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# Introduction

## Marie-Claire Cordonier Segger, Frederic Perron-Welch, and Christine Frison

The exponential growth in the use and trade of living modified organisms (LMOs) has made the safe use of biotechnology (i.e., biosafety) an issue of global relevance.<sup>1</sup> Modern biotechnology has the potential to further development and improve human welfare, but the possible impact of environmental releases of LMOs on other species and varied ecosystems also implies significant and unexplored risks. The adoption of the Cartagena Protocol on Biosafety<sup>2</sup> (Cartagena Protocol) contributes to the development of an international regulatory framework to enable international trade in environmentally sound applications of biotechnology.<sup>3</sup>

This Protocol, as a legal instrument that aims to promote sustainable development and use of biological resources, is part of the emerging body of sustainable development law, integrating economic and social development and environmental protection by setting an international regime in place to govern the transboundary movements of LMOs.<sup>4</sup> Globalisation has greatly broadened the need for biosafety and has complicated its pursuit. In spite of multilateral initiatives for the implementation of national biosafety frameworks, the implementation of international

<sup>&</sup>lt;sup>1</sup> Global use of biotech crops has grown rapidly – approximately 94-fold from 1996 to 2011 – to 160 million hectares of cropland cultivated by millions of farmers in 29 different countries. Most biotech crops are grown in the USA, but developing countries are rapid adopters and are expected to soon grow the majority of biotech crops. Successful crops (e.g. soybeans, cotton, corn, and canola) have seen high levels of market penetration. See Clive James, *Global Status of Commercialized Biotech/GM Crops*: 2011, International Service for the Acquisition of Agri-biotech Applications (ISAAA) Brief No 43 (Ithaca, NY: ISAAA, 2011).

<sup>&</sup>lt;sup>2</sup> *Cartagena Protocol on Biosafety*, 2226 UNTS 208; 39 ILM 1027, 29 January, 2000 (entered into force 11 September 2003) [*Cartagena Protocol*].

<sup>&</sup>lt;sup>3</sup> Secretariat of the Convention on Biological Diversity (SCBD), *Cartagena Protocol on Biosafety to the Convention on Biological Diversity: Text and Annexes* (Montreal, Canada: SCBD, 2000) at Introduction.

<sup>&</sup>lt;sup>4</sup> Marie-Claire Cordonier Segger, "The Role of International Forums in the Advancement of Sustainable Development" (2009) 10(1) Sustainable Development Law & Policy 4 at 8; Marie-Claire Cordonier Segger and Ashfaq Khalfan, eds, Sustainable Development Law: Principles, Practices and Prospects (Oxford, UK: Oxford University Press, 2004) at 2 [Sustainable Development Law].

### 2 Marie-Claire Cordonier Segger, Frederic Perron-Welch, and Christine Frison

biosafety obligations remains a challenge for developing countries, especially for those with limited scientific, human, technical, and financial resources.

This book analyses the legal aspects of implementing the Cartagena Protocol and provides a serious contribution to current legal and academic debates on biosafety by reviewing key issues under the Cartagena Protocol that affect the design and implementation of national biosafety regulatory regimes. The book takes into account the principles of sustainable development law, and informs future evolution of the international biosafety regime. The text also examines recent experiences with domestic laws and regulations on biosafety, canvassing the practical, legal, political, and economic challenges encountered in the design and implementation of these regulatory schemes, while placing special emphasis on diverse law and policy approaches taken in developing countries.

Overall, this book addresses the legal avenues that are available to implement international law on biosafety by focusing on three particular objectives. First, the book identifies the aspects of international law on biosafety that are pertinent to and reflective of the treaty objective of sustainable development and use of biotechnology and genetic resources, as well as related principles of international law. Second, the book analyses the national implementation of international law on biosafety, focusing on the design and enforcement of biosafety regulations from a sustainable development law perspective, and examines the practical, legal, political, and economic challenges and achievements encountered in implementing international biosafety obligations. Last, the book discusses the future legal practice and research agenda in this field, providing both recommendations to encourage successful implementation of biosafety regulations and insights into international institutions that oversee and further develop international law on biosafety.

## DEVELOPMENT OF THE CARTAGENA PROTOCOL

Due to emerging debates on biotechnology and its potential impact on the environment, the topic of biosafety was raised in the 1992 Earth Summit in Rio de Janeiro. Discussions did not result in a treaty on the subject, but negotiators decided that biosafety should be addressed under the aegis of the Convention on Biological Diversity (CBD).<sup>5</sup> The CBD requires Parties to establish or maintain means to regulate risks arising from biotechnology, taking into account those associated with the use and release of LMOs, which are likely to have adverse environmental impacts that could affect conservation and sustainable use of biotechnology, or present risks to human health.<sup>6</sup> Parties also committed to consider the need for a Protocol setting out procedures for the safe transfer, handling, and use of LMOs that might have adverse effect on the conservation and sustainable use of biological diversity, including

<sup>&</sup>lt;sup>5</sup> Convention on Biological Diversity, 5 June 1992, 31 ILM 818 (entered into force 29 December 1993) [CBD].

<sup>&</sup>lt;sup>6</sup> *Ibid* at art 8(g).

#### Introduction

arrangements for advance informed agreement (AIA) prior to the import/export of LMOs.7

The first Conference of the Parties (COP) of the CBD in 1994 initiated consideration of a Protocol, focusing on possible objectives, definitions, scope, application of the AIA procedures, relation to agreements other than the protocol, aspects of risk, relevant national authorities, capacity building, illegal traffic, liability and redress, and the financial mechanisms and resources.<sup>8</sup> In 1995, the second COP to the CBD adopted Decision II/5, launching the Open-ended Ad-Hoc Working Group on Biosafety. This Working Group met six times between 1996 and 1999, concluding with the submission of a draft Protocol to be considered at the first Extraordinary Meeting of the COP (convened with the purpose of adopting a Protocol on biosafety to the CBD).

The Extraordinary Meeting, which was held in two sessions in 1999 and 2000, resulted in the adoption of the Cartagena Protocol and the establishment of the Ad-Hoc Intergovernmental Committee for the Cartagena Protocol (ICCP) to undertake the preparations necessary for the first meeting of the Parties.<sup>9</sup> The Protocol entered into force on 11 September 2003 and by 31 January 2012 engaged 161 Parties. The CBD Conference of the Parties serving as the meeting of the Parties to the Protocol (COP-MOP) acts as the governing body.<sup>10</sup> By 2010, the COP-MOP had met five times. These meetings made significant contributions to the elaboration of international law on biosafety and sustainable development.

The first meeting of the COP-MOP was held in Kuala Lumpur, Malaysia, from 23 to 27 February 2004. Fundamentally, it succeeded in setting up the operational framework required for the long-term effective implementation of the Protocol.<sup>11</sup> The most notable developments included the creation of procedures and mechanisms that would facilitate decision making by Parties of import, a group that includes developing countries, economies in transition, and centres of origin and centres of genetic diversity,<sup>12</sup> and the establishment of an information-sharing mechanism: the Biosafety Clearing-House (BCH).<sup>13</sup> In addition, a roster of experts was created

3

<sup>7</sup> Ibid at Art. 19(3).

<sup>&</sup>lt;sup>8</sup> Patricia Birnie, Alan Boyle, and Catherine Redgwell, *International Law & the Environment*, 3rd ed. (Oxford, UK: Oxford University Press, 2009) at 629 [International Law & Environment].

<sup>9</sup> Report of the Extraordinary Meeting of the Conference of the Parties for the Adoption of the Protocol on Biosafety, UN Doc UNEP/CBD/ExCOP/1/3, Dec EM-I/3.

<sup>&</sup>lt;sup>10</sup> *Cartagena Protocol, supra* note 2 at art 29(1). The list of the Parties to the Protocol is available online: http://bch.cbd.int/protocol/parties.

<sup>&</sup>lt;sup>11</sup> International Institute for Sustainable Development (IISD), Earth Negotiations Bulletin (ENB), Vol 9, No 289, Summary of the First Meeting of the Conference of the Parties to the Convention on Biological Diversity Serving as the Meeting of the Parties to the Cartagena Protocol on Biosafety, online: http://www.iisd.ca/volo9/enbo9289e.html.

<sup>&</sup>lt;sup>12</sup> SCBD, Global Biosafety: From Concepts to Action: Decisions from the First meeting of the Conference of the Parties to the Convention on Biological Diversity Serving as the Meeting of the Parties to the Cartagena Protocol on Biosafety (Montreal, Canada: SCBD, 2004), Dec BS-I/2.

<sup>&</sup>lt;sup>13</sup> Ibid, Dec BS-I/3.

### 4 Marie-Claire Cordonier Segger, Frederic Perron-Welch, and Christine Frison

for the purpose of capacity building in developing countries;<sup>14</sup> the Action Plan for Building Capacities for the Effective Implementation of the Cartagena Protocol was launched;<sup>15</sup> and the group made first steps toward establishing identification requirements for LMOs intended for direct use as food or feed, or for processing.<sup>16</sup> Finally, that first meeting resulted in the establishment of procedures and mechanisms on compliance,<sup>17</sup> provision of guidance on transboundary movement of LMOs with nonparties,<sup>18</sup> the creation of a medium-term programme of work for the COP-MOP,<sup>19</sup> and the funding of capacity building and implementation measures through the Global Environment Facility.<sup>20</sup>

The following year, the second meeting of the COP-MOP took place in Montreal, Canada, from 30 May to 3 June 2005. Noticeable progress was made on three key issues under the Protocol. First, discussions on risk assessment and management led to the creation of the Ad Hoc Technical Expert Group (AHTEG) on Risk Assessment.<sup>21</sup> Second, major decisions were made relating to the operations and activities of the Biosafety Clearing House, capacity-building activities, and the financial mechanism/resources.<sup>22</sup> Third, the Parties recognized and emphasized the importance of public awareness and participation.<sup>23</sup> The main point of contention during the negotiations, however, was documentation for the transboundary movement of LMOs.<sup>24</sup> Discussions between the Parties did result in the articulation of measures to elaborate documentation for the contained use and intentional introduction of LMOs into the environment,<sup>25</sup> but no decision was made regarding documentation for LMOs meant for food, feed, or processing (LMO-FFP) as required by Article 18.2(a) of the Protocol.<sup>26</sup>

COP-MOP 3 was held in Curitiba, Brazil, from 13 to 17 March 2006. The main result of that meeting was the adoption of a compromise package on LMO-FFP documentation requirements.<sup>27</sup> Other major decisions taken included the

- <sup>14</sup> Ibid, Dec BS-I/4.
- <sup>15</sup> Ibid, Dec BS-I/5.
- <sup>16</sup> Ibid, Dec BS-I/6.
- <sup>17</sup> Ibid, Dec BS-I/7.
- <sup>18</sup> *Ibid*, Dec BS-I/11, Annex.
- <sup>19</sup> Ibid, Dec BS-I/12.
- <sup>20</sup> *Ibid*, Dec. BS-I/15.
- <sup>21</sup> SCBD, Facing the Biosafety Challenge: Towards Effective Implementation of the Protocol: Decisions of the Second Meeting of the Conference of the Parties to the Convention on Biological Diversity Serving as the Meeting of the Parties to the Cartagena Protocol on Biosafety (Montreal, Canada: SCBD, 2005), Dec BS-II/9 at para 4.
- <sup>22</sup> Ibid, Dec BS-II/2, BS-II/3, BS-II/4 and BS-II/5.
- <sup>23</sup> Ibid, Dec BS-II/13.
- $^{\rm 24}~$  Ibid, at v.
- <sup>25</sup> *Ibid*, Dec BS-II/10.
- <sup>26</sup> IISD, ENB, Vol 9, No 320, Summary of the First Meeting of the Ad Hoc Group on Liability and Redress and the Second Meeting of the Parties to the Cartagena Protocol on Biosafety. Online: <http://www.iisd.ca/vol09/enb09320e.html>.
- <sup>27</sup> IISD, ENB, Vol 9, No 351, Summary of the Third Meeting of the Parties to the Cartagena Protocol on Biosafety, online: <a href="http://www.iisd.ca/volo9/enbo9351e.html">http://www.iisd.ca/volo9/enbo9351e.html</a>; SCBD, Biosafety: Building Further

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#### Introduction

adoption of an updated version of the Action Plan for Building Capacities for the Effective Implementation of the Cartagena Protocol on Biosafety,<sup>28</sup> directions relating to the financial mechanism,<sup>29</sup> further discussion on guidance and capacity building for risk assessment and risk management,<sup>30</sup> and the adoption of a monitoring and reporting format to help fulfill obligations under Article 33 of the Protocol.<sup>31</sup>

At COP-MOP 3 the Parties decided to meet every two years rather than every year; thus COP-MOP 4 was held in Bonn, Germany from 12 to 16 May 2008. One major achievement was the decision to further elaborate international rules and procedures for liability and redress resulting from the transboundary movement of LMOs.<sup>32</sup> Furthermore, the Parties issued a comprehensive decision on risk assessment and risk management, agreeing to the development of training activities and the establishment of an Ad Hoc Technical Expert Group on Risk Assessment and Risk Management.<sup>33</sup> These initiatives were in addition to the adoption of measures to promote long-term biosafety education and training and to strengthen the Coordination Mechanism to support those measures.<sup>34</sup>

The fifth meeting of the COP-MOP took place from 11 to 15 October 2010 in Nagoya, Japan. The Parties focused on adopting rules and procedures pertaining to liability and redress, and concluded the meeting with the adoption of the Nagoya – Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol.<sup>35</sup>

At COP-MOP 5, the Parties also adopted a ten-year strategic plan for the implementation of the Protocol from 2011 to 2020 with a focus on five main areas: 1) facilitating the establishment and further development of effective biosafety systems for the implementation of the Protocol; 2) capacity-building; 3) compliance and review; 4) information sharing; and 5) outreach and cooperation.<sup>36</sup> Due to the work done at COP-MOP 5, the Parties, in cooperation with relevant organizations,

Consensus for Action: Decisions of the Third Meeting of the Conference of the Parties to the Convention on Biological Diversity Serving as the Meeting of the Parties to the Cartagena Protocol on Biosafety (Montreal, Canada: SCBD, 2007), Dec BS-III/10.

<sup>28</sup> *Ibid*, Dec BS-III/3.

- <sup>30</sup> Ibid, Dec BS-III/11.
- <sup>31</sup> *Ibid*, Dec BS-III/14.
- <sup>32</sup> SCBD, Biosafety: Taking Further Steps Towards Effective Implementation of the Protocol. Decisions of the Fourth Meeting of the Conference of the Parties to the Convention on Biological Diversity Serving as the Meeting of the Parties to the Cartagena Protocol on Biosafety (Montreal, Canada: SCBD, 2008), Dec BS-IV/12.
- 33 Ibid, Dec BS-IV/11.
- <sup>34</sup> *Ibid*, Dec BS-IV/3.
- <sup>35</sup> Nagoya Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety, Annex to Dec BS-V/11, online: http://bch.cbd.int/protocol/NKL\_text.shtml.
- <sup>36</sup> SCBD, Biosafety: Setting a New Agenda: Decisions of the Fifth Meeting of the Conference of the Parties to the Convention on Biological Diversity Serving as the Meeting of the Parties to the Cartagena Protocol on Biodiversity (Montreal, Canada: SCBD, 2011), Dec BS-V/16, at Annex I, at para 7.

5

<sup>&</sup>lt;sup>29</sup> *Ibid*, Dec BS-III/5.

## 6 Marie-Claire Cordonier Segger, Frederic Perron-Welch, and Christine Frison

are also approaching the adoption of a roadmap for risk assessment, as well as guidelines on the elements and procedures of risk assessments for different LMO types, to help countries make informed decisions about the development, handling and use of LMOs.<sup>37</sup>

## SUSTAINABLE DEVELOPMENT LAW AND THE CARTAGENA PROTOCOL

*Sustainable development law* refers to a set of legal instruments and related principles that include, among their objectives, the realization of sustainable development.<sup>38</sup> To date, most sustainable development law has been adopted through "hard law" treaty regimes, although there is also a body of emerging customary principles of law on sustainable development. The process of identifying and promoting respect for these principles of law has been reasonably complex and continues to be the subject of debates in 2010.<sup>39</sup> In 2002, however, at the 70th Conference of the International Law Association (ILA), a resolution by the Committee on the Legal Aspects of Sustainable Development, the ILA New Delhi Declaration of Principles of International Law Relating to Sustainable Development, which was annexed to the outcomes of the 2002 World Summit on Sustainable Development (WSSD), provided an important benchmark that is used in much of the relevant academic and legal literature today.<sup>40</sup>

The New Delhi Declaration elaborates on seven central principles that are common to most international treaties related to sustainable development, many of which were recognized and reaffirmed in the 2002 Johannesburg Plan of Implementation from the World Summit.<sup>41</sup> In this book, these principles provide a benchmark against which the Cartagena Protocol can be analyzed to assess its commitment to the realization of sustainable use of biological resources, and ultimately, to sustainable development. These principles include the duty of States to ensure sustainable use of resources; the principle of equity and the eradication of poverty; the principle of common but differentiated responsibilities; the principle of the precautionary approach to human health, natural resources, and ecosystems; the principle of good governance; and the principle of integration and justice; the principle of good governance; and the principle of integration and interrelationship, in particular as these relate to human rights and social, economic, and environmental objectives.

<sup>&</sup>lt;sup>37</sup> Ibid, Dec BS-V/12.

<sup>&</sup>lt;sup>38</sup> Sustainable Development Law, supra note 4 at 103.

<sup>&</sup>lt;sup>39</sup> Cordonier Segger, "The Role of International Forums in the Advancement of Sustainable Development," *supra* note 4 at 10.

<sup>&</sup>lt;sup>40</sup> ILA New Delhi Declaration of Principles of International Law Relating to Sustainable Development, UN Doc A/CONF.199/8, Annex [New Delhi Declaration].

<sup>&</sup>lt;sup>41</sup> Cordonier Segger, "The Role of International Forums in the Advancement of Sustainable Development," *supra* note 4 at 10.

#### Introduction

### Principle of Integration and Interrelationship

The principle of integration and interrelationship provides the context for international law on sustainable development by emphasizing the interdependence among economic development, social and human rights, and environmental priorities in international law.<sup>42</sup> The 1992 Rio Declaration from the United Nations Conference on Environment and Development (UNCED) states that "[i]n order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it."<sup>43</sup> In the WSSD, this principle was arguably broadened to recognize that human rights and social development priorities also constitute an integral part of this balance.<sup>44</sup> It is essential that sustainable development be implemented at all sectors of society and governance.<sup>45</sup> To respect this principle, States may seek to resolve overlaps or perceived conflicts between economic, social, and environmental concerns either through the activation of existing institutions or the establishment of new ones that can balance the competing goals.<sup>46</sup>

The Cartagena Protocol is a prime example of the principle of integration and interrelationship because it is a treaty regime that attempts to address social, economic, and environmental themes in a balanced and holistic fashion. This recognized, it is clear that the Cartagena Protocol permits and even encourages the economic development of biotechnology, attempting to promote safe, equitable, and environmentally sound uses. The negotiation of the Protocol served as an attempt to reconcile competing narratives on modern biotechnology through the creation of a regime that promoted the environmentally sound application of biotechnology. The Protocol's preamble makes this objective clear, since it recognizes the great potential of modern biotechnology while also expressing awareness of its rapid expansion and the resulting growing public concern over its potential adverse effects on biodiversity and human health. It also recognizes that trade and environment agreements should be mutually supportive, with the aim of achieving sustainable development.<sup>47</sup> Additionally, several provisions in the Protocol allow for economic considerations to receive priority, such as the exemption of LMOs in transit from the advance informed agreement procedure,48 and LMOs intended for contained use in accordance with the importing Party's standards.<sup>49</sup> Similarly,

7

<sup>&</sup>lt;sup>42</sup> New Delhi Declaration, supra note 40 at Principle 7.1; Sustainable Development Law, supra note 4 at 102.

<sup>&</sup>lt;sup>43</sup> Rio Declaration on Environment and Development, UN Doc A/CONF.151/26 (Vol I), 31 ILM 874 (1992) at Principle 4.

<sup>&</sup>lt;sup>44</sup> Sustainable Development Law, supra note 4 at 103.

<sup>&</sup>lt;sup>45</sup> New Delhi Declaration, supra note 40 at Principle 7.2.

<sup>&</sup>lt;sup>46</sup> *Ibid* at Principle 7.3.

<sup>&</sup>lt;sup>47</sup> *Cartagena Protocol, supra* note 2 at Preamble.

<sup>48</sup> *Ibid* at art 6(1).

<sup>&</sup>lt;sup>49</sup> *Ibid* at art 6(2).

## 8 Marie-Claire Cordonier Segger, Frederic Perron-Welch, and Christine Frison

a distinct procedure for commodities (LMOs–FFP) is provided for, rather than the standard advance informed agreement procedure.<sup>50</sup> The Protocol also reflects the principle of integration and interrelationship through its integration of social considerations by the application of socioeconomic considerations in the risk assessment process.<sup>51</sup> Although the Protocol recognizes and attempts to integrate environmental and social concerns into the process of developing and using biotechnology, and even activates economic instruments to achieve social and environmental aims, it remains far from clear whether the current interrelationships among economic, social, and environmental nuances in the treaty could be described as adequately balanced.

# Principle of Sustainable Use of Natural Resources

In principle, States have a duty to ensure sustainable use of natural resources, particularly in a transboundary context. This duty stems from the recognition that the sovereign right of States to manage their own natural resources comes with the responsibility to ensure that activities within their jurisdiction or control do not cause significant environmental damage elsewhere.<sup>52</sup> This principle encourages States to manage their natural resources sustainably to contribute to the development of their peoples, with particular regard for the rights of indigenous peoples, and to the conservation and sustainable use of natural resources and the protection of the environment, including ecosystems.<sup>53</sup> The principle also emphasizes that the protection, preservation, and enhancement of the natural environment, and biological diversity in particular, is a common concern of humankind.<sup>54</sup> This principle is reflected in many international treaties and legal instruments in the field of sustainable development.<sup>55</sup>

Fundamentally, the Cartagena Protocol was conceived with this duty in mind. This is clear from its objective, which holds that the Protocol's aim is to contribute to ensuring an adequate level of protection in the safe transfer, handling, and use of LMOs that could have adverse effects on the conservation and sustainable use of biological diversity.<sup>56</sup> The Parties themselves are also obliged to ensure that the development, handling, transport, use, transfer, and release of LMOs is undertaken in a manner that prevents or reduces the risks to biological diversity.<sup>57</sup> In essence, the Cartagena Protocol is seeking to contribute to the sustainable use of biotechnology and biological resources, in particular LMOs.

<sup>56</sup> Cartagena Protocol, supra note 2 at art 1.

<sup>&</sup>lt;sup>50</sup> *Ibid* at art 11.

<sup>&</sup>lt;sup>51</sup> *Ibid* at art 26.

<sup>&</sup>lt;sup>52</sup> New Delhi Declaration, supra note 40 at Principle 1.1.

<sup>&</sup>lt;sup>53</sup> *Ibid* at Principle 1.2.

<sup>54</sup> *Ibid* at Principle 1.3.

<sup>&</sup>lt;sup>55</sup> Sustainable Development Law, supra note 4 at 120.

<sup>&</sup>lt;sup>57</sup> *Ibid* at art 2(2).

#### Introduction

9

## Principle of Equity and the Eradication of Poverty

The principle of equity - both inter- and intragenerational - is central to the attainment of sustainable development.58 Although the present generation has a right to use and enjoy the resources of the Earth, this generation is also under an obligation to take into account the long-term impact of its activities and to sustain the resource base and the global environment for the benefit - in its broadest meaning - of future generations.<sup>59</sup> The right to development must be implemented to meet developmental and environmental needs of present and future generations sustainably and equitably. This includes exercising the duty to cooperate for the eradication of poverty in accordance with Chapter IX on International Economic and Social Co-operation of the Charter of the United Nations and the Rio Declaration on Environment and Development, as well as the duty to cooperate for global sustainable development and the attainment of equity in the development opportunities of developed and developing countries.<sup>60</sup> The principle of equity is reflected in different ways in many international treaties and legal instruments in the field of sustainable development.<sup>61</sup> Although it is the primary responsibility of the State to aim for conditions of equity within its own population, and to ensure, at a minimum, the eradication of poverty, both the UN Charter and the 2000 U.N. Millennium Declaration recognize that all States that are in a position to do so have a further responsibility, to assist in the global achievement of this objective.<sup>62</sup> In attempting to protect the rights of future generations to safe food and a sound environment, the Cartagena Protocol reflects a certain respect for the principle of equity. By making possible the safer import and use of drought-resistant varieties of plants, high-yield food crops, and other beneficial LMOs, it could be argued that the Cartagena Protocol is also contributing in certain ways to reducing poverty. Furthermore, by attempting to balance the need of exporters of LMOs for a stable regulatory climate and the need of importers to be able to manage the risks and potential impacts of biotechnology on their populations, especially in poor or rural areas, the Protocol also has the potential to address imbalances, thereby securing greater equity.

#### Principle of Common but Differentiated Responsibilities

The principle of common but differentiated responsibilities is a manifestation of general principles of equity. States and other relevant actors have a common responsibility for the achievement of global sustainable development and protection of the environment, but each stakeholder's differing circumstances must be taken into

<sup>&</sup>lt;sup>58</sup> New Delhi Declaration, supra note 40 at Principle 2.1.

<sup>&</sup>lt;sup>59</sup> *Ibid* at Principle 2.2.

<sup>&</sup>lt;sup>60</sup> *Ibid* at Principle 2.3.

<sup>&</sup>lt;sup>61</sup> Sustainable Development Law, supra note 4 at 122.

<sup>&</sup>lt;sup>62</sup> New Delhi Declaration, supra note 40 at Principle 2.4.

### 10 Marie-Claire Cordonier Segger, Frederic Perron-Welch, and Christine Frison

account when examining their contribution toward those goals.<sup>63</sup> All States have a duty to cooperate in the achievement of global sustainable development and the protection of the environment, and international organizations, corporations (including in particular transnational corporations), nongovernmental organizations, and civil society should also be a part of this global partnership. Corporations have a role pursuant to the "polluter-pays" principle.<sup>64</sup>

Differentiation of responsibilities, although principally based on the contribution that a State has made to the emergence of environmental problems, must also take into account the economic and developmental situation of the State, in recognition of the special needs and interests of developing countries and of countries with economies in transition, particularly least-developed countries and those affected adversely by environmental, social, and developmental considerations.<sup>65</sup> Developed countries bear a special burden of responsibility in reducing and eliminating unsustainable patterns of production and consumption and in contributing to capacity building in developing countries by providing financial assistance and access to environmentally sound technology. In particular, developed countries should play a leading role and assume primary responsibility in matters of relevance to sustainable development.<sup>66</sup>

The Protocol recognizes that centres of origin and centres of genetic diversity are of crucial importance to humankind and takes into account the limited capacities of many countries, particularly developing countries, to cope with the nature and scale of known and potential risks associated with LMOs.<sup>67</sup> The Protocol's capacity-building measures, resources, and financial mechanism may also contribute to the realization of this principle in the treaty.<sup>68</sup>

## Principle of the Precautionary Approach

The precautionary approach to human health, natural resources, and ecosystems requires that 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 degradation.<sup>69</sup> This requires States, international organizations, and nongovernment actors to avoid activities, in light of scientific uncertainty, that could cause significant harm.<sup>70</sup> The approach includes accountability for harm caused, planning based on clear criteria and well-defined goals, consideration of

<sup>&</sup>lt;sup>63</sup> Sustainable Development Law, supra note 4 at 132–3.

<sup>&</sup>lt;sup>64</sup> New Delhi Declaration, supra note 40 at Principle 3.1.

<sup>&</sup>lt;sup>65</sup> *Ibid* at Principle 3.2 and 3.3.

<sup>&</sup>lt;sup>66</sup> *Ibid* at Principle 3.4.

<sup>&</sup>lt;sup>67</sup> Cartagena Protocol, supra note 2 at Preamble.

<sup>&</sup>lt;sup>68</sup> *Ibid* at arts 22 and 28.

<sup>&</sup>lt;sup>69</sup> Cordonier Segger, "The Role of International Forums in the Advancement of Sustainable Development," *supra* note 4 at 12.

<sup>&</sup>lt;sup>70</sup> New Delhi Declaration, supra note 40 at Principle 4.1.