protecting it from inappropriate development.⁴⁸

3. Conclusion

It was suggested earlier in this paper that the concept of ESD involves a substantive outcome that is to be achieved through the implementation of the principles of ESD. The implementation of these principles achieves different aspects of the substantive outcome. Each of the principles should not be viewed in isolation but rather as part of a package. Sometimes the principles reinforce each other and strengthen the case for taking some particular action. At other times they tug in different directions and may need to be weighed against one another to determine the appropriate action to be taken. Courts have emphasised the need to consider all of the principles of ESD that are relevant to the decision to be made.⁴⁹

THE PRINCIPLE OF SUSTAINABLE USE

1. The language of sustainable use

One of the principles of ESD is the principle of sustainable use: the aim of exploiting natural resources in a manner which is “sustainable” or “prudent” or “rational” or

⁴³ See *Resource Management Act 1991* (NZ) ss 56, 57.

⁴⁴ New Zealand Coastal Policy Statement 2010, objective 2, policies 13, 15.

⁴⁵ *Environmental Defence Society Inc v The New Zealand King Salmon Company Ltd* [2014] NZSC 38; [2014] 1 NZLR 593, 651 [132].

⁴⁶ *ibid* 656 [149].

⁴⁷ *Resource Management Act 1991* (NZ) s 67(3).

⁴⁸ *Environmental Defence Society Inc v The New Zealand King Salmon Company Ltd* [2014] NZSC 38; [2014] 1 NZLR 593, 657–658 [152]–[154].

⁴⁹ *Northcompass Inc v Hornsby Shire Council* (1996) 130 LGERA 248, 264–265; *Telstra Corp Ltd v Hornsby Shire Council* [2006] NSWLEC 133; (2006) 67 NSWLR 256, 280 [182]–[183]; *Blue Wedges Inc v Minister for Environment, Heritage and the Arts* [2008] FCA 399; (2008) 167 FCR 463, 480–481 [76]–[78].

“wise” or “appropriate”.⁵⁰ This principle also has an ecological core; use of natural resources needs to be within ecological limits.

Consider some examples from Australia. The statement of the objects of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) includes “to promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources”.⁵¹ Although ESD is the desired end, it is to be achieved through the means of conservation and ecologically sustainable use of natural resources. “Ecologically sustainable use” of natural resources is defined to mean “use of the natural resources ... within their capacity to sustain natural processes while maintaining the life-support systems of nature and ensuring that the benefit of the use to the present generation does not diminish the potential to meet the needs and aspirations of future generations”.⁵² This definition of ecologically sustainable use sets outcomes, including that the use of natural resources is to be within their capacity to sustain natural processes while maintaining the life support systems of nature.

In Queensland, the purpose of the *Sustainable Planning Act 2009* is “to seek to achieve ecological sustainability” by, amongst other things, managing the process by which development takes place, including ensuring that the process “delivers sustainable outcomes”.⁵³ One of the ways in which this purpose is to be advanced is by:

ensuring the sustainable use of renewable natural resources and the prudent use of non-renewable natural resources by, for example, considering alternatives to the use of non-renewable natural resources.⁵⁴

The objective of “ecological sustainability” is defined to involve a balance that integrates “protection of ecological processes and natural systems” with economic development and social development.⁵⁵ Ecological processes and natural systems will be protected if:

- (i) the life-supporting capacities of air, ecosystems, soil and water are conserved, enhanced or restored for present and future generations; and
- (ii) biological diversity is protected.⁵⁶

If a particular proposed use of natural resources cannot be shown to achieve this outcome of ecological sustainability, it should not be approved.

⁵⁰ Philippe Sands and Jacqueline Peel et al, *Principles of International Environmental Law* (3rd edn, CUP 2012) 207, 210-213, 217; cited in *Telstra Corp Ltd v Hornsby Shire Council* [2006] NSWLEC 133; (2006) 67 NSWLR 256, 265 [109]; *BP Southern Africa (Pty) Limited v MEC for Agriculture, Conservation, Environment and Land Affairs* 2004 (5) SA 124 (WLD), 143–144.

⁵¹ *Environment Protection and Biodiversity Conservation Act 1999* (Cth) s 3(1)(b).

⁵² *ibid* s 528.

⁵³ *Sustainable Planning Act 2009* (Qld) s 3(a).

⁵⁴ *ibid* s 5(1)(b).

⁵⁵ *ibid* s 8.

⁵⁶ *ibid* s 11(a).

2. Judicial analysis of the language of sustainable use

In South Australia, the Environment, Resources and Development Court refused consent to a proposal to establish tuna farms in the waters of Louth Bay in Spencer Gulf because it could not be shown that it could be carried out in an ecologically sustainable way.⁵⁷ The development was required to be assessed against the provisions of the applicable development plan made under the *Development Act 1993* (SA). One of the provisions was that development of the marine environment, and in particular the marine aquaculture industry, had to be carried out “in an ecologically sustainable way”.

The court held that “an adaptive management approach, implemented by way of licence conditions to achieve ecologically sustainable development, which could be varied in response to new knowledge, is one means by which the development could proceed in an ecologically sustainable manner”.⁵⁸ However, the court found that an appropriate adaptive management regime could not be implemented. It could not be achieved by imposing conditions of development consent because the Development Act did not give the relevant authority power to vary the conditions.⁵⁹ Similarly, it could not be achieved by way of a lease or licence under the *Fisheries Act 1982* (SA). In circumstances where a lease or licence issued under the Fisheries Act could be for a term as long as 10 years, there would be no scope for an adaptive management approach to fish farming, because the terms and conditions of the lease or licence would be fixed for that period and could not be varied.⁶⁰ Without implementation of an adaptive management regime, the development could not be carried out in an ecologically sustainable way. The court therefore set aside the original governmental decision to grant development consent.⁶¹

The Land and Environment Court of New South Wales (NSW) applied the principle of sustainable use in overturning a development consent that had been granted to a waste disposal facility on prime agricultural land.⁶² Two adjacent local councils sought development consent to construct and operate a waste disposal facility on land in one council’s area. That council granted development consent to the development application. The applicable local environmental plan zoned the land on which the waste disposal facility was proposed as Zone 1(a) General Rural. The objective of the zone was to promote the proper management and utilisation of resources by:

- (a) protecting, enhancing and conserving;
 - (i) agricultural land in a manner which sustains its efficient and effective agricultural production potential,

⁵⁷ *Conservation Council of SA Inc v Development Assessment Commission and Tuna Boat Owners Association of SA (No 2)* [1999] SAERDC 86 (16 December 1999).

⁵⁸ *ibid* [37]; affirmed on appeal in *Tuna Boat Owners Association of SA Inc v Development Assessment Commission* [2000] SASC 238; (2000) 77 SASR 369, 370 [6], 374–375 [32]–[34].

⁵⁹ *Conservation Council of SA Inc v Development Assessment Commission and Tuna Boat Owners Association of SA (No 2)* [1999] SAERDC 86 (16 December 1999) [35].

⁶⁰ *ibid* [41].

⁶¹ *ibid* [44].

⁶² *Hub Action Group Inc v Minister for Planning* [2008] NSWLEC 116; (2008) 161 LGERA 136.

- ...
- (b) preventing the unjustified development of prime crop and pasture land for purposes other than agriculture.⁶³

Clause 10 of the local environment plan provided the mechanism for determining whether or not a proposed development complied with objective (b) of the zone. The clause provided that the council was not to consent to an application to carry out development within Zone 1(a) unless two conditions were satisfied. First, the council had made an assessment of the effect of the carrying out of the development on, amongst other matters, the present and potential use of the land for the purposes of agriculture. Second, the council was satisfied that the development would not have an adverse effect on the long-term use, for sustained agricultural production, of any prime crop and pasture land.⁶⁴

“Prime crop and pasture land” was defined to mean land identified on a map prepared by the relevant Department of Agriculture as Class 1, Class 2 or Class 3 or as land of merit for special agricultural uses.⁶⁵ The land proposed for the waste disposal facility was mapped as Class 3 and thus fell within the definition of prime crop and pasture land.

The court found that the waste disposal facility would have an effect on the long-term use, for sustained agricultural production, of this prime crop and pasture land. The court held:

The principle of good governance is essential to sustainable development. It requires the enactment and enforcement of clear and effective laws that support sustainable development. The provisions of the LEP relating to the 1(a) zone, including cl 10(1), are part of a law supporting sustainable development, by protecting, enhancing and conserving the valuable resource of agricultural land and in particular prime crop and pasture land in a manner which ensures its use for sustained agricultural production. The upholding and enforcement of that law promotes good governance.

The principle of sustained use of natural resources involves the exploitation of natural resources in a way which is sustainable in the long-term and which reduces environmental harm. It involves consideration of the effects of use on all natural resources, certainly the effect of the use on the resources the intended subject of the activity but also the effect that the use of those resources might have on the sustainable use of other resources.

In this case, whilst adoption of a waste minimisation strategy and operation of a waste disposal facility with a resource recovery facility is beneficial in promoting sustainability, by such means as encouraging more efficient use of resources, reducing unnecessary resource consumption, improving resource recovery and reducing waste generation, by siting the waste disposal facility on prime crop and pasture land, the proposed development impedes achieving sustainability by

⁶³ *Hub Action Group Inc v Minister for Planning* [2008] NSWLEC 116; (2008) 161 LGERA 136, 145 [32].

⁶⁴ *ibid* 146 [33].

⁶⁵ *ibid* 147 [36].

adversely affecting the long-term use, for sustained agricultural production, of that land.⁶⁶

THE PRINCIPLE OF INTEGRATION

1. The concept of integration

The principle of integration requires the effective integration of both long-term and short-term economic, environmental and social considerations in decision-making processes.⁶⁷ It was the philosophical underpinning of the WCED's report, *Our Common Future*. That report recognised that the ecologically harmful cycle caused by economic development without regard to and at the cost of the environment could only be broken by integrating environmental concerns with economic goals.⁶⁸

The principle of integration ensures respect and reciprocity between economic development, social development and environmental protection. The Plan of Implementation of the World Summit on Sustainable Development held in Johannesburg in 2002 noted that efforts needed to be taken to:

promote the integration of the three components of sustainable development – economic development, social development and environmental protection – as interdependent and mutually reinforcing pillars. Poverty eradication, changing unsustainable patterns of production and consumption and protecting and managing the natural resource base of economic and social development are overarching objectives of, and essential requirements for, sustainable development.⁶⁹

At its simplest, the principle of integration requires that each of the three components of sustainable development – economic development, social development and environmental protection – are taken into account in development decision-making. It requires that decision-makers “ensure that social and economic development decisions do not disregard environmental considerations, and not undertake environmental protection without taking into account relevant social and economic implications”.⁷⁰

Procedurally, such integration can be facilitated by conducting environmental impact assessments for proposed projects and strategic environmental assessments for

⁶⁶ *Hub Action Group Inc v Minister for Planning* [2008] NSWLEC 116; (2008) 161 LGERA 136, 157–158 [69]–[71].

⁶⁷ See *Environment Protection and Biodiversity Conservation Act 1999* (Cth) s 3A(a); *Protection of the Environmental Administration Act 1991* (NSW) s 6(2); *Rio Declaration on the Environment and Development* 31 ILM 874 (1992) Principle 4.

⁶⁸ As was recognised in *Telstra Corp Ltd v Hornsby Shire Council* [2006] NSWLEC 133; (2006) 67 NSWLR 256, 266 [110].

⁶⁹ *Plan of Implementation of the World Summit on Sustainable Development* (Johannesburg 2002) [2]; cited in *Telstra Corp Ltd v Hornsby Shire Council* [2006] NSWLEC 133; (2006) 67 NSWLR 256, 266 [112].

⁷⁰ Marie-Claire Cordonier Segger and Ashfaq Khalfan, *Sustainable Development Law: Principles, Practices and Prospects* (OUP 2004) 104; Sands and Peel (n 50) 207.

proposed policies, plans and programs.⁷¹ As the Land and Environment Court of NSW has noted:

Requiring prior environmental impact assessment and approval is a key means of achieving ecologically sustainable development. It facilitates the achievement of the principle of integration (“ecologically sustainable development requires the effective integration of economic and environmental considerations in decision-making processes” ...). If environmental considerations are to be an integral part of decision-making processes, it is necessary to assess the environmental impacts and risks associated with proposed activities. Environmental impact assessment is widely applied to predict the impacts of proposed activities on the environment.⁷²

Integration of economic, environmental and social considerations is assisted by environmental impact assessment addressing both the concept of ESD and all of the principles of ESD of relevance to the decision to be made.

The Land and Environment Court held that the environmental impact assessment for a large coal mine in the Hunter Valley of NSW was inadequate in law in failing to consider the downstream effects of greenhouse gas emissions, known as scope 3 emissions, by the burning of coal mined from the project. The court held that the decision-maker was bound to take into account the principles of ESD, including the principle of intergenerational equity and the precautionary principle. The decision-maker had decided that the environmental impact assessment for the project was adequate. The court held that, in making that decision, the decision-maker failed to take into account the principle of intergenerational equity and the precautionary principle.⁷³ The court held that the environmental impact assessment needed to consider the principles of ESD.⁷⁴

2. The achievement of integration

Whilst environmental impact assessment is a procedural means of implementing the principle of integration, it still leaves unanswered how integration of the three components of ESD is to be achieved. The principles of ESD require decision-making which integrates and weighs up potentially conflicting economic, social and environmental considerations.⁷⁵ What balance is to be struck between these three, often conflicting, needs? As Bosselmann observes, “if sustainable development would be used merely for integrating and balancing conflicting interests, nothing

⁷¹ Sands and Peel (n 50) 215.

⁷² *Bentley v BGP Properties Pty Ltd* [2006] NSWLEC 34; (2006) 145 LGERA 234, 245 [67]; adopted in *Gray v Minister for Planning* [2006] NSWLEC 720; (2006) 152 LGERA 258, 291 [116]; see also *Director-General, Department of Environment and Climate Change v Rae* [2009] NSWLEC 137; (2009) 168 LGERA 121, 129 [17].

⁷³ *Gray v Minister for Planning* [2006] NSWLEC 720; (2006) 152 LGERA 258, 294 [126], 296 [135].

⁷⁴ *ibid* 293 [118], 294 [127], 295 [131], 296 [133]–[134]; Jacqueline Peel, ‘Ecologically Sustainable Development: More than Mere Lip Service?’ (2008) 12 *The Australasian Journal of Natural Resources Law and Policy* 1, 17-22.

⁷⁵ *MyEnvironment Inc v VicForests* [2012] VSC 91 [62]; affirmed on appeal *MyEnvironment Inc v VicForests* [2013] VSCA 356; (2013) 198 LGERA 396, 412 [40], 440 [142].

would be achieved. Without a benchmark, we are left at a guess *how* environmental, social and economic interests should be balanced”.⁷⁶

What benchmark has been suggested? A common view is that the three pillars of economic development, social development and environmental protection supporting ESD are of equal height and standing and should be given equal weight and importance in decision-making processes. This view might be seen to reflect a three scales model of ESD: the environment sits in one scale, economic development sits in a second scale and social development sits in a third scale. The aim for decision-making is to keep all of the scales balanced at the same level. This view, however, is incorrect for at least three reasons.

First, the three scales model assumes a separation between the environmental, developmental and social spheres that does not exist in reality. They are interrelated and interdependent, now and in the future. The pursuit of one affects the ability to pursue the others. The aim of sustainable development is to bring the three together not to balance them as independent entities.⁷⁷ As Bosselmann notes, “the key element of sustainable development is the recognition that economic and environmental goals are inextricably linked”.⁷⁸ Indeed, the *Sustainable Planning Act 2009* (Qld) defines “ecological sustainability” to be a balance that integrates:

- (a) protection of ecological processes and natural systems at local, regional, State and wider levels; and
- (b) economic development; and
- (c) maintenance of the cultural, economic, physical and social wellbeing of people and communities.⁷⁹

As this definition shows, balancing involves integration but integration does not necessarily require balancing. The balance referred to is a balance that relates to each of the ecological, economic and social limbs and integrating them.⁸⁰ Balance can be achieved by integrating the ecological, economic and social limbs differentially but not necessarily equally.

Second, to accord equal weight to economic development, social development and environmental protection may be self-defeating – the environment may deteriorate and hence ecological sustainability cannot be achieved. Bosselmann argues that “to perceive environmental, economic and social as equally important components of sustainable development is arguably the greatest misconception of sustainable development and the greatest obstacle to achieving social and economic justice”.⁸¹ He continues that “the concept of sustainable development can only perform its normative functions in so far as it incorporates the idea of ecological sustainability”.⁸²

⁷⁶ Bosselmann (n 33) 25.

⁷⁷ *ibid* 30, 31.

⁷⁸ *ibid* 31.

⁷⁹ *Sustainable Planning Act 2009* (Qld) s 8.

⁸⁰ *Chesol Pty Ltd v Logan City Council* [2007] QPEC 1; [2007] QPELR 285, 299–300 [87].

⁸¹ Bosselmann (n 33) 23.

⁸² *ibid* 41.

Third, it is unrealistic to expect that all of the ecological, economic and social goals can be equally balanced in every decision made. For example, an equal balance of environmental protection, economic development and social development may not be able to be achieved by every development on every parcel of land. As the Planning and Environment Court of Queensland has noted:

In assessing the extent to which a proposal advances ecological sustainability, it is appropriate to have regard not just to the subject site but to its context. Ecological sustainability is not necessarily advanced if every parcel of land is, in part, used for economic development of a kind which advances the wellbeing of people and communities and, in part, for the protection of ecological processes. Sometimes the promotion of ecological sustainability, at a broader level, will require, for example, a particular area or site to be entirely preserved from development for the protection of ecological processes while another site or area is given over to intense economic development.⁸³

THE PRECAUTIONARY PRINCIPLE

1. The concept of precaution

One of the best known principles of ESD is the precautionary principle. There are numerous formulations of the precautionary principle but the most widely employed formulation is based on Principle 15 of the Rio Declaration on Environment and Development which states:

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.⁸⁴

An example of a domestic statutory incorporation of the precautionary principle is section 6(2)(a) of the *Protection of the Environment Administration Act 1991* (NSW):

the precautionary principle—namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

In the application of the precautionary principle, public and private decisions should be guided by:

- (i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and
 - (ii) an assessment of the risk-weighted consequences of various options
- ...

The precautionary principle is the principle of ESD that has been the subject of the most judicial consideration by courts throughout the world.⁸⁶ Difficulties in its

⁸³ *Chesol Pty Ltd v Logan City Council* [2007] QPEC 1; [2007] QPELR 285, 300 [90].

⁸⁴ *Rio Declaration on Environment and Development* 31 ILM 874 (1992) Principle 15.

⁸⁵ See also *Environment Protection and Biodiversity Conservation Act 1999* (Cth) s 3A(b).

application flow from the “the indifference of the precautionary approach, both in terms of *when* and *what* action is required”.⁸⁷ The courts, by their decisions, have assisted in elucidating the meaning and scope of the precautionary principle in three ways.

First, courts have recognised the precautionary principle to be part of the law of the land. The precautionary principle might not have been expressly incorporated in legislation. Courts have nevertheless found that the precautionary principle is to be implied in the legislation or the common law. The Supreme Court of India has held that “the precautionary principle and the polluter pays principle are part of the environmental law of the country”, notwithstanding that neither was expressly incorporated in constitutional or statutory law.⁸⁸ Similarly, the Land and Environment Court of NSW has held that decision-makers who are required to have regard to the public interest in development decision-making are obliged to have regard to the principles of ESD, including the precautionary principle, where issues relevant to those principles arise.⁸⁹

Second, courts have explained when the precautionary principle will apply. Formulations of the precautionary principle based on Principle 15 of the Rio Declaration refer to two matters for the application of the precautionary principle. The first is in the opening phrase “if there are threats of serious or irreversible environmental damage”. The second is in the statement as to what should not be done: namely “lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation”. The Land and Environment Court of NSW has held that satisfaction of these two matters is necessary to trigger the application of the precautionary principle:

The application of the precautionary principle and the concomitant need to take precautionary measures is triggered by the satisfaction of two conditions precedent or thresholds: a threat of serious or irreversible environmental damage and scientific uncertainty as to the environmental damage. These conditions or thresholds are cumulative. Once both of these conditions or thresholds are satisfied, a precautionary measure may be taken to avert the anticipated threat of environmental damage, but it should be proportionate.⁹⁰

⁸⁶ Lee Godden and Jacqueline Peel, *Environmental Law: Scientific, Policy and Regulatory Dimensions* (OUP 2010) 137; Brian J Preston, ‘The Role of the Judiciary in Promoting Sustainable Development: The Experience of Asia and the Pacific’ (2005) 9 *Asia Pacific Journal of Environmental Law* 109, 133-174; Preston, (n 1) 115-121; Stephen Estcourt, ‘The Precautionary Principle, the Coast and Temwood Holdings’ (2014) 31 *Environmental and Planning Law Journal* 288, 288.

⁸⁷ Bosselmann (n 33) 60.

⁸⁸ *Vellore Citizens Welfare Forum v Union of India* AIR 1996 SC 2715, 2721 [13]; *MC Mehta v Kamal Nath* (1997) 1 SCC 388 [37], [38]; *AP Pollution Control Board v Prof MV Nayudu* AIR 1999 SC 812, 818–821; *MC Mehta v Union of India* [2004] INSC 179; AIR 2004 SC 4016, 4045 [48].

⁸⁹ *BGP Properties v Lake Macquarie City Council* [2004] NSWLEC 399; (2004) 138 LGERA 237, 262 [113]; *Telstra Corp Ltd v Hornsby Shire Council* [2006] NSWLEC 133; (2006) 67 NSWLR 256, 268 [124]; *Minister for Planning v Walker* [2008] NSWCA 224; (2008) 161 LGERA 423, 451 [42]–[43].

⁹⁰ *Telstra Corp Ltd v Hornsby Shire Council* [2006] NSWLEC 133; (2006) 67 NSWLR 256, 269 [128]; applied in *Environment East Gippsland Inc v VicForests* [2010] VSC 335 [188]; *MyEnvironment Inc v VicForests* [2012] VSC 91 [272].

Third, it is clear that the two conditions interrelate. This is because the degree of scientific uncertainty that needs to be established varies depending upon the magnitude of the environmental damage. Nevertheless, it assists explanation of the application of the precautionary principle to address the two conditions separately.⁹¹ The following paragraphs address the two conditions separately before considering the application of the principle.

2. A threat of serious or irreversible environmental damage

The existence of a threat is critical. It is not necessary that serious or irreversible environmental damage has actually occurred. It is the *threat* of such damage that is required.⁹² The concept of a “threat” has been taken by the Environment, Resources and Development Court of SA to mean “likelihood” or “probability”.⁹³ However, the Supreme Court of Victoria has held that, in speaking of a threat of environmental damage, the precautionary principle is not making any statement as to the likelihood or probability of its occurrence, except for asserting that the risk is not one that is far-fetched or fanciful. Instead, a threat of environmental damage refers to the foreseeability of the risk of environmental damage. A risk of environmental damage which is remote, in the sense that it is extremely unlikely to occur, may nevertheless constitute a foreseeable risk. “A risk which is not far-fetched or fanciful is real and therefore foreseeable”.⁹⁴

The threats to the environment that should be considered have been held to include “direct and indirect threats, secondary and long-term threats and the incremental or cumulative impacts of multiple or repeated actions or decisions. Where threats may interact or be interrelated (for example where action against one threat may exacerbate another threat) they should not be addressed in isolation”.⁹⁵

The environmental damage threatened must attain the threshold of being *serious or irreversible*. Assessing the seriousness or irreversibility of environmental damage involves consideration of many factors. These include:

- (a) the spatial scale of the threat - for example, local, regional, statewide, national, international;
- (b) the magnitude of possible impacts on both natural and human systems;
- (c) the perceived value of the threatened environment;

⁹¹ Peel criticises the separation of the threat and uncertainty assessments: Jacqueline Peel, ‘When (Scientific) Rationality Rules: (Mis)Application of the Precautionary Principle in Australian Mobile Phone Tower Cases’ (2007) 19 *Journal of Environmental Law* 103, 103.

⁹² *Telstra Corp Ltd v Hornsby Shire Council* [2006] NSWLEC 133; (2006) 67 NSWLR 256, 269 [129].

⁹³ *Conservation Council of South Australia v Development Assessment Committee and Tuna Boat Owners Association (No 2)* [1999] SAERDC 86 (16 December 1999) [24].

⁹⁴ *Environment East Gippsland Inc v VicForests* [2010] VSC 335; (2010) 30 VR 1, 47 [191]; citing *Wyong Shire Council v Shirt* (1980) 146 CLR 40, 47–48.

⁹⁵ *Telstra Corp Ltd v Hornsby Shire Council* [2006] NSWLEC 133; (2006) 67 NSWLR 256, 269 [130].

- (d) the temporal scale of possible impacts in terms of both the timing and the longevity - or persistence - of the impacts;
- (e) the complexity and connectivity of the possible impacts;
- (f) the manageability of possible impacts, having regard to the availability of means and the acceptability of means;
- (g) the level of public concern, and the rationality of and scientific or other evidentiary basis for the public concern; and
- (h) the reversibility of the possible impacts and, if reversible, the time frame for reversing the impacts, and the difficulty and expense of reversing the impacts.⁹⁶

If there is not a threat of serious or irreversible environmental damage, there is no basis upon which the precautionary principle can operate. The precautionary principle does not apply.⁹⁷ This was the conclusion reached by a number of courts in relation to proposed telecommunications developments that, by reason of compliance by a significant margin with relevant standards for the protection of public health and safety, there was no threat of serious or irreversible damage to public health and safety from the developments.⁹⁸ Similarly, courts have held that, by reason of the measures taken to protect threatened species of fauna in native forests, logging would not constitute a real threat of serious or irreversible damage.⁹⁹

3. The lack of scientific certainty

In the context of the lack of scientific certainty, the uncertainty is in relation to the nature and scope of the threat of environmental damage.¹⁰⁰ Assessing the degree of scientific uncertainty involves a process of analysis of many factors. These include:

- (a) the sufficiency of the evidence that there might be serious or irreversible environmental harm caused by the development plan, programme or project;
- (b) the level of uncertainty, including the kind of uncertainty - such as technical, methodological or epistemological uncertainty; and
- (c) the potential to reduce uncertainty having regard to what is possible in principle, economically and within a reasonable time frame.¹⁰¹

⁹⁶ *Telstra Corp Ltd v Hornsby Shire Council* [2006] NSWLEC 133; (2006) 67 NSWLR 256, 269–270 [131]; cited in *Environment East Gippsland Inc v VicForests* [2010] VSC 335; (2010) 30 VR 1, 47 [190]; *MyEnvironment Inc v VicForests* [2012] VSC 91, [274].

⁹⁷ *Telstra Corp Ltd v Hornsby Shire Council* [2006] NSWLEC 133; (2006) 67 NSWLR 256, 271 [138].

⁹⁸ For example, *Hutchinson Telecommunications (Australia) Pty Ltd v Baulkham Hills Shire Council* [2004] NSWLEC 104 [27]; *Telstra Corp Ltd v Hornsby Shire Council* [2006] NSWLEC 133; (2006) 67 NSWLR 256, 280 [184]–[185].

⁹⁹ *MyEnvironment Inc v VicForests* [2012] VSC 91, [277], [341]; upheld on appeal *MyEnvironment Inc v VicForests* [2013] VSCA 356; (2013) 198 LGERA 396.

¹⁰⁰ *Leatch v National Parks and Wildlife Service* (1993) 81 LGERA 270, 282; *Telstra Corp Ltd v Hornsby Shire Council* [2006] NSWLEC 133; (2006) 67 NSWLR 256, 271 [140].

The degree of scientific uncertainty that needs to exist in order to trigger application of the precautionary principle varies depending on the magnitude of environmental damage used in the formulation of the first condition of the precautionary principle. For the formulation of “serious or irreversible environmental damage”, the correlative degree of uncertainty about the threat of environmental damage has been held to be “highly uncertain of threat” or “considerable scientific uncertainty”¹⁰² or “substantial uncertainty”.¹⁰³

Then there is the relationship between the two conditions. If there is an absence of considerable or substantial scientific uncertainty - that is that the second condition is not satisfied - while at the same time there is a threat of serious or irreversible environmental damage - that is that the first condition is satisfied, then the precautionary principle will not apply. The threat of serious or irreversible environmental damage can be classified as relatively certain because it is possible to establish a causal link between the action or event and any environmental damage, to calculate the probability of their occurrence and to insure against them. Measures will still need to be taken but these will need to be preventative measures to control the relatively certain threat of serious or irreversible damage rather than precautionary measures which are appropriate in relation to uncertain threats of environmental damage.¹⁰⁴

4. A shift of the burden of proof

If each of the conditions is satisfied – there is a threat of serious or irreversible damage and there is the requisite degree of scientific uncertainty about that environmental damage – the precautionary principle will be activated. Courts have held that, at this point of activation of the precautionary principle, there is a shifting of the burden of proof. A decision-maker must assume that the threat of serious or irreversible environmental damage is no longer uncertain but is instead certain and real. The burden of showing that the threat does not in fact exist or is negligible effectively reverts to the proponent of the development plan, program or project.¹⁰⁵ The Land and Environment Court of NSW explained:

The rationale for requiring this shift of the burden of proof is to ensure preventative anticipation; to act before scientific certainty of cause and effect is established. It may be too late, or too difficult and costly, to change a course of action once it is proven to be harmful. The preference is to prevent environmental damage, rather than remediate it. The benefit of the doubt is given to environmental protection when there is scientific uncertainty. To avoid environmental harm, it is better to err on the side of caution.

¹⁰¹ *Telstra Corp Ltd v Hornsby Shire Council* [2006] NSWLEC 133; (2006) 67 NSWLR 256, 271 [141]; cited in *Environment East Gippsland Inc v VicForests* [2010] VSC 335; (2010) 30 VR 1, 48 [195].

¹⁰² *Telstra Corp Ltd v Hornsby Shire Council* [2006] NSWLEC 133; (2006) 67 NSWLR 256, 272 [146]–[147].

¹⁰³ *Environment East Gippsland Inc v VicForests* [2010] VSC 335; (2010) 30 VR 1, 48 [197].

¹⁰⁴ *Telstra Corp Ltd v Hornsby Shire Council* [2006] NSWLEC 133; (2006) 67 NSWLR 256, 273 [149].

¹⁰⁵ *ibid* 273 [150].

The function of the precautionary principle is, therefore, to require the decision-maker to assume that there is, or will be, a serious or irreversible threat of environmental damage and to take this into account, notwithstanding that there is a degree of scientific uncertainty about whether the threat really exists ...¹⁰⁶

5. Application of the precautionary principle

(a) Types of precautionary measures

Courts have explained what actions are required when the precautionary principle does apply. The Land and Environment Court of NSW has said:

The type and level of precautionary measures that will be appropriate will depend on the combined effect of the degree of seriousness and irreversibility of the threat and the degree of uncertainty. This involves assessment of risk in its usual formulation, namely the probability of the event occurring and the seriousness of the consequences should it occur. The more significant and the more uncertain the threat, the greater the degree of precaution required.¹⁰⁷

(b) Obtaining further information to reduce uncertainty

Where there is still considerable scientific uncertainty, prudence may require that the development plan, program or project not proceed until further information is obtained in order to reduce the uncertainty. Thus, the Supreme Court of Pakistan appointed an expert commissioner to examine and study the scheme and the planning used by a government agency for an electricity grid station and to report whether there was any likelihood that the electromagnetic fields that radiated from the grid station might cause a hazard to the health of residents in the locality.¹⁰⁸

(c) Allowing margin for error

Prudence would also suggest that some margin for error should be retained until all the consequences of the decision to proceed with the development plan, program or project are known. This allows for potential errors in risk assessment and cost benefit analysis. Potential errors are weighted in favour of environmental protection.

¹⁰⁶ *Telstra Corp Ltd v Hornsby Shire Council* [2006] NSWLEC 133; (2006) 67 NSWLR 256, 273 [151]–[152]; *Conservation Council of South Australia v Development Assessment Committee and Tuna Boat Owners Association (No 2)* [1999] SAERDC 86 (16 December 1999) [24]–[25]; *Tuna Boat Owners Association of SA Inc v Development Assessment Commission* [2000] SASC 238; (2000) 77 SASR 369, 373–374 [27]–[30]; *Vellore Citizens Welfare Forum v Union of India* AIR 1996 SC 2715, 2720–2721 [11]; *AP Pollution Control Board v Prof MV Nayudu* AIR 1999 SC 812, 821 [37]–[39]; *Narmada Bachao Andolan v Union of India* [2000] INSC 518; AIR 2000 SC 3751, 3803–3804 [150].

¹⁰⁷ *Telstra Corp Ltd v Hornsby Shire Council* [2006] NSWLEC 133; (2006) 67 NSWLR 256, 276 [161].

¹⁰⁸ *Zia v WAPDA* PLD 1994 SC 693 [10], [16].

Weighting the risk of error in favour of the environment safeguards ecological space or environmental room for manoeuvre.¹⁰⁹

Illustrations of weighting the risk of error in favour of the environment can be found in decisions of the Land and Environment Court of NSW directed at the avoidance of a risk of serious or irreversible environmental damage to endangered species and ecological communities. This is achieved, first, by resolving scientific uncertainty as to whether an endangered ecological community was widely distributed over a development site by assuming the existence of the wide distribution of the endangered ecological community¹¹⁰ and, second, by determining that proposed developments were likely to significantly affect endangered species and ecological communities so as to trigger the statutory requirement to prepare a detailed environmental assessment in the form of a species impact statement.¹¹¹

(d) An adaptive management approach

One means of retaining a margin for error is to implement a step-wise or adaptive management approach, whereby uncertainties are acknowledged and the area affected by the development plan, program or project is expanded as the extent of uncertainty is reduced.¹¹² The Land and Environment Court of NSW has held that an adaptive management approach might involve the following core elements:

- monitoring of impacts of management or decisions based on agreed indicators;
- promoting research, to reduce key uncertainties;
- ensuring periodic evaluation of the outcomes of implementation, drawing of lessons, and review and adjustment, as necessary of the measures or decisions adopted; and
- establishing an efficient and effective compliance system.¹¹³

The court found that the appropriate and proportionate response to the threat of environmental damage to stygofauna within a limestone formation proposed to be quarried was to implement a step-wise or adaptive management approach. This involved the imposition of conditions of development consent requiring monitoring linked to adaptive management.¹¹⁴ The court stated:

¹⁰⁹ *Telstra Corp Ltd v Hornsby Shire Council* [2006] NSWLEC 133; (2006) 67 NSWLR 256, 276 [162].

¹¹⁰ *Providence Projects Pty Ltd v Gosford City Council* [2006] NSWLEC 52; (2006) 147 LGERA 274, 289 [76]–[81].

¹¹¹ *BT Goldsmith Planning Services Pty Ltd v Blacktown City Council* [2005] NSWLEC 210 [73], [88]; *Gales Holdings Pty Ltd v Tweed Shire Council* [2006] NSWLEC 85; (2006) 146 LGERA 236, 246–248 [56], [60], [66]–[69]; *Gales Holdings Pty Ltd v Tweed Shire Council* [2006] NSWLEC 212 [44]–[47].

¹¹² *Telstra Corp Ltd v Hornsby Shire Council* [2006] NSWLEC 133; (2006) 67 NSWLR 256, 726 [163]; *Environment East Gippsland Inc v VicForests* [2010] VSC 335; (2010) 30 VR 1, 49 [205].

¹¹³ *Telstra Corp Ltd v Hornsby Shire Council* [2006] NSWLEC 133; (2006) 67 NSWLR 256, 276 [164]; see also *Sustain Our Sounds Inc v The New Zealand King Salmon Company Ltd* [2014] NZSC 40; [2014] 1 NZLR 673, 703 [109].

¹¹⁴ *Newcastle and Hunter Valley Speleological Society Inc v Upper Hunter Shire Council and Stoneco Pty Ltd* [2010] NSWLEC 48 [183].

Adaptive management is a concept which is frequently invoked but less often implemented in practice. Adaptive management is not a “suck it and see”, trial and error approach to management, but it is an iterative approach involving explicit testing of the achievement of defined goals. Through feedback to the management process, the management procedures are changed in steps until monitoring shows that the desired outcome is obtained. The monitoring program has to be designed so that there is statistical confidence in the outcome. In adaptive management the goal to be achieved is set, so there is no uncertainty as to the outcome and conditions requiring adaptive management do not lack certainty, but rather they establish a regime which would permit changes, within defined parameters, to the way the outcome is achieved ...

The conditions of consent requiring monitoring and adaptive management would operate over the life of a project (and, in the case of rehabilitation, beyond it). Over this period there are likely to be changes in technology, understanding of issues and the environment (for example in 30 years time climatic conditions might be different from those currently prevailing). An adaptive management regime provides the potential for addressing changes without creating a requirement to seek formal amendment of conditions.¹¹⁵

The Supreme Court of New Zealand has held that such an adaptive management approach was available and consistent with a proper precautionary approach for managing salmon farms in coastal marine areas.¹¹⁶ Three adaptive management approaches had been proposed: staged development, tiered approach to monitoring and ongoing adaptive management.¹¹⁷ The court considered the threshold question of what must be present before an adaptive management approach can even be considered and responded:

there must be an adequate evidential foundation to have reasonable assurance that the adaptive management approach will achieve its goals of sufficiently reducing uncertainty and adequately managing any remaining risk. The threshold question is an important step and must always be considered. As Preston CJ said in *Newcastle*, adaptive management is not a “suck it and see” approach.¹¹⁸

The court considered the secondary question of what an adaptive management regime must contain in any particular case before it is legitimate to use such an approach rather than prohibiting the development until further information becomes available. The court stated that this will depend on an assessment of a combination of factors:

- (a) the extent of the environmental risk (including the gravity of the consequences if the risk is realised);
- (b) the importance of the activity (which could in some circumstances be an activity it is hoped will protect the environment);
- (c) the degree of uncertainty; and

¹¹⁵ *Newcastle and Hunter Valley Speleological Society Inc v Upper Hunter Shire Council and Stoneco Pty Ltd* [2010] NSWLEC 48 [184], [187].

¹¹⁶ *Sustain Our Sounds Inc v The New Zealand King Salmon Company Ltd* [2014] NZSC 40; [2014] 1 NZLR 673, 716 [158].

¹¹⁷ *ibid* 702 [104].

¹¹⁸ *ibid* 708 [125].

- (d) the extent to which an adaptive management approach will sufficiently diminish the risk and the uncertainty.¹¹⁹

The Land and Environment Court of NSW has found on a number of occasions that, consistent with the precautionary principle, an adaptive management approach could be implemented for proposed developments. These included a pearl farm in the waters of Port Stephens;¹²⁰ open cut and underground coal mines that might have insufficient water supply for operations;¹²¹ longwall coal mining that might affect hydrological regimes and dependent ecosystems;¹²² and a limestone quarry that might affect stygofauna.¹²³

- (e) Prohibiting the development

Where precautionary measures cannot reduce the threat of serious or irreversible environmental damage to acceptable levels, the appropriate action may be to prohibit the carrying out of the environmentally damaging activity. The Supreme Court of New Zealand has noted that this may be the case “where urgent measures are needed to avert imminent potential threats, where the potential damage is likely to be irreversible and where particularly vulnerable species or ecosystems are concerned”.¹²⁴

The Environment, Resources and Development Court of SA has found that a proposed tuna farm would be ecologically sustainable only if an adaptive management regime could be implemented but, because a regime could not be implemented, consent for the development should be refused.¹²⁵

The Land and Environment Court of NSW has held that the scarcity of scientific knowledge about the population, habitat and behavioural patterns of two threatened fauna species and about the impacts of a proposed road on the species justified the refusal of a licence to take or kill the species.¹²⁶ Similarly, the Land and Environment Court has refused development consent to an open cut coal mine, finding that the precautionary measures proposed, including compensatory biodiversity offsets, were

¹¹⁹ *Sustain Our Sounds Inc v The New Zealand King Salmon Company Ltd* [2014] NZSC 40; [2014] 1 NZLR 673, 709 [129].

¹²⁰ *Port Stephens Pearls Pty Ltd v Minister for Infrastructure and Planning* [2005] NSWLEC 426 [56]–[58].

¹²¹ *Ulan Coal Mines Ltd v Minister for Planning* [2008] NSWLEC 185; (2008) 160 LGERA 20, 40 [98], [99].

¹²² *Rivers SOS Inc v Minister for Planning* [2009] NSWLEC 213; (2009) 178 LGERA 347, 379 [131].

¹²³ *Newcastle and Hunter Valley Speleological Society Inc v Upper Hunter Shire Council and Stoneco Pty Ltd* [2010] NSWLEC 48 [187]–[189].

¹²⁴ *Sustain Our Sounds v The New Zealand King Salmon Company* [2014] NZSC 40; [2014] 1 NZLR 673, 704 [111].

¹²⁵ *Conservation Council of South Australia v Development Assessment Committee and Tuna Boat Owners Association (No 2)* [1999] SAERDC 86 (16 December 1999); affirmed on appeal *Tuna Boat Owners Association of SA Inc v Development Assessment Commission* [2000] SASC 238; (2000) 77 SASR 369.

¹²⁶ *Leatch v National Parks and Wildlife Service* (1993) 81 LGERA 270, 284, 286–287.

unlikely to prevent serious and irreversible harm to an endangered ecological community.¹²⁷

The Victorian Civil and Administrative Tribunal has held, applying the precautionary principle, that because of, first, the uncertainties associated with the potential effects on aquifers from changes in rainfall and associated recharge by reason of climate change, second, the potential seriousness of permanently depleting the groundwater storage and, third, the risk of irreversible damage to the environment, it was inappropriate to grant water extraction licences.¹²⁸

THE PRINCIPLES OF INTERGENERATIONAL AND INTRAGENERATIONAL EQUITY

1. Introduction

The definition of ESD in WCED's report, *Our Common Future*,¹²⁹ and Principle 3 of the Rio Declaration on Environment and Development¹³⁰ contain two ethical elements: concern for the poor - intragenerational justice or equity; and concern for the future - intergenerational justice or equity. Intragenerational equity describes equity within the present generation while intergenerational equity describes equity between the present and future generations. The needs that are to be equitably shared relate to the three components of ESD: economic development, social development and environmental protection. Equity is not limited to the use or exploitation of natural resources. It extends to maintenance and enhancement of the environment. The Supreme Court of Canada referred to:

the growing concern on the part of legislatures and of society about the safeguarding of the environment. That concern does not reflect only the collective desire to protect it in the interests of the people who live and work in it, and exploit its resources, today. It may also be evidence of an emerging sense of intergenerational solidarity and acknowledgement of an environmental debt to humanity and to the world of tomorrow.¹³¹

The importance to ESD of the component of environmental protection is made clear in Australia where intergenerational equity is legislatively defined to require "that the present generation should ensure that the health, diversity and productivity of the

¹²⁷ *Bulga Milbrodale Progress Association Inc v Minister for Planning and Infrastructure and Warkworth Mining Ltd* [2013] NSWLEC 48; (2013) 194 LGERA 347.

¹²⁸ *Alanvale Pty Ltd v Southern Rural Water* [2010] VCAT 480 [154]–[159], [200].

¹²⁹ "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs": World Commission on Environment and Development (n 23) 44, ch 2 [1].

¹³⁰ "The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations": *Rio Declaration on Environment and Development* 31 ILM 874 (1992).

¹³¹ *Imperial Oil Ltd v Quebec (Minister of the Environment)* 2003 SCC 58; [2003] 2 SCR 624, 640 [19].

environment are maintained or enhanced for the benefit of future generations”.¹³² Similarly intragenerational equity has been judicially recognised as involving “people within the present generation having equal rights to benefit from the exploitation of resources and from the enjoyment of a clean and healthy environment”.¹³³

2. The concepts of intergenerational, intragenerational and interspecies equity

Brown Weiss suggests that there are three fundamental principles forming the basis of intergenerational equity.¹³⁴ First, the “conservation of options principle” requires each generation to conserve the diversity of the natural and cultural resource base in order to ensure that options are available to future generations in solving their problems and satisfying their needs.¹³⁵ This principle rests on the premise that diversity contributes to robustness. It is argued that, while diversity may lead to change in the biological population, biodiverse ecosystems will remain robust. Thus, destructive activities - such as clear felling of tropical forests, developing crop monocultures and exhausting non-renewable resources such as fossil fuels - must be avoided to ensure that future generations have a diverse, natural and cultural base comparable to the status quo. Future generations are more likely to survive, attain their goals and be capable of solving problems as they arise - if they have a variety of options available.¹³⁶

Second, the “conservation of quality principle” holds that each generation must maintain the quality of the natural and cultural environments such that they are passed on in no worse condition than they are received.¹³⁷ Bosselmann argues that this principle requires the preservation of the integrity of the planetary ecosystem - the natural stock – as well as of knowledge about natural resources and ways to use them - the capital stock.¹³⁸

¹³² *Environment Protection and Biodiversity Conservation Act 1999* (Cth) s 3A(c); *Protection of the Environment Administration Act 1991* (NSW) s 6(2)(b).

¹³³ *Telstra Corp Ltd v Hornsby Shire Council* [2006] NSWLEC 133; (2006) 67 NSWLR 256, 267 [117]; citing Ben Boer, ‘Institutionalising Ecologically Sustainable Development: The Roles of National, State, and Local Governments in Translating Grand Strategy into Action’ (1995) 31 *Willamette Law Review* 307, 320.

¹³⁴ See discussion in Brian J Preston, ‘The Role of the Judiciary in Promoting Sustainable Development: The Experience of Asia and the Pacific’ (2005) 9 *Asia Pacific Journal of Environmental Law* 109, 176-177 cited in *Gray v Minister for Planning* [2006] NSWLEC 720; (2006) 152 LGERA 258, 293 [119].

¹³⁵ Edith Brown Weiss, ‘Intergenerational Equity: A Legal Framework for Global Environmental Change’ in Edith Brown Weiss (ed), *Environmental Change and International Law: New Challenges and Dimensions* (United Nations University Press 1992) 397, 401; Edith Brown Weiss, *In Fairness to Future Generations: International Law, Common Patrimony, and Intergenerational Equity* (Transnational Publishers 1989).

¹³⁶ Edith Brown Weiss, ‘Intergenerational Equity: A Legal Framework for Global Environmental Change’ in Edith Brown Weiss (ed), *Environmental Change and International Law: New Challenges and Dimensions* (United Nations University Press 1992) 402-404.

¹³⁷ Edith Brown Weiss, ‘Intergenerational Equity: A Legal Framework for Global Environmental Change’ in Edith Brown Weiss (ed), *Environmental Change and International Law: New Challenges and Dimensions* (United Nations University Press 1992) 401, 404–405.

¹³⁸ Bosselmann (n 33) 98-99.

Third, the “conservation of access” principle requires that each generation should give its members equitable rights of access to the legacy of past generations and should conserve this access for future generations.¹³⁹ This principle holds that the present generation should have a reasonable and equitable right of access to the natural and cultural resources of the earth. Provided the present generation upholds its duties to the future generations, each member of the present generation ought to be entitled to the resources that could improve their own economic and social wellbeing. In this way, this principle of intergenerational equity encompasses the concept of intragenerational equity.¹⁴⁰

Bosselmann argues that a third element needs to be added to the two elements of intergenerational equity and intragenerational equity: namely concern for the nonhuman world - interspecies justice or equality.¹⁴¹ He argues that this element is necessary to ensure ecological sustainability and ecological justice.¹⁴²

These three principles of equity – intergenerational, intragenerational and interspecies justice – fix not only the process of consideration in decision-making but also the outcomes or results of decision-making. These include maintaining a healthy, diverse and productive environment now and in the future.¹⁴³ The three principles of equity call for distributive justice which is to be achieved by according procedural justice: a fair result reached by a fair process. How have these principles been developed by the judiciary?

3. Judicial analysis of the principles of equity

(a) Intergenerational equity and environmental sustainability

The principle of intergenerational equity and the conservation of options subprinciple underpinned the Land and Environment Court’s decision to refuse development consent for a waste disposal facility on prime agricultural land.¹⁴⁴ The development would have precluded an area of prime crop and pasture land from being able to be used sustainably now and in the future for agricultural production. The court noted:

The principle of intergenerational equity involves the right of the present generation to use and enjoy the resources of the earth but without compromising the ability of future generations to do likewise. The present generation needs to ensure that the health, diversity and productivity of the environment are maintained and enhanced for the benefit of future generations. This obligation of intergenerational equity would be breached by the carrying out of development which has an adverse effect on the long-term use, for sustainable agricultural production, of prime crop and pasture land.

¹³⁹ Brown Weiss (n 136) 401.

¹⁴⁰ *ibid* 405.

¹⁴¹ Bosselmann (n 33) 99.

¹⁴² *ibid* 100-101.

¹⁴³ Fisher (n 26) 343.

¹⁴⁴ *Hub Action Group Inc v Minister for Planning* [2008] NSWLEC 116; (2008) 161 LGERA 136.

Such development compromises future generations' ability to use and enjoy to the same degree as the present generation the prime crop and agricultural land.¹⁴⁵

Similarly, the Land and Environment Court, in deciding to approve a large wind farm, recognised that achieving intergenerational equity involved a consideration of the conservation of options subprinciple:

The attainment of intergenerational equity in the production of energy involves meeting at least two requirements. The first requirement is that the mining of and the subsequent use in the production of energy of finite, fossil fuel resources needs to be sustainable. Sustainability refers not only to the exploitation and use of the resource (including rational and prudent use and the elimination of waste) but also to the environment in which the exploitation and use takes place and which may be affected. The objective is not only to extend the life of the finite resources and the benefits yielded by exploitation and use of the resources to future generations, but also to maintain the environment, including the ecological processes upon which life depends, for the benefit of future generations. The second requirement is, as far as is practicable, to increasingly substitute energy sources that result in less greenhouse gas emissions for energy sources that result in more greenhouse gas emissions, thereby reducing the cumulative and long-term effects caused by anthropogenic climate change. In this way, the present generation reduces the adverse consequences for future generations.¹⁴⁶

The principle of intergenerational equity and the conservation of quality subprinciple have underpinned many judicial decisions in cases where development would significantly impair the quality of the environment, particularly the clearing of forests. The Supreme Court of the Philippines upheld the right of children to bring judicial review proceedings which challenged governmental decisions to grant and renew timber licences that authorised large scale deforestation and environmental damage.¹⁴⁷ The court held:

We find no difficulty in ruling that they can, for themselves, for others of their generation and for the succeeding generations, file a class suit. Their personality to sue in behalf of the succeeding generations can only be based on the concept of intergenerational responsibility insofar as the right to a balanced and healthful ecology is concerned. Such a right, as hereinafter expounded, considers the "rhythm and harmony" of nature. Nature means the created world in its entirety. Such rhythm and harmony indispensably include, inter alia, the judicious disposition, utilization, management, renewal and conservation of the country's forest, mineral, land, waters, fisheries, wildlife, off-shore areas and other natural resources to the end that their exploration, development and utilization be equitably accessible to the present as well as future generations. Needless to say, every generation has a responsibility to the next to preserve that rhythm and harmony for the full enjoyment of a balanced and healthful ecology. Put a little differently, the minors' assertion of their right to a

¹⁴⁵ *Hub Action Group Inc v Minister for Planning* [2008] NSWLEC 116; (2008) 161 LGERA 136, 158 [72].

¹⁴⁶ *Taralga Landscape Guardians Inc v Minister for Planning* [2007] NSWLEC 59; (2007) 161 LGERA 1, 12 [74].

¹⁴⁷ *Minors Oposa v Secretary of the Department of Environment and Natural Resources* GR No 101083, July 30, 1993; 33 ILM 173 (1994).

sound environment constitutes, at the same time, the performance of their obligation to ensure the protection of that right for the generations to come.¹⁴⁸

Similarly, the Supreme Court of India has set aside governmental decisions to approve factories for the manufacture of katha that required the cutting down of khair trees. The establishment of katha manufacturing units would have led to “indiscriminate felling of khair trees which would have a deep and adverse effect upon the environment and ecology of the State” of Himachal Pradesh.¹⁴⁹ The court held that the governmental approval of each proposed manufacturing unit not only violated relevant national and state forest policies, it was also:

contrary to public interest involved in preserving forest wealth, maintenance of environment and ecology and considerations of sustainable growth and intergenerational equity. After all, the present generation has no right to deplete all the existing forests and leave nothing for the next and future generations. Not keeping the above considerations in mind, it is obvious, has vitiated the approvals granted [by the Government] ... The obligation of sustainable development requires that a proper assessment should be made of the forest wealth and the establishment of industries based on forest produce should not only be restricted accordingly but their working should also be monitored closely to ensure that the required balance is not disturbed.¹⁵⁰

The Supreme Court of India has repeatedly held that forests in India are an important part of the environment and constitute a national asset. Consequently, “if deforestation takes place rampantly, then intergenerational equity would stand violated”.¹⁵¹ Similarly, the Supreme Court of India ordered the suspension of the illegal mining of iron ore and allied minerals in the State of Karnataka when that was causing loss of scarce natural resources and wide-scale land and environmental degradation. The court found that the environment and ecology are national assets subject to intergenerational equity.¹⁵² In Canada also the principle of intergenerational equity has been invoked to declare invalid forest management plans that failed to comply with legal obligations to ensure the sustainability of the forest for future generations.¹⁵³

¹⁴⁸ *Minors Oposa v Secretary of the Department of Environment and Natural Resources* GR No 101083, July 30, 1993; 33 ILM 173 (1994) 185.

¹⁴⁹ *State of Himachal Pradesh v Ganesh Wood Products* [1995] INSC 482; AIR 1996 SC 149, 152 [10].

¹⁵⁰ *ibid* 163 [51].

¹⁵¹ *Glanrock Estate Pvt Ltd v State of Tamil Nadu* [2010] INSC 723; [2010] 12 SCR 597, 624; *Court On Its Own Motion v Union of India*, WP (C) 284 of 2012, SC, 13 December 2012; [2012] INSC 783 [1], [14]; see also *TN Godavarman Thirumulpad v Union of India* (valuation of forests case) [2005] INSC 504; AIR 2005 SC 4256, 4259 [1]–[3], 4279–4280 [89]–[92].

¹⁵² *Samaj Parivartana Samudaya v State of Karnataka* [2013] INSC 463; AIR 2013 SC 3217, 3237 [31], 3242 [41]; see also *AP Pollution Control Board v Prof MV Nayudu* AIR 1999 SC 812, 824 [51]; *Tirupur Dyeing Factory Owners Association v Noyyal River Ayacutdars Protection Association* [2009] INSC 1624; AIR 2010 SC 3645, 3651 [17].

¹⁵³ *Algonquin Wildlands League v Ontario (Minister for Natural Resources)* (1998) 110 OAC 201, 26 CELR (NS) 163 (Ontario Divisional Court) [13], [14], [138], [203], [237]; see also Jerry De Marco, ‘Law for Future Generations: The Theory of Intergenerational Equity in Canadian Environmental Law’ (2004) 15 *Journal of Environmental Law and Practice* 1, 22-25.

(b) Intergenerational equity and cultural heritage

Courts have applied the principle of intergenerational equity together with the subprinciple of conservation of quality to cultural heritage. The Land and Environment Court of NSW upheld the principle of intergenerational equity in relation to Aboriginal cultural heritage including Aboriginal objects.¹⁵⁴ The Supreme Court of India has recognised the applicability of the principle of intergenerational equity in relation to two, historical, drinking water tanks that had been used for over 500 years by local villagers and pilgrims.¹⁵⁵ The Supreme Court of Sri Lanka applied the principle of intergenerational equity in restraining the exploration and mining of phosphate and associated minerals at Eppawela. The mining operations were likely to affect adversely monuments and irrigation schemes, including tanks and canals, of great historical and cultural significance.¹⁵⁶

(c) Intergenerational equity and climate change

Courts have invoked the principle of intergenerational equity in deciding climate change cases. The Land and Environment Court of NSW has held that the failure to consider the greenhouse gas emissions from the mining of coal - that is scope 1 and 2 emissions - and from the burning of coal - that is scope 3 emissions - in the environmental assessment of a proposed open cut coal mine involved a failure to take into account the principle of intergenerational equity.¹⁵⁷ The Land and Environment Court based its decision to impose conditions on an approval of another coal mine to offset greenhouse gas emissions from the mining of the coal on the principle of intergenerational equity.¹⁵⁸ The Hague District Court in the Netherlands found the principle of intergenerational equity relevant in establishing the scope of the duty of care of the Dutch government to take measures to reduce greenhouse gas emissions.¹⁵⁹ In contrast, a majority of the Supreme Court of New Zealand has held that a consent authority does not need to consider the greenhouse gas emissions from the end use of coal mined from a proposed coal mine.¹⁶⁰

(d) Intragenerational equity

Judicial decisions have also recognised the need for intragenerational justice and have applied the conservation of access subprinciple. The Supreme Court of India ordered a municipal government to abate the nuisance caused by inadequate sewerage and drainage systems that disproportionately affected the poor, thereby

¹⁵⁴ *Anderson v Director General, Department of Environment and Conservation* [2006] NSWLEC 12; (2006) 144 LGERA 43, 91–92 [199]–[200]; *Anderson v Director General, Department of Environment and Climate Change* [2008] NSWCA 337; (2008) 163 LGERA 400, 426–427 [85]–[92].

¹⁵⁵ *Intellectuals Forum Tirupathi v State of Andhra Pradesh* [2006] INSC 86; AIR 2006 SC 1350.

¹⁵⁶ *Bulankulama v Secretary, Ministry of Industrial Development* 2000 (3) SLR 243.

¹⁵⁷ *Gray v Minister for Planning* [2006] NSWLEC 720; (2006) 152 LGERA 258, 294 [126]; see also *Thornton v Adelaide Hills Council* [2006] SAERDC 41; (2006) 151 LGERA 1, 12–13 [47].

¹⁵⁸ *Hunter Environment Lobby Inc v Minister for Planning* [2011] NSWLEC 221 [19]–[21], [100].

¹⁵⁹ *Urgenda Foundation v The State of the Netherlands (Ministry of Infrastructure and the Environment)* C/09/456689/HA ZA 13-1396 (Rechtbank Den Haag) (24 June 2015) [4.8], [4.56], [4.57].

¹⁶⁰ *West Coast Ent Inc v Buller Coal Ltd* [2013] NZSC 87; [2014] 1 NZLR 32.

causing social injustice.¹⁶¹ The Supreme Court of India has also taken judicial notice of the intragenerational injustice occasioned by the lack of necessary facilities and essential amenities and of the risk to the lives of pilgrims en route to and around a holy cave. The court gave directions and orders for measures to be undertaken to improve facilities and amenities for pilgrims.¹⁶² Similarly, the Supreme Court of India made various orders restraining and regulating mining of limestone that was adversely affecting the forests and ecology of the Doon Valley area and the health and well-being of rural villagers.¹⁶³ The court found the forests “are a bequest of the past generations to the present”.¹⁶⁴

(e) An integrated approach to the principles of equity

The Land and Environment Court of NSW considered each of the three principles of equity – intergenerational, intragenerational and interspecies justice – in refusing approval for a large, open cut coal mine that would have had significant and unacceptable impacts on biological diversity, including endangered ecological communities, as well as noise and social impacts on local villagers. The court found that the economic analyses that justified the project had not considered issues of equity or distributive justice. Rather they were concerned only with the aggregation of costs and benefits and not how or why these were allocated.¹⁶⁵ The court noted that distributive injustice would be caused by the distribution of the burdens of the project in several ways: first, on local villagers by limiting their ability to live in a clean and healthy environment - intragenerational equity; second, on future generations by not maintaining the health, diversity and productivity of the local environment - intergenerational equity; and third, on components of biological diversity, such as endangered ecological communities and threatened fauna, by disturbing the integrity, stability and beauty of the biotic community - interspecies equity.¹⁶⁶

THE PRINCIPLE OF CONSERVATION OF BIOLOGICAL DIVERSITY AND ECOLOGICAL INTEGRITY

1. The functions performed by the principle

(a) The concepts underlying the principle

One of the principles of ESD concerns the conservation of biological diversity and ecological integrity. In Australia, it is formulated as a fundamental consideration to be taken into account in decision-making processes. For example, “the conservation

¹⁶¹ *Ratlam Municipal Council v Vardhichand* [1980] INSC 138; AIR 1980 SC 1622, 1629 [15]–[16].

¹⁶² *Court On Its Own Motion v Union of India*, WP (C) 284 of 2012, SC, 13 December 2012; [2012] INSC 783.

¹⁶³ *Rural Litigation and Entitlement Kendra v State of Uttar Pradesh* AIR 1988 SC 2187.

¹⁶⁴ *ibid* 2196 [21]; see also 2197 [24].

¹⁶⁵ *Bulga Milbrodale Progress Association Inc v Minister for Planning and Infrastructure and Warkworth Mining Ltd* [2013] NSWLEC 48; (2013) 194 LGERA 347, 449 [485].

¹⁶⁶ *ibid* 449–451 [486]–[494].

of biological diversity and ecological integrity should be a fundamental consideration”.¹⁶⁷

Biological diversity or biodiversity refers to:

the variability among living organisms from all sources (including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part) and includes:

- (a) diversity within species and between species;
- (b) diversity of ecosystems.¹⁶⁸

More particularly, biological diversity has been defined to mean:

the diversity of life and is made up of the following 3 components:

- (a) genetic diversity – the variety of genes (or units of heredity) in any population,
- (b) species diversity – the variety of species,
- (c) ecosystem diversity – the variety of communities or ecosystems.¹⁶⁹

Conservation of biological diversity therefore requires the maintenance of the diversity within species and between species and the diversity of ecosystems and the maintenance of essential ecological processes and life-support systems.¹⁷⁰

Ecological integrity refers to the earth’s life-support systems.¹⁷¹ The Land and Environment Court of NSW has described ecological integrity in these terms:

At a macro level, ecological integrity involves conservation of the ecological processes that keep the planet fit for life. They “shape climate, cleanse air and water, regulate water flow, recycle essential elements, create and recreate soil, and enable ecosystems to renew themselves”...

Maintaining ecological integrity involves maintaining ecosystem health. Ecosystems become unhealthy if their community structure (species richness, species composition or food web architecture) or ecosystem functioning (productivity, nutrient dynamics, decomposition) has been fundamentally upset by human pressures...

Maintaining ecological integrity also involves maintaining ecosystem functioning and ecosystem services. Ecosystem functioning is “the sum total of processes such as the cycling of matter, energy, and nutrients operating at the ecosystem level”...Ecosystem services are “the wide array of conditions and processes through which ecosystems, and their biodiversity, confer benefits on humanity; these include

¹⁶⁷ *Environment Protection and Biodiversity Conservation Act 1999* (Cth) s 3A; *Protection of the Environment Administration Act 1999* (NSW) s 6(2)(c).

¹⁶⁸ *Environment Protection Biodiversity and Conservation Act 1999* (Cth) s 528.

¹⁶⁹ *Threatened Species Conservation Act 1995* (NSW) s 4(1).

¹⁷⁰ See *National Strategy for Ecological Sustainable Development* (n 31) 8.

¹⁷¹ John Moffet and Francois Bregha, ‘The Role of Law Reform in the Promotion of Sustainable Development’ (1996) 6 *Journal of Environmental Law and Practice* 1, 4; Preston (n 134) 187.

the production of goods, life support functions, life-fulfilling conditions, and preservation of options”...

The conservation of threatened species is an essential action in the conservation of species diversity, and hence of biological diversity, and of ecological integrity.¹⁷²

(b) The principle as a process

These formulations of the principle of conservation of biological diversity and ecological integrity describe a process – the consideration of the conservation of biological diversity and ecological integrity in decision-making. Consideration of relevant matters involves more than the matters being adverted to or given mere lip service. The decision-maker has to inform itself sufficiently to be able to take the relevant matters into consideration. For a proposed development for which approval is sought, the decision-maker has to be aware not only of the impacts and the likely harm but also of any protective or mitigative measures. There needs to be an understanding of the relevant matters and their significance to the decision required to be made as well as a process of evaluation sufficient to warrant the description of the matters being taken into consideration.¹⁷³

Where the subject matter of the relevant matter is an outcome or objective, including a performance standard, that is to be achieved, it needs to be considered as a fundamental element in, or a focal point of, the decision-making process.¹⁷⁴ A decision-maker cannot ignore the prescribed standard, outcome or objective, or subvert it by applying some other standard or no standard at all, or by pursuing some other outcome or objective or none at all. A mere perfunctory acknowledgment of the existence of the relevant consideration will not suffice.¹⁷⁵

(c) The principle as an outcome

The principle, however, is more than a process. Performing the process of consideration of the relevant matter of the conservation of biological diversity and ecological integrity is not an end in itself. Rather it is a means to achieve the end of ecological sustainability that lies at the core of ESD. Implementation of the principle of conservation of biological diversity and ecological integrity is, therefore, not only a process. It may also lead to a substantive outcome. This substantive outcome emerges for three reasons.

First, the subject matter of the consideration that is required is an outcome – the conservation of biological diversity and ecological integrity. This requires

¹⁷² *Bentley v BGP Properties Pty Ltd* [2006] NSWLEC 34; (2006) 145 LGERA 234, 243–244 [60]–[63].

¹⁷³ *Weal v Bathurst City Council* [2000] NSWCA 88; (2000) 111 LGERA 181 185 [13], 201 [80], 202 [86]; *Anderson v Director General, Department of Environment and Climate Change* [2008] NSWCA 337; (2008) 163 LGERA 400, 421 [58]; *Warkworth Mining Ltd v Bulga Milbrodale Progress Association Inc* [2014] NSWCA 105; (2014) 86 NSWLR 527, 572 [214]–[215].

¹⁷⁴ *Zhang v Canterbury City Council* [2001] NSWCA 167; (2001) 51 NSWLR 589, 602 [75].

¹⁷⁵ *Warkworth Mining Ltd v Bulga Milbrodale Progress Inc* [2014] NSWCA 105; (2014) 86 NSWLR 527, 572 [215].

maintenance of the diversity within species and between species and the diversity of ecosystems and maintenance of essential ecological processes and life-support systems.

Second, the concept of biological diversity and ecological integrity is not merely a consideration: that is something to be taken into account in decision-making. It is required to be a “fundamental” consideration. The adjective “fundamental” describing the noun “consideration” means “essential” or “primary”. It elevates the weight and priority that must be given to the conservation of biological diversity and ecological integrity relative to any other considerations in the decision-making process.¹⁷⁶ Although it is generally for the decision-maker to accord such weight to relevant considerations as the decision-maker thinks appropriate, a court may set aside a decision where the decision-maker fails to give adequate weight to a relevant consideration of great importance - especially one that is classified as fundamental.¹⁷⁷

Third, it needs to be remembered that the ultimate objective is to promote and maintain ESD. ESD has at its core the substantive outcome of ecological sustainability – protecting and restoring the earth’s ecological systems. This substantive outcome is to be achieved by implementing the various principles of ESD, including the principle of conservation of biological diversity and ecological integrity. Although the principle in terms requires the conservation of biological diversity and ecological integrity only to be a fundamental consideration, if the substantive outcome of ESD as ecological sustainability is to be achieved, so too must the outcome of conservation of biological diversity and ecological integrity. The earth’s ecological systems cannot be maintained if the diversity of life on earth and the earth’s life-support systems are not protected and maintained.¹⁷⁸

The consequence is that, in practice, proper consideration of the principle of conservation of biological diversity and ecological integrity ought to result in the making of a decision that promotes rather than demotes the conservation of biological diversity and ecological integrity.

2. The application of the principle in practice

(a) Civil proceedings

Has this analysis been supported by the approaches adopted by the courts? In particular, have they upheld the need to afford priority to the conservation of biological diversity and ecological integrity in decision-making? The Land and Environment Court of NSW refused to grant a licence to take or kill two species of endangered fauna, the Giant Burrowing Frog and the Yellow-bellied Glider, for the

¹⁷⁶ Fisher (n 26) 343.

¹⁷⁷ *Warkworth Mining Ltd v Bulga Milbrodale Progress Association Inc* [2014] NSWCA 105; (2014) 86 NSWLR 527, 568 [196].

¹⁷⁸ David Hooper et al, ‘A Global Synthesis Reveals Biodiversity Loss as a Major Driver of Ecosystem Change’ (2012) 486 *Nature* 105, 105; Bradley Cardinale, ‘Biodiversity Loss and its Impact on Humanity’ (2012) 486 *Nature* 59, 60-61.

construction of a proposed road through their habitat.¹⁷⁹ In so doing, the court applied the precautionary principle. There was a scarcity of scientific knowledge about the populations and habitats of the two species and the impacts of the construction of a road on the species. The court held that the applicant for the licence needed to satisfy the court that it was appropriate in all the relevant circumstances to grant the licence to take or kill the endangered species.¹⁸⁰ In circumstances where the court was left in doubt as to the likely adverse effects on the long-term conservation of the two species of endangered fauna, it concluded that a licence to take or kill the species should not be granted.¹⁸¹

The Land and Environment Court upheld the need for the conservation of biological diversity and ecological integrity in refusing development consent for an industrial subdivision of land containing an endangered ecological community - the Sydney Freshwater Wetland - and an endangered plant species.¹⁸² Similarly, the Land and Environment Court refused development consent to a large open cut coal mine in the Hunter Valley that would have had significant and unacceptable impacts on endangered ecological communities. These included in particular the Warkworth Sands Woodland which was an endemic community with a very short range as well as key habitats of fauna species.¹⁸³ The mining project proposed no measures to avoid the impacts and few measures to mitigate the impacts. In addition the direct offsets and other compensatory measures proposed would not adequately compensate for the significant impacts on the ecological community. The court held that this was “a fundamental matter to be considered in the decision-making process, to which significant weight should be assigned”.¹⁸⁴

Giving priority to the conservation of biological diversity and ecological integrity does not always mean the refusal of approval to a project that is likely to impact on biological diversity and ecological integrity. It may be possible to impose conditions of approval to ensure the conservation of biological diversity and ecological integrity, including by requiring monitoring and adaptive management.¹⁸⁵

(b) Criminal proceedings

Sentencing decisions for offences against environmental legislation have also recognised the importance of conservation of biological diversity and ecological integrity. A critical factor affecting the objective seriousness of an offence is the harmfulness of the offender’s conduct. For environmental offences, the Land and Environment Court of NSW has observed:

¹⁷⁹ *Leatch v National Parks and Wildlife Service and Shoalhaven City Council* (1993) 81 LGERA 270.

¹⁸⁰ *ibid* 286–287.

¹⁸¹ *ibid* 284, 286–287.

¹⁸² *BGP Properties Pty Ltd v Lake Macquarie City Council* [2004] NSWLEC 399; (2004) 138 LGERA 237, 271 [150].

¹⁸³ *Bulga Milbrodale Progress Association Inc v Minister for Planning and Infrastructure and Warkworth Mining Ltd* [2013] NSWLEC 48; (2013) 194 LGERA 347.

¹⁸⁴ *ibid* 397 [255].

¹⁸⁵ *Telstra Corp Ltd v Hornsby Shire Council* [2006] NSWLEC 133; (2006) 67 NSWLR 256, 276–277 [164]–[165]; *Newcastle and Hunter Valley Speleological Society Inc v Upper Hunter Shire Council and Stoneco Pty Ltd* [2010] NSWLEC 48, [183]–[187].

Harmfulness needs to not only be considered in terms of actual harm, the potential or risk of harm should also be taken into account ... Harm should not be limited to measurable harm such as actual harm to human health. It can also include a broader notion of the quality of life.

Harm can include harm to the environment and its ecology. Harm to an animal or plant not only adversely affects that animal or plant, it also affects other biota that have ecological relationships to that animal or plant

Harm can be direct or indirect, individual or cumulative. Activities that contribute incrementally to the gradual deterioration of the environment, even when they cause no discernible direct harm to human interest, should also be treated seriously.¹⁸⁶

Sentencing courts have recognised that harm to components of biological diversity and a loss of ecological integrity thwart the achievement of ESD and this includes a failure to apply the principle of conservation of biological diversity and ecological integrity. The culpability of an offender depends on the degree to which the offender's conduct offends against the legislative objectives, including maintenance of ESD and the conservation of biological diversity and ecological integrity.¹⁸⁷

THE PRINCIPLE OF INTERNALISATION OF ENVIRONMENTAL COSTS AND IMPROVED VALUATION AND PRICING

1. The concepts underlying the principle

(a) Introduction

ESD involves the internalisation of environmental costs into decision-making about economic and other development plans, programs and projects likely to affect the environment. This is the principle of the internalisation of environmental costs. The principle requires accounting for both the short-term and the long-term external and environmental costs. This can be undertaken in a number of ways, including:

- (a) environmental factors being included in the valuation of assets and services;
- (b) adopting the polluter pays or user pays principle, that is to say, those who generate pollution and waste should bear the cost of containment, avoidance or abatement;

¹⁸⁶ *Environment Protection Authority v Waste Recycling and Processing Corporation* [2006] NSWLEC 419; (2006) 148 LGERA 299, 325 [145]–[147]; see also *Bentley v BGP Properties Pty Ltd* [2006] NSWLEC 34; (2006) 145 LGERA 234, 260–261 [173]–[178].

¹⁸⁷ *Bentley v BGP Properties Pty Ltd* [2006] NSWLEC 34; (2006) 145 LGERA 234, 260 [170]–[171] (clearing of a threatened plant species); *Garrett v Williams* [2006] NSWLEC 785; (2006) 160 LGERA 115, 133 [89], [90] (clearing of an endangered ecological community); *Director-General, Department of Environment and Climate Change v Rae* [2009] NSWLEC 137; (2009) 168 LGERA 121, 128–129 [15]–[20] (clearing of native vegetation); *Plath v Rawson* [2009] NSWLEC 178; (2009) 170 LGERA 253, 264–266 [49]–[56] (clearing of many threatened plant species).

- (c) the users of goods and services paying prices based on the full life cycle of the costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste; and
- (d) environmental goals, having been established, being pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.¹⁸⁸

The rationale underlying the internalisation of environmental costs is that if the real value of the environment and of its components is reflected in the costs of using it, the environment will be sustainably used and managed and not exploited wastefully.¹⁸⁹

(b) Market failure

The concept of internalisation of external costs is an economic rule to address market failure. Market failures occur when markets do not reflect the full social costs or benefits of a good or service. One cause of market failure is externalities. These are uncompensated side effects of human actions. An externality exists whenever an output of one person appears as an input in the consumption or production of another person without accompanying payment of compensation.¹⁹⁰

Here is an example: where a factory discharges waste into, and thereby pollutes, a stream. The discharged waste is an output of the production at the factory. The factory does not pay the costs of containment, avoidance or abatement of the pollution caused by the waste. Rather, the users downstream experience the negative externality of the pollution of the stream. This is an input in their consumption or production activities. The pollution of the stream has a real economic cost to the users. For example, the riparian users such as irrigators may incur input costs in their agricultural production when they treat the polluted water by filtration or chemical treatment. Recreational users suffer a diminution in the recreational services provided by the stream. The problem with a negative externality is that the people and the environment that are impacted are usually not compensated for the costs they suffer.¹⁹¹

Another cause of market failure is government subsidies of infrastructure investment that cause distortions in investment and misallocation of natural resources. Government subsidies to promote the construction of infrastructure distort cost benefit analysis. In most cost benefit analysis, the cost of previous infrastructure investments are regarded as “sunk” costs to be excluded from the analysis. As history reveals, sunken government subsidies to promote the construction of

¹⁸⁸ *Telstra Corp Ltd v Hornsby Shire Council* [2006] NSWLEC 133; (2006) 67 NSWLR 256, 267 [119]; see also *Protection of the Environment Administration Act 1991* (NSW) s 6(2)(d).

¹⁸⁹ Preston (n 134) 193-194.

¹⁹⁰ John Krutilla and Anthony Fisher, *The Economics of Natural Environments: Studies in the Valuation of Commodity and Amenity Resources* (Resources for the Future 1975) 27.

¹⁹¹ Brian J Preston, ‘Economic Valuation of the Environment’ (2015) 32 *Environmental and Planning Law Journal* 301, 307.

infrastructure - such as dams, roads, railways and ports - have resulted in significant environmental degradation.¹⁹²

(c) The polluter and user pays principles

The user pays principle and the polluter pays principle are means of dealing with governmental subsidies and negative externalities that lead to market failure. The user pays principle requires that those who benefit from investment should pay for its creation. As Young notes, “when users have to pay for infrastructure and investment costs there is less risk of poor investments being used as an indirect means to develop marginal resources”.¹⁹³

The polluter pays principle provides that the person who causes environmental harm - the polluter - should pay the costs of the environmental harm - the pollution. Under the polluter pays principle, the polluter should pay for the costs of: preventing pollution or reducing pollution to comply with applicable standards and laws; preventing, controlling, abating and mitigating damage to the environment caused by pollution; making good any resultant environmental damage, such as cleaning up pollution and restoring the environment damaged; and making reparation, including compensatory damages and compensatory restoration, for irreparable injury.¹⁹⁴ By requiring the polluter to take responsibility for the external costs arising from its pollution, the principle allocates these costs to the polluter. The polluter must internalise these costs as a cost of doing business. Internalisation will be complete when the polluter takes responsibility for all the costs arising from pollution. It will be incomplete when part of the costs are shifted to society.¹⁹⁵

The polluter pays principle plays a role in both the prevention of pollution and the remediation of pollution if it were to occur. The principle plays a role in prevention by justifying decisions either not to approve development that cannot ensure the internalisation of environmental costs or to approve development only on conditions that will ensure the internalisation of environmental costs. Further, the prior knowledge that, if pollution were to occur, the polluter would be responsible for its containment, avoidance and abatement would have a deterrent effect, thereby preventing future pollution.¹⁹⁶ The costs of containment, avoidance and abatement of pollution are usually likely to exceed the costs of prevention of pollution. Acting

¹⁹² MD Young, ‘The Precautionary Principle as a Key Element of Ecologically Sustainable Development’ in Ronnie Harding and Elizabeth Fisher (eds), *Perspectives on the Precautionary Principle* (Federation Press 1999) 148.

¹⁹³ Young (n 192).

¹⁹⁴ Brian J Preston, ‘Sustainable Development Law in the Courts: The Polluter Pays Principle’ (2009) 26 *Environmental and Planning Law Journal* 257, 259.

¹⁹⁵ Nicolas de Sadeleer, *Environmental Principles – From Political Slogans to Legal Rules* (OUP 2002) 21.

¹⁹⁶ Australian and New Zealand Environment Conservation Council, *Financial Liability for Contaminated Site Remediation: A Position Paper* (1994) 5-6; Anna Kingsbury, ‘Funding the Remediation of Contaminated Land in Australia and New Zealand: The Problem of Orphan Sites’ (1998) 6 *Waikato Law Review* 37, 41.

rationally, a person would undertake the cost of preventative measures rather than the cost of remedial measures.¹⁹⁷

Application of the polluter pays principle affects market decisions for consumption of goods and services produced by a polluter. As Cordonier Segger and Khalfan observe:

Instituting the polluter pays principle ensures that the prices of goods reflect the costs of producing that good, including costs associated with pollution, resource degradation, and environmental harm. Environmental costs are reflected (or “internalized”) in the price of every good. The result is that goods that pollute less will cost less, and consumers may switch to less polluting substitutes. This will result in a more efficient use of resources and less pollution.¹⁹⁸

The polluter pays principle plays a role in the remediation of pollution that has occurred: first, by justifying administrative and judicial orders for clean-up, remediation and rehabilitation of the environment harmed; and, second, by making reparation including compensation for irremediable injuries.

(d) Conclusion

The concept of internalisation of environmental costs, including the polluter pays principle and user pays principle, is concerned with process by introducing into decision-making by producers and consumers the environmental costs of production and consumption.¹⁹⁹ But this process is only a means to achieve the substantive end of a more sustainable use of resources with less environmental harm including less pollution. Achieving this end furthers the ultimate outcome of ecological sustainability that lies at the core of ESD.

2. Judicial application of the polluter and user pays principles

To what extent have judicial decisions recognised and applied the concept of internalisation of environmental costs, including the polluter pays principle and the user pays principle? The Supreme Court of India has held that the polluter pays principle is part of the law of the country.²⁰⁰ The court, by its orders, has applied the polluter pays principle to prevent ongoing pollution, including to abate the discharge of untreated effluent by tanneries in the State of Tamil Nadu;²⁰¹ to relocate tanneries discharging toxic effluent affecting the environment and the health of residents in

¹⁹⁷ See *Axer Pty Ltd v Environment Protection Authority* (1993) 113 LGERA 357, 359–360; *Bentley v BGP Properties Pty Ltd* [2006] NSWLEC 34; (2006) 145 LGERA 234, 257–258 [156]–[157].

¹⁹⁸ Cordonier Segger and Khalfan (n 70) 82-83.

¹⁹⁹ Fisher (n 26) 343.

²⁰⁰ *Indian Council for Enviro-Legal Action v Union of India* AIR 1996 SC 1446, 1466 [67]; *Vellore Citizens Welfare Forum v Union of India* AIR 1996 SC 2715, 2721 [12], [13]; *MC Mehta v Union of India* (Calcutta tanneries case) (1997) 2 SCC 411; 1996 (10) Suppl SCR 383 [18], [19]; *MC Mehta v Union of India* (Taj Trapezium case) AIR 1997 SC 734, 760–761 [26]; *MC Mehta v Kamal Nath* (River Beas case) (1997) 1 SCC 388 [37]–[38].

²⁰¹ *Vellore Citizens Welfare Forum v Union of India* AIR 1996 SC 2715.

Calcutta;²⁰² to order coke or coal consuming industries emitting air pollution that was damaging the Taj Mahal in Agra and the residents of the Taj Trapezium to apply for gas connection or, on failing to do so, to relocate;²⁰³ and to order illegally imported containers of oil, which constituted hazardous waste, lying at Nhava Sheva Port be re-exported or destroyed at the importers' cost.²⁰⁴

The Supreme Court of India has also applied the polluter pays principle to require the polluter to pay the costs of remediation and compensation for loss and damage caused by pollution. The means include requiring chemical factories to pay the costs of carrying out remediation of polluted aquifers and soil;²⁰⁵ requiring tanneries to pay the costs of removing sludge and other pollutants lying in areas affected by untreated effluent and to compensate for harm caused to the villagers, the soil and the underground water;²⁰⁶ requiring tanneries to relocate and pay compensation for the loss of the ecological and environmental values of areas affected by toxic effluent and for the suffering of residents;²⁰⁷ and paying compensation for the costs of restitution of the environment and ecology of a river damaged by construction of a motel.²⁰⁸

In Australia, the polluter pays principle has been applied by courts in four situations: in sentencing for environmental crime; in imposing civil orders for statutory breach, both pecuniary penalties and injunctive relief; in reviewing administrative orders imposed by regulatory agencies, including management orders to remediate contaminated land; and in imposing conditions requiring prevention, remediation and compensation in approvals for development in merit review appeals.²⁰⁹

The Land and Environment Court of NSW has applied the polluter pays principle in sentencing for environmental crime. The court has stated:

Courts have repeatedly stated, when sentencing for environmental offences, that the sentence of the court needs to be of such magnitude as to change the economic calculus of persons in determining whether to comply with or contravene environmental laws. It should not be cheaper to offend than to prevent the commission of the offence. Environmental crime will remain profitable until the financial cost to offenders outweighs the likely gains by offending. The amount of any fine needs to be such as will make it worthwhile to incur the costs of complying with the law and undertaking the necessary precautions. The amount of the fine must be substantial enough so as not to appear as a mere licence fee for illegal activity ... In this way, the sentence of the court changes the economic calculus of persons who

²⁰² *M C Mehta v Union of India* (Calcutta tanneries case) (1997) 2 SCC 411; 1996 (10) Suppl SCR 383 [20].

²⁰³ *M C Mehta v Union of India* (Taj Trapezium case) AIR 1997 SC 734.

²⁰⁴ *Research Foundation for Science Technology and Natural Resources Policy v Union of India* [2005] INSC 14; (2005) 10 SCC 570.

²⁰⁵ *Indian Council for Enviro-Legal Action v Union of India* AIR 1996 SC 1446.

²⁰⁶ *Vellore Citizens Welfare Forum v Union of India* AIR 1996 SC 2715, 2720–2721 [11].

²⁰⁷ *MC Mehta v Union of India* (Calcutta tanneries case) (1997) 2 SCC 411; 1996 (10) Suppl SCR 383 [20].

²⁰⁸ *MC Mehta v Kamal Nath* (River Beas case) (1997) 1 SCC 388 [39]; see also *MC Mehta v Kamal Nath* AIR 2000 SC 1997 [1], [24].

²⁰⁹ Preston (n 194) 259-266.

might be tempted not to comply with environmental laws or not to undertake the necessary precautions. Compliance with the law becomes cheaper than offending. Environmental crimes become economically irrational.

Sentences that have this effect result in persons who carry out activities likely to harm the environment, including causing pollution, internalising the costs of preventing and controlling pollution as well as any environmental harm itself. This is the polluter pays principle, one of the principles of ecologically sustainable development. Persons who generate pollution and waste should bear the costs of containment, avoidance or abatement ... The sentence of the court should be such as to make it economically rational for such persons to incur the cost of containment, avoidance or abatement of pollution and waste.²¹⁰

In addition, the polluter ought to be required to pay for the costs of remedying any ongoing environmental harm caused by the polluter's conduct. This can be done by ordering the polluter to clean up the pollution and restore the environment as far as practicable to the condition it was in before being polluted. The polluter ought also to be required to make reparation for irremediable harm caused by the polluter's conduct, such as the death of biota and damage to ecosystem structure and functioning.²¹¹

CONCLUSION

ESD and its principles have been criticised as vague and for being framed appropriately for the purpose of political aspirations but not framed for implementation as legal standards.²¹² This impedes the achievement of ESD. As courts have recognised, in order to achieve sustainability, "hortatory statements of principle and aspirational goals are insufficient; the grand strategy must be translated into action". This involves institutionalising ESD and its principles in policies and laws as well as ensuring that functions under those policies and laws are performed in a way that promotes and implements ESD and its principles.²¹³ It also involves articulating clearly when, how and what action needs to be taken to achieve ESD.

The task of instilling ESD and its principles with legal rigour has generally fallen to the judiciary.²¹⁴ The judiciary, through their decisions, have elucidated the meaning of ESD and its principles and how they can be applied meaningfully in decision-

²¹⁰ *Bankstown City Council v Hanna* [2014] NSWLEC 152; (2014) 205 LGERA 39, 68–69 [152]–[153]; see also *Axer Pty Ltd v Environment Protection Authority* (1993) 113 LGERA 357, 359–360; *Bentley v BGP Properties Pty Ltd* [2006] NSWLEC 34; (2006) 145 LGERA 234, 257–258 [156]–[157]; *Environment Protection Authority v Waste Recycling and Processing Corporation* [2006] NSWLEC 419; (2006) 148 LGERA 299, 341 [229]–[232].

²¹¹ *Environment Protection Authority v Waste Recycling and Processing Corporation* [2006] NSWLEC 419; (2006) 148 LGERA 299, 341 [230].

²¹² *Nicholls v Director-General of National Parks and Wildlife* (1994) 84 LGERA 397, 419.

²¹³ *Hub Action Group Inc v Minister for Planning* [2008] NSWLEC 116; (2008) 161 LGERA 136, 141 [2].

²¹⁴ *Godden and Peel* (n 86) 139.

making. These judicial pronouncements are neither complete nor comprehensive. More work needs to be done to explain the meaning and application of ESD and its principles. The judiciary has supplied many of the pieces of the 1,000 piece jigsaw puzzle of ESD. Patches of the picture are starting to emerge. There are gaps. Future judicial decisions need to supply more jigsaw pieces to bring the whole picture of ESD into full view.