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International Environmental Law

The Practitioner's Guide to
the Laws of the Planet



ABA
AMERICAN BAR ASSOCIATION
Section of Environment,
Energy, and Resources

Cover by Mary Anne Kulchawik/ABA Publishing.

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Printed in the United States of America

18 17 16 15 14 5 4 3 2 1

Library of Congress Cataloging-in-Publication Data

International environmental law / edited by Roger R. Martella Jr. and J. Brett Grosko. — First edition.

pages cm

Includes bibliographical references and index.

ISBN 978-1-62722-737-7 (print : alk. paper)

1. Environmental law, International. 2. Environmental law. I. Martella, Roger Romulus, editor. II. Grosko, J. Brett, editor.

K3585.I5773 2014

344.04'6—dc23

2014017915

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CHAPTER 20

Central and South America Overview: Emerging Trends in Latin America

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I. Introduction

As a result of rapid industrialization, enormous population growth, increased economic power, and compelling environmental and natural resources challenges, environmental law in Latin America has never been more dynamic or perhaps important. Although framework laws have existed in many countries for decades, most have mandated aspirational standards marked by sparse enforcement, leaving adrift their potential for meaningful impact. The past decade has been one of extensive regulatory evolution and implementation, a trend not likely to reverse. Several jurisdictions, especially among the more developed economies, now boast mature environmental regimes supplemented by complex technical standards, robust licensing and enforcement mechanisms, and new or expanded private remedies for the redress of environmental harms. The region's legislative activity and standardization in the fields of climate change and product stewardship rivals that of Europe and surpasses the United States. This chapter provides an overview of the landscape of environmental law in Latin America, with brief accounts of its legal and institutional structure and selected substantive areas of interest in the region.

II. Constitutional Underpinnings of Environmental Laws

Latin American countries are civil law systems, and provisions governing the environment are set forth in national constitutions.¹ The range of constitutional rights and protections is diverse in scope and substance, with some constitutions guaranteeing a right to a healthy environment and others simply establishing state jurisdiction over natural resources.² The overall trend is increased environmental protections and guarantees. Bolivia is a global

leader, recently adopting Mother Earth (*Pachamama*) protections into its constitution and environmental laws.³

The constitutional underpinnings of environmental legal systems in Latin America have practical implications. First, several constitutions establish shared jurisdiction over natural resources between national and local (state, municipal, or regional) bodies. In many cases, subnational jurisdictions can impose more stringent requirements than those of the national government, leading to separate and significant layers of environmental law, licensing, and potential enforcement.⁴ Second, the constitutional foundations of environmental laws usually provide for redress of environmental harms and protection of the environment as constitutional claims (e.g., *amparo*);⁵ the use of these claims is increasing.⁶ Third, as a matter of constitutional law, patrimony over natural resources is often reserved to the nation and private rights to use natural resources are accorded through concessions systems.⁷ Negotiation of private resource concessions, in particular for water use,⁸ will likely become significant to future regional development.

III. Laws, Regulations, and Technical Standards

Constitutional environmental provisions are implemented through a variety of legal instruments. Although the hierarchy of laws and their nomenclature varies from country to country, a typical environmental legal structure will include a governing law (adopted by a legislative body); implementing regulations (adopted by a government agency, sometimes in multiple layers, issued at different organizational levels within agencies); and technical standards (adopted by agencies, but in many countries developed and issued by a separate, non-governmental technical standards organization). For example, Mexico⁹ has in place a comprehensive waste law governing solid urban, special management, and hazardous waste;¹⁰ an implementing regulation to that law;¹¹ and a set of technical standards that provide significant definitional contours including, among many others, hazardous waste listings and definitions of hazardous waste characteristics;¹² hazardous waste landfill siting requirements;¹³ and hydrocarbon remediation standards.¹⁴

In many jurisdictions, there are also framework environmental laws that cover a wide range of environmental media, jurisdictional, licensing, and enforcement provisions.¹⁵ Many of these framework laws were the first environmental or natural resources legislation adopted in these countries, or their successors.¹⁶ While the general regional trend is toward media-specific laws, these framework laws continue to remain important to the regulatory landscape and are often cited as authority for subsequent laws, regulations, and agency actions.

It bears emphasis that states and municipalities, especially in heavily industrialized areas, are typically active in exercising jurisdiction over environmental matters. In many places, local environmental laws either augment or implement provisions of national laws. For example, Brazil has a national waste law, the National Solid Waste Policy Act, adopted in 2010;¹⁷ however,

the State of São Paulo has long regulated the field and developed one of the most advanced site remediation regimes in the region.¹⁸ Other particularly active states and municipalities include the Federal District of Mexico; Buenos Aires Province and the Autonomous City of Buenos Aires, Argentina; City of Santiago, Chile; City of Bogotá, Colombia; and in Brazil, the States of São Paulo, Paraná, Rio Grande do Sul, and Rio de Janeiro, and the City of São Paulo.

Public participation in the development of environmental legal standards is increasing in Latin America. Bills in many national legislatures can be monitored electronically.¹⁹ Administrative procedure and government transparency laws usually require that agency draft regulations be published in official registers for public comments prior to finalization. Many legislators and regulators in most Latin American countries are receptive to input from environmentalists and the regulated community alike; technical standards are often developed by working groups that involve the private and public sectors.

The role and sophistication of environmental technical standards has increased as legal regimes mature. The development of technical standards can be less transparent than for laws and regulations, though they typically provide concrete operating rules and regulatory thresholds. For example, the Brazilian Technical Standards Association, a private, nonprofit institution, develops numerous environmental rules, including hazardous waste standards, of general reference in Brazil.²⁰ In Peru a discrete governmental organization is charged with developing technical standards.²¹ Some of these standards are issued as binding law,²² while others are voluntary,²³ and still others have an intermediate status as nonbinding but “normative”²⁴ or, more commonly, are made binding by law or practice. Such formally nonbinding technical standards may become binding in the following ways: (1) by setting industry standards of care; (2) by being incorporated by reference into binding regulations; (3) by filling a regulatory gap (i.e., incorporated by inference); or (4) by being referenced in environmental licenses. While it is common in the region for technical standards to be adopted directly from international technical bodies such as the International Standards Organization and ASTM International,²⁵ many national standardization institutions also create their own unique technical standards. More often than not, international harmonization is the exception rather than the rule.

IV. Agencies with Environmental Jurisdiction

National environmental agencies in Latin America have increasing prominence and sophistication. Historically, authority over environmental matters was often housed in the departments of other agencies, such as health or social development agencies.²⁶ Agency structure has changed significantly in the last decade, and the trend is for environmental agencies to be established as stand-alone institutions with broad jurisdiction to oversee policy development, standard-setting, permitting, and enforcement of most environmental

laws. Several countries now have in place national cabinet-level environmental administrative bodies, for example, Argentina,²⁷ Brazil,²⁸ Chile,²⁹ and Mexico.³⁰ Enforcement is sometimes conducted through separate prosecutorial bodies or attorneys general.³¹ Some key states and municipalities have highly sophisticated and progressive environmental agencies, some of such import that they drive the policies of their national agencies.³²

Even with the advent of dedicated environmental agencies, total or partial jurisdiction over certain environmental subject matter may belong to other agencies. For example, health agencies may have jurisdiction over the regulation of chemical substances and wastes;³³ agriculture agencies over registration and control of pesticides and fertilizers;³⁴ and transportation agencies over transportation of hazardous products and substances.³⁵ Overlapping jurisdiction tends to complicate regulation and oversight of subject matter and can prolong permit approval processes.

V. Agency Licensing and Enforcement

Environmental regulatory programs in Latin America are license-intensive. In most cases, industrial operations must obtain concessions for the use of natural resources and licenses to construct and operate a facility that will emit or discharge pollutants.³⁶ Concessions and licenses frequently must be listed in publicly available registries.³⁷ General requirements for concessions and licenses are typically set forth in media-specific regulations and application forms, some of them quite extensive.³⁸ It is not unusual for the licensing process to be time-consuming or for permitting authorities to request extra-regulatory information or impose unique operating requirements. In some instances, legislatures and agencies have undertaken efforts to streamline licensing procedures,³⁹ although the process remains challenging for many applicants despite such efforts.

Enforcement penalties for violations vary widely, with the following being typically within the scope of an agency's authority: fines tied to the severity of the environmental harm; publication of the violation; restitution for environmental damage; permit revocation, suspension, or denial; partial or total shutdown of facilities; seizure of goods and property; administrative arrest; and incarceration.⁴⁰ Overall, the scope and scale of penalty provisions are increasing. In 1998, Brazil enacted a landmark environmental crimes law with schedules of offenses and sanctions, including fines of up to 50 million reais and prison terms up to five years.⁴¹ A 2008 implementing regulation provides guidelines for the application of sanctions and procedural protections for alleged violators.⁴² In contrast, Colombia's environmental criminal law establishes a presumption of guilt for acts alleged to cause environmental harm, making it one of the most procedurally stringent in the world.⁴³

Enforcement of environmental laws in Latin America is trending upward. Pressed by local citizen groups and non-governmental organizations (NGOs) to deal with environmental challenges, agencies have begun to employ a range of once-dormant enforcement provisions.⁴⁴ Enforcement staff numbers and budgets have generally increased at environmental agencies, in some

cases dramatically.⁴⁵ Although not always perceived as consistent, enforcement efforts are often high profile, widely reported in the press, and intended to set examples through high penalty assessments and criminal convictions.⁴⁶

VI. The Role of Administrative and Judicial Tribunals

Historically, the role of the judiciary, whether administrative, civil, or criminal, in Latin American environmental matters has been limited.⁴⁷ This may be attributable to several factors, including deficiencies in standing and procedural rights; objective environmental standards; judicial capacity; and efficient and ethical processing of claims.⁴⁸ Administrative complaint systems were limited and private actions could only be brought under general civil code provisions, which typically required demonstration of a specific, individual, personal injury for standing.⁴⁹ The damages potentially allowed for individual cases were low, often tied to minimum wage compensation,⁵⁰ and most Latin American legal systems lacked a mechanism for aggregate litigation (e.g., class actions),⁵¹ providing little incentive for private lawyers to invest in individual cases. Together, these factors served as significant impediments to private actions for environmental harms.

That landscape has evolved significantly in recent decades, and the pace of change has been accelerating. Many environmental laws provide for citizen complaint mechanisms to governments.⁵² While these provisions do not typically allow damages to be paid to private parties, they may trigger scrutiny and can lead to enforcement action.⁵³ Citizen groups have also begun to make aggressive use of other legal mechanisms to bring environmental claims, such as *amparo* actions that provide a cause of action to redress constitutional harms.⁵⁴ Moreover, in a development that may create a sea change in Latin American environmental jurisprudence, some form of class action or “collective action” is now recognized in several jurisdictions.⁵⁵ Accordingly, many of the long-standing barriers to private enforcement of environmental harm are being removed.

The region has begun to embrace the international trend of dedicated environmental tribunals, which can be expected to enhance the role of the judiciary and administrative tribunals in environmental matters.⁵⁶ For example, Costa Rica has an active environmental administrative tribunal⁵⁷ and Chile recently enacted a national environmental court.⁵⁸ Regional tribunals to address cross-border and multijurisdictional issues, environmental issues, and provide alternate means for pursuing environmental claims, such as the Latin American Water Tribunal, may also see expanded dockets and jurisdictions over time.⁵⁹

VII. Influences of International Environmental Law and Free Trade Agreements

International environmental law plays a significant role in the development of the domestic laws of many Latin American countries.⁶⁰ Most Latin American countries are parties to most major multilateral environmental agreements,

including the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal,⁶¹ the United Nations Framework Convention on Climate Change,⁶² the Convention on International Trade in Endangered Species of Wild Fauna and Flora,⁶³ the Montreal Protocol on Substances That Deplete the Ozone Layer,⁶⁴ and the Rio Declaration on Environment and Development.⁶⁵

International environmental law often shapes domestic environmental policies or becomes the basis for domestic environmental standards. For example, Mexico and Brazil have adopted climate change laws that provide for greenhouse gas emissions reduction targets and are likely drivers of energy efficiency programs.⁶⁶ The hazardous waste standards in many countries are heavily influenced by, and in some cases adopted directly from, the Basel Convention waste classification system.⁶⁷ Although comprehensive regulation of chemicals in the region is scant, most countries have implemented the Montreal Protocol⁶⁸ and the Stockholm⁶⁹ and Rotterdam⁷⁰ conventions.

The influence of free trade agreements on domestic environmental laws in Latin America is pronounced. A number of free trade agreements, particularly those executed with the United States, demand some level of harmonization of legal provisions or minimum environmental standards among the trade partners.⁷¹ They have also required that the domestic laws of signatory countries have in place transparency protections, citizen complaint mechanisms, or other procedural protections for environmental harms, or, in the case of the North American Free Trade Agreement (NAFTA), created an international citizen complaint mechanism.⁷² Regional free trade agreements also play an increasingly important role in setting environmental policies,⁷³ typically through establishing model regulations and technical standards that must be adopted directly by all member countries.⁷⁴

VIII. Influence of Non-Governmental Organizations and Development Organizations

The role and influence of NGOs in the development of regional environmental law and policy has increased significantly in the past decade. Together with the rise of the Internet and influence of social media, international NGOs have established high-profile environmental campaigns and have become significant players in local environmental policy debates.⁷⁵ Local NGOs also have been successful in advancing domestic environmental agendas and bringing first-impression environmental lawsuits.⁷⁶

To a limited extent, development assistance from the European Union has played a role in shaping environmental law in Latin America, particularly with respect to product stewardship laws governing electric and electronics equipment.⁷⁷ Although the laws of the United States also inform environmental laws in Latin America, many countries in the region have a history of looking to the European Union for regulatory models, a practice that is facilitated by cultural and linguistic affinities⁷⁸ and by the interagency

relationships built through direct outreach from European countries. As the region readies for what it hopes will be large-scale investment in carbon sequestration and other greenhouse gas emissions-reducing projects through the Kyoto Protocol's Clean Development Mechanism, the influence of foreign development agencies can be expected to continue.

IX. Key Areas of Regulation

A. Environmental Impact Assessments

In contrast to the United States, environmental impact assessments (EIAs) are widely used in Latin America as the basis for environmental permitting.⁷⁹ EIAs are typically required for a wide range of projects, including water infrastructure and treatment projects; highway and railway construction; cable and satellite installation; pipelines; oil and gas extraction and refining; chemical manufacturing; electrical plant construction; mining; cement manufacturing; paper milling; sugar processing; hazardous waste and radioactive treatment and disposal; industrial activities in forested, wetland, and coastal zones; and development of industrial parks, airports, and tourism facilities.⁸⁰

The standards for EIAs in most Latin American countries differ from those in the United States, where the process is designed to ensure that government agencies consider the effects of their own actions and allows for an abbreviated process if no significant impact is identified. Instead, Latin American EIA requirements typically entail a comprehensive report on all of the environmental aspects of the proposed project.⁸¹ As such, the technical requirements for Latin American EIAs can be extensive and often include both analysis of potentially applicable regulations during construction and operations and planning for the long-term future of the affected area beyond the life of the project.⁸² In some countries, the project proponent is required to hire only specially licensed environmental consultants to conduct the EIA,⁸³ and those consultants may have ongoing liability for any defects in the quality of their reports—which in turn may provide incentives for a highly conservative analysis of potential impacts. EIAs are usually subject to review and approval by multiple agencies, and in some cases the public at large and certain segments of society (e.g., indigenous tribes, environmental groups, and industries that may be affected by the project) may have a guaranteed opportunity to participate in the process.⁸⁴

B. Water Quality and Quantity

Several Latin American constitutions have enshrined access to water (or to clean water) as a basic human right.⁸⁵ Water quality and availability have profound practical implications for public health and the daily functioning of society, which are keenly felt in Latin America due to the limited capacity of the water delivery infrastructure in much of the region. Such scarcity may be counterintuitive as, in the global context, Latin America is the region

richest in fresh water. However, the overall abundance may be deceptive as much of the water is concentrated geographically and/or seasonally, little of the flow is collected for human use, and very little of the collected water is effectively treated for potability. Outside Argentina, Chile, and Uruguay, water supplies in the region are generally considered unsafe to drink unless filtered, as waterborne ailments are ubiquitous.

Latin American countries generally regulate industrial wastewater, in most cases adopting contaminant threshold tables from U.S. Environmental Protection Agency regulations or the World Health Organization.⁸⁶ Where applicable, these effluent standards are typically incorporated by reference into a facility's environmental operating permit. In the more developed countries, such as Brazil, facilities are required to treat wastewater prior to discharge and conduct routine monitoring of receiving water bodies, reporting the data to the environmental licensing agency.⁸⁷

In addition to regulation of water quality, industrial facilities in Latin America face restrictions on water use.⁸⁸ In much of Brazil, for example, new facilities and those renewing permits must obtain concessions for a limited allocation of water,⁸⁹ then pay fees for water capture, consumption, and discharge.⁹⁰ In Brazil and several other Latin American countries, authority over water resources is now divided by hydrographic basins rather than political boundaries, and it is the basin authorities that set water allocation policies and use fees.⁹¹

C. Air Quality

Across the region, air quality issues reach acute proportions in many of the major cities, particularly those situated in air-trapping basins such as Bogotá, Caracas, Mexico City, Santiago, and the greater São Paulo conurbation.⁹² The municipal authorities of several cities have sought to curb their smog problems by enacting mobile source restrictions, such as rotating bans on cars based on license plate numbers and replacing diesel-fueled buses with electric vehicles.⁹³ Brazil has experimented with policy incentives and alternative fuel mandates to reduce the fossil fuel consumption of its automobile fleets—these efforts began on a large scale in the 1970s when the country's military dictatorship initiated a conversion to ethanol-only cars, and have continued with renewable fuel mixture requirements for gasoline and diesel, and emissions standards for vehicles.⁹⁴

Most Latin American countries regulate stationary source emissions through concentration limits, and in some cases require control equipment and stack monitoring, all of which are imposed through environmental licensing.⁹⁵ Lists of regulated pollutants typically include sulfur dioxide, nitrogen oxides, carbon monoxide, ozone, size classes of particulate matter, and in some cases lead, mercury, and volatile organic compounds.⁹⁶ Some of the more developed countries have federal rules that set ambient air quality standards,⁹⁷ although effective implementation is constrained by the lack of enforcement programs or formal incentives to motivate local agencies to

meet the standards. In some countries, including Mexico and Brazil, agencies have recently instituted air quality monitoring programs as an initial step toward implementation of standards, in some cases providing real-time air quality updates for particular locations in major urban areas.⁹⁸ In 2012, the Brazilian state of São Paulo instituted a complex set of emissions regulations that resemble the U.S. Clean Air Act's Nonattainment New Source Review program, possibly marking the beginning of a regional trend toward more robust stationary source regulation.⁹⁹

D. Waste and Product Stewardship

Waste management throughout most of Latin America has historically been hampered by weak infrastructure: inadequate collection services and limited landfill capacity. Informal open-air landfills are common and urban sanitation is generally far below the standards of more developed countries.¹⁰⁰ Beginning in 2003, with Mexico's General Law for the Prevention and Integral Management of Wastes,¹⁰¹ most of the major Latin American countries have enacted some form of framework waste legislation, and the succeeding years have been marked with various stages of implementing regulations. Prominent among the recurring elements of these laws are mandatory planning for municipal solid waste management; heightened standards and special rules for the management of hazardous wastes; and extended producer responsibility for end-of-life products.¹⁰²

The emerging set of hazardous waste rules typically encompasses such issues as: generator requirements (e.g., registration, reporting, storage, and manifesting); complex waste classification standards based on listed categories and characteristics; special qualifications and administrative requirements for hazardous waste managers and transporters; and restrictions on final disposition through disposal in sealed landfills.¹⁰³ Certain countries, most notably Argentina, impose stringent restrictions on domestic movements of hazardous wastes across internal boundaries,¹⁰⁴ which may pose significant challenges to management of industrial wastes. All Latin American nations are Parties to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, which limits options for management solutions that entail export of covered wastes.¹⁰⁵ Several countries have adopted some form of the Basel Convention's waste classification, including its annexes, as the basis for their own domestic waste classification systems.¹⁰⁶

Most of the recently enacted waste laws designate certain categories of products at their end of life as "special management wastes" subject to product stewardship obligations.¹⁰⁷ In such cases, product manufacturers and importers are required to provide end-of-life collection (a.k.a. product "take-back") and "environmentally adequate" disposition, which typically refers to the pollution prevention hierarchy, prioritizing reuse, recycling, and any other recovery over disposal. In Brazil, these obligations are denoted as "reverse logistics," implying a mirror-image of product distribution channels

that expand the obligations to include retailers and distributors.¹⁰⁸ Products subject to these obligations in most countries include tires, batteries, pesticide and lubricant containers, electronics, and mercury-containing lamps; some jurisdictions include additional products and packaging.¹⁰⁹

E. Contaminated Sites and Liability

Along with the historical absence of comprehensive waste laws, most Latin American countries traditionally failed to address the most persistent impacts of unregulated disposal: widespread contamination of soils and groundwater with toxic substances. Recently, however, several countries have begun to tackle this issue, although the approaches vary and there is as yet no single regional model for contaminated site legislation and the imposition of legal liability to cover the significant costs of cleanup.¹¹⁰ Consequently, this area of environmental law remains dynamic and a source of great uncertainty for companies that presently own industrial properties or are connected, either directly or through acquisitions, to past industrial activity in Latin America.

Although lacking legislation that specifically provides for contaminated site liability, many Latin American countries have espoused a generic “polluter pays” principle either in their constitutions or in their general environmental or waste laws.¹¹¹ In many cases, this principle alone has been sufficient to impose responsibility for the cleanup of chemical spills and other releases to soils. However, such an approach is not always practical because of the difficulty in many cases of identifying “the polluter” responsible for a particular site. Argentina has sought to address this problem, in part, by requiring those who undertake activities that risk harming the environment to hold dedicated insurance policies or other financial guarantees against potential contamination.¹¹² Another approach is found in Mexico’s General Waste Law, which prohibits the transfer of contaminated properties without express authorization, effectively placing the burden of remediation on current owners.¹¹³

In an emerging trend, several countries are establishing liability regimes tailored to their residual legacies, beginning with inventories of contaminated sites.¹¹⁴ Argentina and Peru have focused on certain sectors in which soil contamination is readily identifiable and problematic: in particular, abandoned mines and areas of concentrated industrial activity such as Argentina’s Matanza-Riachuelo river basin.¹¹⁵ The Brazilian state of São Paulo, a regional leader on several environmental issues, has enacted a law modeled on the U.S. Superfund statute, with a dedicated fund (by its Portuguese acronym, FEPRAC) to enable the state to remediate orphan or multiparty sites, then sue the responsible party(ies) for reimbursement.¹¹⁶ The 2013 FEPRAC regulations require soil sampling at former industrial sites prior to issuance of environmental operating permits, as a mechanism to identify contaminated areas and subject them to mandatory remediation.¹¹⁷

F. Natural Resources

Various subregions within Latin America are disproportionately rich in valuable natural resources, particularly mineral and biological resources, and several of its economies have historically been dominated by exploitation of these resources. Argentina, Brazil, Chile, Colombia, and Peru are global leaders in mineral production, particularly metals such as copper, iron, nickel, and tin.¹¹⁸ Peru and Chile are, respectively, the second- and ninth-largest harvesters of marine fish in the world.¹¹⁹ Despite significant deforestation, Brazil remains second only to Russia in total forest cover,¹²⁰ and has by far the largest share of tropical forest.¹²¹ Looking beyond tropical forests, the wide array of natural habitats in South America makes it the most biodiverse continent: for example, while comprising only 12 percent of the world's land area, South America is home to 33 percent of known bird species.¹²² Inspired by the 1992 Convention of Biological Diversity, some countries have sought to regulate access to the genetic resources within their borders, valued economically as a warehouse of uncataloged natural substances, many of which are expected to hold great potential for development as pharmaceuticals.¹²³

In countries that have significant natural resource sectors, the laws written to regulate the extractive industries include environmental provisions that may anticipate the development of generally applicable environmental laws. As a precursor to its modern environmental laws, Brazil's 1965 Forest Code instituted an ambitious regulatory framework intended to protect all forms of native vegetation on public and private property throughout Brazil,¹²⁴ with its schedules of violations and penalties forming the apparent inspiration and basis for the progressive Environmental Crimes Law of 1998.¹²⁵ Additional examples can be found in the mining laws enacted in Argentina and Peru to address historical contamination of soils and watercourses by mine "tailings" (i.e., large volumes of leftover extracted material that often contain high concentrations of toxic elements), which provide the model and precedent for more universal contaminated site laws.¹²⁶

G. Energy and Climate

The energy sector in Latin America is robust and rapidly expanding to become a source of economic growth and stability. Brazil, Mexico, and Venezuela are each significant producers of petroleum, with the huge "presalt" reserves first announced in 2007 beneath the offshore waters of Brazil being among the global industry's largest discoveries in recent decades.¹²⁷ The region is also developing an increasingly diverse portfolio of renewable energy sources, including biofuels, hydroelectric, wind, and solar power. The prime example is Brazil, which has positioned itself as a global biofuel leader,¹²⁸ with large-scale production of ethanol from sugar cane since the 1970s, augmented by recent investments in biodiesel derived primarily from soybeans.¹²⁹ Brazil's electrical grid relies heavily on large hydroelectric projects,¹³⁰ including several at various stages of construction in the Amazon

Basin,¹³¹ a source of significant controversy due to the effects on forests and indigenous inhabitants. Energy efficiency initiatives are spreading across Latin America, with several countries recently imposing energy performance labeling requirements for a wide range of products.¹³² Uruguay has taken an especially comprehensive approach to alternative energy sources, mandating that an increasing share of its electricity be derived from wind and seeking to eliminate fossil-fuel-fired power plants from its national grid.¹³³

Climate change policies in Latin America are influenced by both broad public acceptance of climate change as a real, human-caused, threatening phenomenon,¹³⁴ and self-interested contemplation of the potential for external funding of development projects under the Kyoto Protocol's Clean Development Mechanism or similar carbon emission offset programs.¹³⁵ In the international sphere, Brazil has prominently advocated for the advancement of multilateral agreements to reduce greenhouse gas emissions.¹³⁶ Domestically, both Brazil's federal government and several states have enacted climate change policy laws intended to stabilize or reduce greenhouse gas emissions,¹³⁷ although it remains unclear whether these governments will actually attempt to impose the extensive cuts in fossil fuel consumption that appear necessary to achieve the laws' objectives.

H. Chemicals

No Latin American country has yet enacted comprehensive chemicals regulation, but some have shown signs of attention to the issue, perhaps most significantly in Mexico, which has advanced an initial chemicals inventory, the first of its kind in the region.¹³⁸ The legislatures of both Argentina and Brazil have recently considered bills that would restrict the content of certain substances in electronic products, generally following the contours of the EU Directive on the Restriction of Hazardous Substances (RoHS).¹³⁹ In light of this and other expressions of affinity for European environmental policy, it would not be surprising to see one or more of the major Latin American countries to adopt the EU's Registration, Evaluation, Authorization, and Restriction of Chemicals (REACH) Regulation in some form. Most Latin American countries are parties to the major international conventions that regulate certain classes of chemicals, such as the Stockholm Convention on Persistent Organic Pollutants,¹⁴⁰ the Montreal Protocol for Ozone-Depleting Substances,¹⁴¹ and the Rotterdam Convention on Prior Informed Consent.¹⁴²

In the related area of chemical hazard communications, Brazil and Uruguay have each adopted the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), with Brazil's initially voluntary technical standard becoming fully mandatory in 2015,¹⁴³ and Uruguay's mandatory regulations under a phased implementation from 2009 to 2017.¹⁴⁴ Mexico adopted a GHS technical standard in 2011; it is voluntary but can be used to satisfy certain workplace safety requirements.¹⁴⁵

As several Latin American countries have sizeable agricultural sectors and abundant insects, pesticides and related product classes such as fertilizers and inoculants are widely used and subject to robust regulatory regimes.¹⁴⁶ In recent years Brazil has become reportedly the world's largest market for pesticides,¹⁴⁷ and has taken steps to ameliorate their impact, banning several substances¹⁴⁸ and attaining the world's highest recovery rate of used pesticide containers.¹⁴⁹ Like most other countries in the region, Brazil requires registration of pesticides, supported by submissions of health and safety data.¹⁵⁰

I. Genetically Modified Organisms

Due to the prevalence of agriculture in their economies, many Latin American countries have significant markets for genetically modified crops. However, as in Europe, public attitudes toward genetically modified organisms (GMOs) tend to be skeptical. The regulation of GMOs in Latin America therefore balances the embrace of practical agricultural solutions against a general anxiety about the unknown potential impacts of biotechnology.¹⁵¹ For example, Brazilian agribusiness has converted to GMOs for the bulk of its export crops, but for domestic consumption food products that contain 1 percent or more GMO derivatives must be prominently labeled as transgenic.¹⁵² Several other countries have acted to restrict the import and use of GMOs. The Andean nations have been especially active in restricting GMO uses, such as Peru's ten-year moratorium¹⁵³ and indefinite bans in Bolivia and Ecuador.¹⁵⁴ In some cases, biosafety restrictions on GMO use are incorporated into the biodiversity laws that protect naturally occurring genetic resources.¹⁵⁵ A notable exception is Mexico, where corn has a special social significance, and GMO cultivars of corn are heavily regulated.¹⁵⁶ All major Latin American countries are signatories of the Cartagena Biosafety Protocol,¹⁵⁷ and some have adopted the terms of this agreement into their domestic laws.¹⁵⁸

X. Conclusion

Latin American environmental law is evolving rapidly, presenting a dynamic field of endeavor for international practitioners and diverse challenges to the regulated community. The consciousness of the populace is heightened, and legislators and regulators are acting on the concerns of their constituents. Where it was once accepted local practice to disregard environmental issues, agencies, courts, and the public are reacting to the legacies of that inattention, with legal consequences that can be unpredictable. The general trend is toward higher degrees of regulation and enforcement, and as the legal communities and agencies across the region gain experience, greater consistency in the application of environmental laws is likely to result, but that transition is far from over.

Notes

1. See generally DAVID R. BOYD, *THE ENVIRONMENTAL RIGHTS REVOLUTION: A GLOBAL STUDY OF CONSTITUTIONS, HUMAN RIGHTS, AND THE ENVIRONMENT* 126–47 (2012); David R. Boyd, *The Constitutional Right to a Healthy Environment*, ENVIRONMENT (July–Aug. 2012) (stating that 16 of 18 constitutions in Latin America include a constitutional right to a healthy environment), <http://www.environmentmagazine.org/Archives/Back%20Issues/2012/July-August%202012/constitutional-rights-full.html>; see, e.g., CONSTITUCIÓN DE LA NACIÓN ARGENTINA arts. 41, 66–69; CONSTITUCIÓN POLÍTICA DEL ECUADOR 2008, arts. 71–74; CONSTITUCIÓN POLÍTICA DE LOS ESTADOS UNIDOS MEXICANOS arts. 1, 4, 26, 27; CONSTITUCIÓN POLÍTICA DE PERU arts. 66–69; CONSTITUCIÓN POLÍTICA DE LA REPÚBLICA DE CHILE art. 19(8); CONSTITUIÇÃO DA REPÚBLICA FEDERATIVA DO BRASIL DE 1988 art. 225.

2. By way of example, Article 41 of the Argentine Constitution grants individual rights to a healthy environment, see *supra* note 1; the Peruvian Constitution does not make such a guarantee and only requires the government to promote sustainable use of natural resources and conservation of biological diversity, see *supra* note 1; while Bolivia has led the region and perhaps the world by adopting constitutional rights to protect “Mother Earth” (*madre tierra*) in 2009, see *infra* note 3.

3. CONSTITUCIÓN POLÍTICA DEL ESTADO PLURINACIONAL DE BOLIVIA art. 34 (“Cualquier persona, a título individual o en representación de una colectividad, esta facultada para ejercitar las acciones legales en defensa del derecho al medio ambiente, sin perjuicio de la obligación de las instituciones políticas de actuar de oficio frente a los atentados contra el medio ambiente.”); Ley No. 300, Ley Marco de la Madre Tierra y Desarrollo Integral para Vivir Bien, G.O. 15.10.2012 (Bolivia).

4. Mexico, Argentina, and Brazil are examples of federalist systems whereby the states (Mexico and Brazil) or provinces (Argentina) have significant jurisdiction over environmental matters and can adopt restrictions that are more stringent than the national standards. See CONSTITUCIÓN POLÍTICA DE LOS ESTADOS UNIDOS MEXICANOS art. 115; CONSTITUCIÓN DE LA NACIÓN ARGENTINA arts. 1, 5, 41; CONSTITUIÇÃO DA REPÚBLICA FEDERATIVA DO BRASIL DE 1988 arts. 23 (“É competência comum da União, dos Estados, do Distrito Federal e dos Municípios: . . . VI—proteger o meio ambiente e combater a poluição em qualquer de suas formas; VII—preservar as florestas, a fauna e a flora. . .”), 24 (“Compete à União, aos Estados e ao Distrito Federal legislar concorrentemente sobre: . . . VI—florestas, caça, pesca, fauna, conservação da natureza, defesa do solo e dos recursos naturais, proteção do meio ambiente e controle da poluição. . .”).

5. In general, an *amparo* provision grants to any citizen the right to sue the government for any alleged constitutional violation (loosely analogous to the Anglo-American habeas corpus action, but with broader scope). See, e.g., CONSTITUCIÓN POLÍTICA DE LOS ESTADOS UNIDOS MEXICANOS arts. 103, 107; Ley de Amparo, Reglamentaria de los Artículos 103 y 107 de la Constitución Política de los Estados Unidos Mexicanos, D.O.F. 10.01.1936 (Mexico); see also CONSTITUCIÓN DE LA NACIÓN ARGENTINA art. 43; CONSTITUCIÓN DE COLOMBIA 1991 art. 86; CONSTITUCIÓN POLÍTICA DE ECUADOR 2008 art. 95; CONSTITUCIÓN POLÍTICA DE COSTA RICA 1994 art. 48.

6. See BOYD, *THE ENVIRONMENTAL RIGHTS REVOLUTION*, *supra* note 1, at 126–47; FRONTERAS COMUNES, *MANUAL DE ACCIONES COLECTIVAS Y AMPARO PARA LOGRAR LA JUSTICIA AMBIENTAL* (2012), http://www.fronterascomunes.org.mx/portal/images/pdf/acciones_colectivas.pdf.

7. CONSTITUCIÓN POLÍTICA DE LOS ESTADOS UNIDOS MEXICANOS art. 27; CONSTITUCIÓN POLÍTICA DE ECUADOR 2008 art. 332.

8. See, e.g., WWF & DEG, *ASSESSING WATER RISK: A PRACTICAL APPROACH FOR FINANCIAL INSTITUTIONS* 9–10 (2011); *Sin Aqua Non: Water Shortages Are a Growing Problem, but Not for the Reasons Most People Think*, *ECONOMIST* (Apr. 8, 2009), <http://www.economist.com/node/13447271>; J. LUIS GAUSCH ET AL., *PUBLIC-PRIVATE INFRASTRUCTURE ADVISORY AUTH.*, WORLD BANK, *RENEGOTIATION OF CONCESSION CONTRACTS IN LATIN AMERICA* (Apr. 2003); PHILIPPE MARIN, *PUBLIC-PRIVATE PARTNERSHIPS FOR URBAN WATER UTILITIES: A REVIEW OF EXPERIENCES IN DEVELOPING COUNTRIES* (Feb. 2009).

9. Mexico is included in the North America section of this volume, not the Central and South America section, and so its chapter precedes this one.

10. *Ley General para la Prevención y Gestión Integral de los Residuos*, D.O.F. 08.08.2003 (Mexico).

11. *Reglamento de la Ley General para la Prevención y Gestión Integral de los Residuos*, D.O.F. 30.11.2006 (Mexico).

12. *Norma Oficial Mexicana NOM-052-SEMARNAT-2005*, *Que establece las características, el procedimiento de identificación, clasificación y los listados de los residuos peligrosos*, D.O.F. 23.06.2006 (Mexico).

13. *Norma Oficial Mexicana NOM-055-SEMARNAT-2003*, *Que establece los requisitos que deben reunir los sitios que se destinarán para un confinamiento controlado de residuos peligrosos previamente estabilizados*, D.O.F. 03.11.2004 (Mexico).

14. *Norma Oficial Mexicana NOM-138-SEMARNAT/SS-2003*, *Límites máximos permisibles de hidrocarburos en suelos y las especificaciones para su caracterización y remediación*, D.O.F. 29.03.2005 (Mexico).

15. E.g., *Ley General del Equilibrio Ecológico y la Protección al Ambiente*, D.O.F. 28.01.1988 (Mexico); *Ley No. 99 de 1993*, *Por la cual se crea el Ministerio del Medio Ambiente*, D.O. 22.12.1993 (Colombia); *Lei No. 6938*, *de 31 de agosto de 1981*, *Dispõe sobre a Política Nacional do Meio Ambiente, seus fins e mecanismos de formulação e aplicação*, D.O.U. 02.09.1981 (Brazil); *Ley No. 25675*, *Ley General del Ambiente*, B.O. 28.11.2002 (Argentina); *Ley No. 19300*, *de 1 de marzo de 1994*, *sobre bases generales del medio ambiente*, D.O. 09.03.1994, (Chile).

16. For example, *Colombia's Renewable Natural Resources Code*, *Decreto No. 2811 de 1974*, *Código de Recursos Naturales Renovables*, D.O. 18.12.1974, which remains in effect, was one of the firsts to be adopted in the region.

17. *Lei No. 12.305 de 2 de agosto de 2010*, *Institui a Política Nacional de Resíduos Sólidos*, D.O.U. 03.08.2010, (Brazil).

18. See, e.g., *Decisão de Diretoria No. 103/2007/C/E*, *de 22 de junho de 2007*, *Dispõe sobre o procedimento para gerenciamento de áreas contaminadas*, D.O.E. 27.06.2007 (São Paulo State, Brazil); *Decisão de Diretoria No. 195/2005/E*, *de 23 de novembro de 2005*, *Dispõe sobre a aprovação dos Valores Orientadores para Solos e Águas Subterâneas no Estado de São Paulo*, D.O.E. 03.12.2005 (São Paulo State, Brazil).

19. National legislative websites in the region that enable monitoring of bills include Mexican Chamber of Deputies, <http://www.diputados.gob.mx/inicio.htm>; Argentine Chamber of Deputies, <http://www.diputados.gov.ar>; Brazilian Chamber of Deputies, <http://www2.camara.leg.br/>; Chilean Chamber of Deputies, <http://www.camara.cl>.

20. *Associação Brasileira de Normas Técnicas*, *Conheça a ABNT*, http://www.abnt.org.br/m3.asp?cod_pagina=929 (last visited June 4, 2013). Chile's Instituto Nacional de Normalización is similarly constituted. *Instituto Nacional de Normalización*, *Quiénes somos*, <http://www.inn.cl/inn/portada/index.php> (last visited June 4, 2013).

21. *Instituto Nacional de Defensa de la Competencia y de la Protección de la Propiedad Intelectual*, *Sobre el INDECOPI*, http://www.indecopi.gob.pe/0/modulos/JER/JER_Interna.aspx?ARE=0&PFL=0&JER=600 (last visited June 4, 2013).

22. In Mexico, Normas Oficiales Mexicanas (NOMs; <http://www.economia-noms.gob.mx>) issued by agencies such as SEMARNAT are automatically binding. Ley Federal sobre Metrología y Normalización art. 3(XI), D.O.F. 01.07.1992.

23. In Mexico, Normas Mexicanas (NMXs; <http://www.economia-nmx.gob.mx>) are officially non-binding standards. Ley Federal sobre Metrología y Normalización art. 3(X).

24. *E.g.*, Norma Técnica Peruana NTP 900.064.012, que establece, en términos generales, las medidas que deben ser adoptadas para el manejo ambientalmente adecuado de los RAEE en las diferentes etapas del manejo de los mismos (designating each of its annexes as either “informative” or “normative”) (Peru).

25. Formerly known as the American Society for Testing and Materials. ASTM Int’l, About ASTM, <http://www.astm.org/ABOUT/aboutASTM.html> (last visited June 4, 2013).

26. For example, in Mexico, environmental authority was formerly granted to the Secretaría de Desarrollo Social (SEDESOL; the Secretary of Social Development). For several years, Colombia’s environmental authority was a subdivision of the Ministerio del Ambiente, Vivienda and Desarrollo Territorial (MAVDT), an umbrella agency that includes housing and development. In 2011, MAVDT was dissolved and the environmental authority reconstituted as the Ministerio de Ambiente y Desarrollo Sostenible (MinAmbiente; <http://www.minambiente.gov.co>).

27. In 2006, the Argentine federal environmental agency, the Secretaria de Ambiente y Desarrollo Sustentable (SAyDS; <http://www.ambiente.gov.ar>), became an executive-level agency.

28. Brazil’s Ministerio do Meio Ambiente (MMA; <http://www.mma.gov.br>) was established in 1985.

29. Chile’s Ministerio del Medio Ambiente (MMA; <http://www.mma.gov.cl>) was established as a cabinet-level agency in 2010.

30. Mexico’s Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT; <http://www.semarnat.gob.mx>) was established in 2000.

31. For example, Mexican environmental law is enforced through the Procuradaria Federal de Protección del Medio Ambiente (PROFEPA; <http://www.profepa.gob.mx>). Brazilian environmental laws are enforced largely through public prosecutors. *See, e.g.*, LESLEY K. McALLISTER, MAKING LAW MATTER: ENVIRONMENTAL PROTECTION AND LEGAL INSTITUTIONS IN BRAZIL (2008).

32. For example, Sao Paulo State’s environmental agency, CETESB, has well-developed site contamination standards that became the model for federal standards. *See supra* note 18; *cf.* Resolução CONAMA No. 420, de 28 de dezembro de 2009, Dispõe sobre critérios e valores orientadores de qualidade do solo quanto à presença de substâncias químicas e estabelece diretrizes para o gerenciamento ambiental de áreas contaminadas por essas substâncias em decorrência de atividades antrópicas, D.O.U. 30.12.2009 (Brazil). The Province of Buenos Aires adopted a progressive electric and electronics waste law, ahead of its federal government. Ley Provincia de Buenos Aires No. 14321, Gestión Sustentable de Residuos de Aparatos Eléctricos y Electrónicos, B.O. 15.12.2011.

33. Mexico regulates toxic substances under its General Health Law, Ley General de Salud, D.O.F. 07.02.1984, and its Secretariat of Health houses its federal toxic substances agency, Comisión Federal para la Protección contra Riesgos Sanitarios (COFEPRIS; <http://www.cofepris.gob.mx>). Costa Rica also regulates toxic substances and products through its Ministry of Health. Decreto Ejecutivo No. 24099-S, del 22 de diciembre de 1994, Reglamento Registro y Control Sustancias Tóxicas y Productos Tóxicos y Peligrosos, La Gaceta 21.03.1995 (Costa Rica).

34. In Peru, the agency with jurisdiction over the registration and control of pesticides is the Servicio Nacional de Sanidad Agraria (SENASA; <http://www.senasa.gob.pe>), a

subsecretary of the Ministry of Agriculture; in Ecuador, pesticides and fertilizers are regulated by the Agencia Ecuatoriana de Aseguramiento de la Calidad del Agro (AGROCALIDAD; <http://www.agrocalidad.gob.ec>).

35. In Brazil, for example, the Agência Nacional de Transportes Terrestres (ANTT) administers the country's principal dangerous goods transport regulation, ANTT Resolução No. 420, de 12 de fevereiro de 2004, Aprova as Instruções Complementares ao Regulamento do Transporte Terrestre de Produtos Perigosos, D.O.U. 31.05.2004.

36. See, e.g., Ley No. 99 de 1993, Por la cual se crea el Ministerio del Medio Ambiente, D.O. 22.12.1993, art. 49 (requiring environmental licensing of any activity that could cause deterioration of natural resources or the environment) (Colombia); Ley de Aguas Nacionales, D.O.F. 01.12.1992, art. 20 (requiring a concession for use of or discharge into national waters) (Mexico).

37. Some of these registries are publicly available through electronic portals on environmental agency websites, for example, <http://www.sea.gob.cl/contenido/centro-de-documentacion> (Chilean environmental impact decisions); <http://vital.anla.gov.co/ventanillasilpa> (Colombia integrated public database); <http://tramites.semarnat.gob.mx/> (Mexican waste management plans).

38. For example, Colombia has developed comprehensive manuals for applications for environmental impact studies. E.g., *MANUAL DE EVALUACION DE ESTUDIOS AMBIENTALES: CRITERIOS Y PROCEDIMIENTOS* (Alberto Federico Mouthon et al. eds., Ministerio del Medio Ambiente 2002).

39. For example, to streamline media-specific environmental permits, Mexico has developed a streamlined "single environmental license" (*licencia ambiental unica*, LAU). See SEMARNAT, Trámite: Licencia Ambiental Única, <http://tramites.semarnat.gob.mx/index.php/atmosfera/autorizaciones-para-la-operacion/5-semarnat-05-002-licencia-ambiental-unica> (last visited June 4, 2013). The State of São Paulo has undertaken a series of reforms to its licensing process to reduce requirements for low-impact projects. See, e.g., Resolução SMA-056 de 10 de junho de 2010, Altera procedimentos para o licenciamento das atividades que especifica (streamlining licensing procedures for specified projects deemed to have low environmental impact) D.O.E. 11.06.2010 (São Paulo State, Brazil).

40. See, e.g., Ley General del Equilibrio Ecológico y la Protección al Ambiente, D.O.F. 28.01.1988, arts. 171–172 (Mexico); Ley No. 1333 de 1999, Por la cual se establece el procedimiento sancionatorio ambiental, D.O. 21.07.2009 (Colombia); Ley No. 19300, de 1 de marzo de 1994, sobre bases generales del medio ambiente, D.O. 09.03.1994, arts. 51–55 (Chile).

41. Lei No. 9605, de 12 de fevereiro de 1999, Dispõe sobre as sanções penais e administrativas derivadas de condutas e atividades lesivas ao meio ambiente, D.O.U. 03.02.1998, art. 54 § 2 (maximum prison term of five years for causing pollution that results or can result in harm to human health, death of animals, or significant destruction of flora) & art. 75 (maximum fine of R\$50 million for violations of environmental laws) (Brazil).

42. Decreto No. 6514, de 22 de julho de 2008, Dispõe sobre as infrações e sanções administrativas ao meio ambiente, estabelece o processo administrativo federal para apuração destas infrações, D.O.U. 23.07.2008 (Brazil).

43. Ley No. 1333 de 1999 art. 5(1) (Colombia).

44. For example, in Latin America's version of Love Canal, the highly contaminated Matanza-Riachuelo River Basin, Argentine environmental authorities have ordered the closure of 239 facilities as part of a global remediation plan. See Press Release, ACUMAR, ACUMAR Cumple con el Control Industrial en la Cuenca, Feb. 26, 2013, <http://www.acumar.gov.ar/novedades/866/acumar-cumple-con-el-control-industrial-en-la-cuenca> (last visited June 4, 2013).

45. Brazil, for example, has responded to the challenges of enforcement in the Amazon Basin with the creation of the Environmental Military Police, a force that numbers in the thousands. *See generally* Polícia Militar Ambiental do Brasil, <http://www.pmambiental.brasil.org.br/> (last visited June 4, 2013). This force was originally authorized under legislation intended to create an Environmental National Guard. Decreto No. 6515, de 22 de julho de 2008, Institui, no âmbito dos Ministérios do Meio Ambiente e da Justiça, os Programas de Segurança Ambiental denominados Guarda Ambiental Nacional e Corpo de Guarda-Parques, D.O.U. 23.07.2008 (Brazil).

46. Perhaps the most notorious of recent government actions in the region is the lengthy and controversial case against Chevron by the government of Ecuador resulting in a judgment of more than \$18.9 billion. Victor Gómez, *Ecuador Court Upholds \$18 Billion Ruling against Chevron*, REUTERS, Jan. 30, 2012, <http://www.reuters.com/article/2012/01/04/us-ecuador-chevron-idUSTRE8021VS20120104> (last visited June 4, 2013). Other recently reported examples include the following: Michael Kepp, *Brazil Cracks Down on Illegal Deforestation, Issues \$11.9 Million in Fines since February*, ENVTL. L. REP. (BNA), Mar. 27, 2013; Michael Kepp, *Brazilian Agency Fines Steelmaker \$17.6M for Contamination Linked to Health Problems*, ENVTL. L. REP. (BNA), Apr. 10, 2013; Alexandra Ulmer & Euan Rocha, *Chile Court Suspends Goldcorp \$3.9 Billion El Morro Project*, REUTERS, Apr. 30, 2012, <http://www.reuters.com/article/2012/04/30/us-goldcorp-idUSBRE83T0CL20120430> (last visited June 4, 2013).

47. *See, e.g.*, INECE, *Summary of Plenary Session No. 7: The Evolving Role of the Judiciary in Environment Compliance and Enforcement*, Sixth International Conference on Environmental Compliance and Enforcement (Apr. 15–19, 2002), <http://www.inece.org/conf/proceedings2/54-Plenary%20Session%20ALT.pdf>. *See also* UNEP, *Aportes y sugerencias de los jueces participantes de la region de America Latina y el Caribe*, World Symposium of Judges (Aug. 18–20, 2002) (Spanish only), available at <http://www.pnuma.org/deramb/AportacionesLACSimposioMudialjueces.pdf>.

48. UNEP, *JUDICIAL HANDBOOK ON ENVIRONMENTAL LAW* (2005), http://www.unep.org/environmentalgovernance/Portals/8/documents/JUDICIAL_HBOOK_ENV_LAW.pdf.

49. *See, e.g.*, THE ROLE OF THE JUDICIARY IN ENVIRONMENTAL GOVERNANCE: COMPARATIVE PERSPECTIVES 263 (Louis J. Kotze & Alexander R. Paterson eds., 2009) (observing that the judiciary in Brazil has “in the past been strongly attached to the tradition of protecting individual rights,” and arguing that the judiciary could expand its role in environmental justice in Brazil by broadening standing, among other things).

50. For example, in a 2002 decision, Colombia’s Constitutional Court struck down a provision of the Penal Code that limited punitive damages in criminal cases to 1,000 times the minimum monthly salary, citing among its reasons the fact that environmental harms may not be subject to direct calculation and such a limit impeded fair compensation in such cases. *See* Sentencia No. C-916/02, Camilo Andrés Baracaldo Cárdenas, *Demanda de inconstitucionalidad contra el artículo 97 de la Ley 599 de 2000*, “[p]or la cual se expide el Código Penal,” at ¶ 8.3.1 (Corte Constitucional, Oct. 29, 2002) (Colombia).

51. For example, Mexico recently provided for class action law suits: constitutional amendments were adopted in 2010 and legislation to implement those reforms was enacted in 2011. *See* Decreto por el que se reforman y adicionan el Código Federal de Procedimientos Civiles, el Código Civil Federal, la Ley Federal de Competencia Económica, la Ley Federal de Protección al Consumidor, la Ley Orgánica del Poder Judicial de la Federación, la Ley General del Equilibrio Ecológico y la Protección al Ambiente

y la Ley de Protección y Defensa al Usuario de Servicios Financieros, D.O.F. 30.08.2011 (Mexico).

52. See, e.g., Ley General del Equilibrio Ecológico y la Protección al Ambiente, D.O.F. 28.01.1988, arts. 199–204 (Mexico); Ley No. 7554, Ley Orgánica del Ambiente, La Gaceta 13.11.1995, art. 107 (Costa Rica).

53. The leading example of a citizen suit leading to enforcement scrutiny may be the case of *Mendoza, Beatriz Silvia y otros c/ Estado Nacional y otros s/ daños y perjuicios derivados de la contaminación ambiental del Río Matanza Riachuelo*, Sentencia No. M.1569.XL (Corte Suprema de Justicia de la Nación, July 8, 2008), in which the Argentine Supreme Court ordered the governments of the nation, the Province of Buenos Aires and the Autonomous City of Buenos Aires to enforce the environmental laws, leading to the closure of hundreds of industrial facilities and the creation of a new regulatory regime in the highly polluted Matanza-Riachuelo River Basin.

54. See BOYD, *THE ENVIRONMENTAL RIGHTS REVOLUTION*, *supra* note 1, at 126–47.

55. See, e.g., *supra* note 52; Ley No. 472 de 1998, por la cual se desarrolla el artículo 88 de la Constitución Política de Colombia en relación con el ejercicio de las acciones populares y de grupo y se dictan otras disposiciones (Colombia); Lei No. 7347, de 24 de julho de 1985, Disciplina a ação civil pública de responsabilidade por danos causados ao meio-ambiente, ao consumidor, a bens e direitos de valor artístico, estético, histórico, turístico e paisagístico, D.O.U. 25.07.1985 (Brazil).

56. See, e.g., GEORGE & CATHERINE PRING, *GREENING JUSTICE: CREATING AND IMPROVING ENVIRONMENTAL COURTS AND TRIBUNALS*, app. 1 (2009), available at <http://www.accessinitiative.org/resource/greening-justice> (last visited June 4, 2013) (listing specialized environmental courts and tribunals in Bolivia, Brazil, Chile, and Costa Rica).

57. Costa Rica's Tribunal Ambiental Administrativo (<http://www.tribunalambiental.org>) is housed within its Ministerio del Ambiente, Energía y Telecomunicaciones.

58. See Ley No. 20600, de 28 de junio de 2012, crea los Tribunales Ambientales, D.O. 28.06.2012 (Chile).

59. According to its website, the Latin American Water Tribunal has heard 58 cases and provided 250 consultations since its founding. Tribunal Latinoamericano del Agua, Audiencias, <http://tragua.com/audiencias> (last visited June 4, 2013).

60. See, e.g., Maura Mullen de Bolivar. *A Comparison of Protecting the Environmental Interests of Latinamerican Indigenous Communities from Transnational Corporations under International Human Rights and Environmental Law*, 8 J. TRANSNAT'L L. & POL'Y 105 (Fall 1998).

61. Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, Mar. 22, 1989, 28 I.L.M. 657. All Central and South American countries are parties. Basel Convention Parties and Signatories, <http://www.basel.int/Countries/StatusofRatifications/PartiesSignatories/tabid/1290/Default.aspx> (last visited Feb. 22, 2013).

62. United Nations Framework Convention on Climate Change, May 9, 1992, 1771 U.N.T.S. 107. All Central and South American countries are parties. UNFCCC, List of Non-Annex I Parties, http://unfccc.int/parties_and_observers/parties/non_annex_i/items/2833.php (last visited Feb. 22, 2013).

63. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Mar. 3, 1973, 993 U.N.T.S. 243. All Central and South American countries are parties. CITES, Member Countries, <http://www.cites.org/eng/disc/parties/alphabet.php> (last visited Feb. 22, 2013).

64. Montreal Protocol on Substances That Deplete the Ozone Layer, Sept. 16, 1987, 26 I.L.M. 1550. All Central and South American countries are parties. UNEP, Ozone Secretariat,

Status of Ratification for the Montreal Protocol and the Vienna Convention, http://ozone.unep.org/new_site/en/treaty_ratification_status.php (last visited Feb. 22, 2013).

65. Rio Declaration on Environment and Development, June 14, 1992, 31 ILM 874 (1992). All Central and South American countries are parties. CITES, Member Countries, <http://www.cites.org/eng/disc/parties/alphabet.php> (last visited Feb. 22, 2013).

66. Ley General de Cambio Climático, D.O.F. 06.06.2012, arts. 2.1, 33.II (Mexico); Lei No. 12187, de 29 de dezembro de 2009, Institui a Política Nacional sobre Mudança do Clima, D.O.U. de 30.12.2009 (Brazil).

67. *See, e.g.*, Ley No. 24051, Régimen Aplicable a la Generación, Manipulación, Transporte, Tratamiento y Disposición Final de Residuos Peligrosos, B.O. 17.01.1992, annexes I, II (Argentina); Decreto Supremo No. 148, de 12 de junio de 2003, Aprueba Reglamento Sanitario sobre Manejo de Residuos Peligrosos, D.O. 16.06.2004, arts. 17, 90 (Chile); Decreto No. 4741 de 2005, Por el cual se reglamenta parcialmente la prevención y el manejo de los residuos o desechos peligrosos generados en el marco de la gestión integral, D.O. 30.12.2005, annexes I-III (Colombia).

68. *See supra* note 66.

69. Stockholm Convention on Persistent Organic Pollutants, May 22, 2001, 40 I.L.M. 532. All Central and South American countries are parties. Stockholm Convention, Status of Ratifications, <http://chm.pops.int/Countries/StatusofRatifications/tabid/252/Default.aspx> (last visited Feb. 22, 2013).

70. Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, Sept. 10, 1998, 38 I.L.M. 1. All Central and South American countries are parties. Rotterdam Convention, Status of Ratifications, <http://www.pic.int/Countries/Statusofratifications/tabid/1072/language/en-US/Default.aspx> (last visited Feb. 22, 2013).

71. *See, e.g.*, North American Free Trade Agreement art. 104, Dec. 17, 1992, 32 I.L.M. 289.

72. Notable is the creation of the Commission on Environmental Cooperation under the NAFTA environmental side agreement, North American Agreement on Environmental Cooperation, Sept. 14, 1993, 32 I.L.M. 1480. *See also* United States—Peru Trade Promotion Agreement art. 18.4, Apr. 12, 2006, <http://www.ustr.gov/trade-agreements/free-trade-agreements/peru-tpa/final-text>, (providing for a commitment to enable citizens to petition the authorities to investigate alleged violations of environmental laws).

73. *E.g.*, Andean Subregional Integration Agreement (Cartagena Agreement), May 26, 1969, 8 I.L.M. 910 (1969) (creating the Andean Community); Treaty of Asunción, Mar. 26 1991, 30 I.L.M. 1041 (1991) (creating the Common Market of the South, or MERCOSUR).

74. *E.g.*, Decisión No. 436, Norma Andina para el Registro y Control de Plaguicidas Químicos de Uso Agrícola, Nonagesimocuarto Período Extraordinario de Sesiones de la Comisión, 11 de junio de 1998, Lima, Peru; MERCOSUR/GMC/RES No. 6/98—Procedimiento Uniforme de Control del Transporte de Mercancías Peligrosas y Cronograma para el Cumplimiento de las Exigencias del Acuerdo sobre Transporte de Mercancías Peligrosas en el MERCOSUR, Grupo Mercado Común XXIX, 8 de mayo de 1998, Buenos Aires, Argentina.

75. For example, Greenpeace International has a significant presence in Latin America, with active campaigns in Argentina, Chile, Brazil, and Mexico.

76. For example, the Border Environmental Justice Campaign (a collaboration between the U.S.-based Environmental Health Coalition and Mexican Colectivo Chilpancingo Pro Justicia Ambiental) initiated a suit that led to the cleanup of the Metales y Derivados site in Tijuana. Local NGO effort was instrumental to shutting down the plant

in 1994 and orchestrating a community-driven cleanup in 2008. See Stephen Siciliano, *Mexico Provides Final Funding for Cleanup of Abandoned Lead Smelting Site in Tijuana*, ENVTL. L. REP. (BNA), Aug. 22, 2007. In the Matanza-Riachuelo River Basin case in Argentina (see *supra* note 55), local NGOs and the National Ombudsman filed a prior suit that laid the groundwork for the eventual success of the Mendoza suit. See Kristi Innvæer Staveland-Sæter, *Litigating the Right to a Healthy Environment: Assessing the Policy Impact of "The Mendoza Case,"* CHR. MICHELSEN INST. (CMI Report R 2011:6), <http://www.cmi.no/publications/file/4258-litigating-the-right-to-a-healthy-environment.pdf>. Four NGOs later declared their role as third parties in the Mendoza case in 2006, after the case was accepted by the Supreme Court of the Nation. See Fundación Ambiente y Recursos Naturales, *The Matanza-Riachuelo River Basin Case Summary* (July 8, 2008), <http://www.farn.org.ar/archives/10827>. Locally prominent NGOs dedicated to environmental law include Centro Mexicano de Derecho Ambiental (Mexican Center for Environmental Law; <http://www.cemda.org>); Derecho, Ambiente y Recursos Naturales (Rights, Environment and Natural Resources (Peru); <http://www.dar.org.pe/inicio.htm>); Centro Ecuatoriano de Derecho Ambiental (Ecuadorian Center for Environmental Law; <http://www.ceda.org.ec>).

77. For example, Swiss government grants provided the initial funding for the Plataforma Regional de Residuos Electrónicos en Latinoamérica y el Caribe (RELAC, an NGO dedicated to electronics product stewardship in Latin America; <http://www.residuoselectronicos.net>). Working with environmental regulators throughout the region, RELAC has developed model electronics legislation based on EU models. Most of its e-waste initiatives have been conducted under the auspices of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal. As part of their commitment to implementing the Convention, the Swiss State Secretariat for Economic Affairs (SECO) and the Swiss Federal Laboratories for Materials Testing and Research (EMPA) launched programs in 2007 and 2009, respectively, to develop e-waste management systems in Peru and Colombia. Swiss Fed. Dep't of Economic Affairs, Trade Promotion, *A Swiss Contribution to the Implementation of the Basel Convention*, <http://www.basel.int/Portals/4/Basel%20Convention/docs/convention/XX%20Anniversary/Press%20kit/Swiss%20Project%20leaflet.pdf> (last visited June 5, 2013). Additionally, the Basel Convention's Partnership for Action on Computing Equipment (PACE), whose operations are supported primarily by the Swiss government, has held several workshops on e-waste management strategies in Latin America. See, e.g., INTI, *Centro Regional Sudamericano Convenio de Basilea*, <http://crsbasilea.inti.gov.ar/gale.htm> (last visited June 5, 2013); Sistema de la Integración Centroamericana, *Centro Regional Convenio de Basilea para Centroamérica y México, Taller Centroamericano para la Gestión Ambientalmente Responsable de Residuos Eléctricos y Electrónicos*, Feb. 28, 2013, <http://www.sica.int/busqueda/Noticias.aspx?IDIItem=76510&IDCat=3&IdEnt=889&Idm=1&IdmStyle=1>. As early as 2006, the United Kingdom, in partnership with the United States and Canada, worked to establish a regional strategy for the environmentally sound management of used lead acid batteries in Central America, Colombia, Venezuela, and the Caribbean. Basel Convention, *Revised regional strategy for the ESM of Used Acid Batteries in Central America, Colombia, Venezuela and the Caribbean island states (phase II)*, <http://www.basel.int/DNNAdmin/AllNews/tabid/2290/ctl/ArticleView/mid/7518/articleId/220/Revised-regional-strategy-for-the-ESM-of-Used-Acid-Batteries-in-Central-America-Colombia-Venezuela-and-the-Caribbean-island-states-phase-II.aspx> (last visited June 5, 2013).

78. In particular, the fact that EU legislation is always provided in Spanish and Portuguese makes it readily available to be adopted by Latin American governments.

79. *See, e.g.*, Ley General del Equilibrio Ecológico y la Protección al Ambiente, D.O.F. 28.01.1988, art. 28 (Mexico); Ley No. 19300, de 1 de marzo de 1994, sobre Bases Generales del Medio Ambiente, D.O. 09.03.1994, art. 8. (Chile); Ley No. 25675, Ley General del Ambiente, B.O. 28.11.2002, arts. 8, 11–13 (Argentina); Ley No. 7554, Ley Orgánica del Ambiente, La Gaceta 13.11.1995, arts. 17–24 (Costa Rica); SEMARNAT, Guía para la Presentación de la Manifestación de Impacto Ambiental del Sector “Residuos Peligrosos,” <http://sinat.semarnat.gob.mx/dgiraDocs/documentos/dgo/estudios/2003/10DU2003ID006.html> (last visited May 29, 2013) (“En México, [EIA] se aplica desde hace más de 20 años y durante este tiempo el procedimiento ha permanecido vigente como el principal instrumento preventivo para la gestión de proyectos o actividades productivas.”).

80. *See, e.g.*, Reglamento de la Ley General del Equilibrio Ecológico y la Protección al Ambiente en Materia de Evaluación del Impacto Ambiental, D.O.F. 26.05.2012, art. 5 (Mexico); Resolução CONAMA No. 1, de 23 de janeiro de 1986, Dispõe sobre Critérios Básicos e Diretrizes Gerais para a Avaliação de Impacto Ambiental, D.O.U. 17.02.1986, art. 2 (Brazil); Ley No. 19300 art. 10 (Chile); Ley Provincia de Buenos Aires No. 11723, del Medio Ambiente, B.O. 02.12.1995, art. 10, annex II; Decreto Ejecutivo No. 31849-MINAE-S-MOPT-MAG-MEIC, Reglamento General sobre los Procedimientos de Evaluación de Impacto Ambiental (EIA), annex I, La Gaceta 24.05.2004 (Costa Rica).

81. *See, e.g.*, Resolução CONAMA No. 1, de 23 de janeiro de 1986, art. 6 (requiring that EIAs include full characterization of the physical, biological, and socio-economic environment) (Brazil); Ley No. 19300 art. 11 (Chile).

82. *See, e.g.*, Reglamento de la Ley General del Equilibrio Ecológico y la Protección al Ambiente en Materia de Evaluación del Impacto Ambiental, D.O.F. 26.05.2012, art. 12(7), 13(7) (requiring “environmental predictions and, where appropriate, evaluation of alternatives”) (Mexico); Resolução CONAMA No. 1, de 23 de janeiro de 1986, art. 6 (requiring that EIAs include analysis of all direct, indirect, immediate, medium-term, long-term, temporary and permanent environmental impacts of the proposed project) (Brazil); Ley No. 19300 art. 12 (Chile).

83. *E.g.*, Decreto Ejecutivo No. 31849-MINAE-SALUD-MOPT-MAG-MEIC art. 31 (requiring environmental permit applicants to use only licensed and registered consultants to conduct and be responsible for EIAs) (Costa Rica).

84. *E.g.*, Resolução CONAMA No. 237, de 19 de dezembro de 1997, Dispõe sobre a revisão e complementação dos procedimentos e critérios utilizados para o licenciamento ambiental, D.O.U. 22.12.1997, art. 3 (requiring publication of EIAs to guarantee public participation in environmental licensing) (Brazil); Reglamento de la Ley General del Equilibrio Ecológico y la Protección al Ambiente en Materia de Evaluación del Impacto Ambiental art. 4(IV) (“Compete a la Secretaría: . . . Llevar a cabo el proceso de consulta pública que en su caso se requiera durante el procedimiento de evaluación de impacto ambiental.”) (Mexico); Ley Provincia de Buenos Aires No. 11723 art. 2(c) (stating that all inhabitants of the Province of Buenos Aires have a right to be involved in processes designed to protect the environment and natural resources).

85. *E.g.*, CONSTITUCIÓN POLÍTICA DE COLOMBIA 1991 art. 366 (“El bienestar general y el mejoramiento de la calidad de vida de la población son finalidades sociales del Estado. Será objetivo fundamental de su actividad la solución de las necesidades insatisfechas de salud, de educación, de saneamiento ambiental y de agua potable.”); CONSTITUCIÓN POLÍTICA DE ECUADOR art. 12 (“El derecho humano al agua es fundamental e irrenunciable. El agua constituye patrimonio nacional estratégico de uso público, inalienable, imprescriptible, inembargable y esencial para la vida.”); CONSTITUCIÓN POLÍTICA DE LOS ESTADOS UNIDOS MEXICANOS art. 4 (“Toda persona tiene derecho al acceso, disposición y saneamiento de agua para consumo personal y doméstico en forma suficiente, salubre, aceptable y asequible.”).

86. *E.g.*, Resolução CONAMA No. 430, de 13 de maio de 2011, Dispõe sobre as condições e padrões de lançamento de efluentes, D.O.U. 16.05.2011, art. 16 (Brazil); Decreto con Fuerza de Ley No. 725, de 11 de diciembre de 1967, Código Sanitario, D.O. 31.01.1968, art. 73 (Chile); Decreto Ejecutivo No. 33601-MINAE-S, Reglamento de Vertido y Reuso de Aguas Residuales, La Gaceta 19.03.2007, arts. 4–5 (Costa Rica).

87. *E.g.*, Resolução CONAMA No. 430, de 13 de maio de 2011, art. 3 (Brazil); Ley de Aguas Nacionales, D.O.F. 01.12.1992, art. 29(XVI) (requiring concession holders to present a biannual water quality report using data from a laboratory certified by the Mexican Institute of Water Technology) (Mexico).

88. In largely arid Chile, for example, the Water Code states that water rights include the responsibility to use water in a way that will not harm others using the same water sources, with respect to quality, quantity, substance, and opportunities for use, among other things. Decreto con Fuerza de Ley No. 1122, de 13 de agosto de 1981, Código de Aguas, D.O. 29.10.1981, art. 14 (Chile). The Water Code also states that the Water Authority is required to consider a “minimal ecological flow” when granting permits for new and ongoing industrial activities. *Id.* art. 129.

89. *E.g.*, Lei No. 9433, de 8 de janeiro de 1997, Institui a Política Nacional de Recursos Hídricos, cria o Sistema Nacional de Gerenciamento de Recursos Hídricos, D.O.U. 09.01.1987, art. 12 (establishing the types of water uses for which a public concession is required) (Brazil).

90. *E.g.*, Conselho Nacional de Recursos Hídricos Resolução No. 108, de 13 de abril de 2010, D.O.U. 27.05.2010 (approving Rio São Francisco Hydrographic Basin Committee Deliberação n° 40, de 31 de outubro de 2008, imposing separate fees for water captured from, or discharged into, the Rio São Francisco or its tributaries) (Brazil).

91. *See, e.g.*, Lei No. 9433, de 8 de janeiro de 1997, arts. 37–39 (establishing “Comitês de Bacia Hidrográfica”) (Brazil); Ley de Aguas Nacionales art. 12 bis (establishing “Organismos de Cuenca”) (Mexico).

92. *See, e.g.*, Secretaría del Medio Ambiente del Gobierno del Distrito Federal, Programa para mejorar la calidad del aire de la Zona Metropolitana del Valle de México 2011–2020 (PROAIRE 2011–2020), Map 1.3.1, “Distribución espacial de la concentración de ozono en la ZMVM, 2005,” Map 1.2.1. “Distribución de la concentración de PM10 en las cinco zonas identificadas, con base en valores promedio anuales para 2005,” http://www.sma.df.gob.mx/proaire2011_2020/index.php (last visited May 29, 2013).

93. In the early 1980s, for example, Mexico began instituting a series of policies aimed at improving air quality. Air quality criteria were published in the Diario Oficial for the first time in 1982, and an automatic air pollution monitoring network was launched in the Distrito Federal in 1986. In 1986 and 1987, respectively, the government launched “21 Actions to Reduce Air Contamination” and “100 Necessary Measures.” These programs marked the beginning of the phasing-out of high-sulfur fuels, reduction of lead in gasoline, and rotating bans on cars, which was initiated in 1988 with the No Car Day program. PROAIRE 2011–2020, 113 (Mexico). San José recently reinstated a rotating license plate ban for the central part of the city in late 2012. *See* Decreto Ejecutivo No. 37370-MOPT, Restricción Vehicular mediante el Esquema Hora/Placa en el Centro de San José, La Gaceta 26.10.2012 (Costa Rica).

94. *See, e.g.*, Pedro G. Seraphim, *Brazil's Ethanol-Enhanced History*, ETHANOL PRODUCER MAG., Aug. 10, 2009, <http://www.ethanolproducer.com/articles/5906/brazil%27s-ethanol-enhanced-history>. Brazil has established vehicle emission standards through a series of laws and regulations, principally Lei 8723, de 28 de outubro de 1993, Dispõe sobre a redução de emissão de poluentes por veículos automotores, D.O.U. 29.10.1993; Resolução CONAMA No. 18, de 18 de maio de 1986, Dispõe sobre a criação do Programa de Controle de Poluição do Ar por Veículos Automotores—PROCONVE, D.O.U.

17.06.1986; and Resolução CONAMA No. 418, de 25 de novembro de 2009, Dispõe sobre critérios para a elaboração de Planos de Controle de Poluição Veicular—PCPV, D.O.U. 26.11.2009.

95. *E.g.*, Resolução CONAMA No. 436, de 22 de dezembro de 2011, Estabelece os limites máximos de emissão de poluentes atmosféricos para fontes fixas instaladas ou com pedido de licença de instalação anteriores a 02 de janeiro de 2007, D.O.U. 26.12.2011, anexo XIV (providing procedures for stationary source air emissions monitoring and reporting to licensing authorities) (Brazil); Resolução CONAMA No. 382, de 26 de dezembro de 2006, Estabelece os limites máximos de emissão de poluentes atmosféricos para fontes fixas, D.O.U. de 02.01.2007, art. 7 (establishing that stationary source emissions limits will be imposed through the issuance or renewal of environmental licenses) (Brazil); Reglamento de la Ley General del Equilibrio Ecológico y la Protección al Ambiente en Materia de Prevención y Control de la Contaminación de la Atmósfera, D.O.F. 25.11.1988, art. 17 (requiring stationary sources of air pollution subject to federal jurisdiction as outlined in the Environment Law to monitor and report emissions) (Mexico).

96. *E.g.*, Resolução CONAMA No. 436, de 22 de dezembro de 2011 (establishing stationary source air emissions standards for sulfur oxides, nitrogen oxides, carbon monoxide, particulate matter, lead, fluorides, and ammonia) (Brazil); Ministerio de Ambiente, Vivienda y Desarrollo Territorial Resolución No. 601 de 2006, D.O. 04.04.2006 (establishing maximum concentrations for “criteria air pollutants”: particulate matter sulfur dioxide, nitrogen dioxide, carbon monoxide, and ozone) (Colombia); Decreto 30221-S Reglamento sobre Inmisión de Contaminantes Atmosféricos, La Gaceta 21.03.2002, art. 5 (establishing maximum concentrations for air pollutants, including but not limited to sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, lead, and hydrogen sulfide) (Costa Rica); Norma Oficial Mexicana NOM-043-SEMARNAT-1993, que establece los niveles máximos permisibles de emisión a la atmósfera de partículas sólidas provenientes de fuentes fijas, D.O.F. 23.04.2003 (establishing stationary source air emissions standards for particulate matter) (Mexico).

97. *E.g.*, Resolução CONAMA No. 3, de 22 de agosto de 1990, Dispõe sobre Padrões de Qualidade do Ar, Previstos no PRONAR [i.e., Programa Nacional de Controle da Qualidade do Ar], D.O.U. 22.08.1990 (establishing air quality standards for sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, total particulate matter, inhalable particles, and smoke) (Brazil); Ministerio de Ambiente, Vivienda y Desarrollo Territorial Resolución No. 601 de 2006 (establishing maximum concentrations for “criteria air pollutants”: particulate matter sulfur dioxide, nitrogen dioxide, carbon monoxide, and ozone) (Colombia).

98. In Brazil, São Paulo’s state environmental agency, CETESB, has established an interactive air quality monitoring program, QUALAR, which imports live data from a network of monitoring stations, making them available for public queries in real time. *See* CETESB, Qualidade do Ar, <http://www.cetesb.sp.gov.br/ar/qualidade-do-ar/32-qualar> (last visited May 29, 2013); Press Release, CETESB, QUALAR—um Novo Sistema de Informações que Facilita as Consultas sobre Qualidade do Ar, Sept. 22, 2009, http://www.cetesb.sp.gov.br/noticentro/2009/09/22_ar.pdf (last visited May 29, 2013). Mexico City has established a similar program, SIMAT. Secretaría del Medio Ambiente del Gobierno del Distrito Federal, Sistema de Monitoreo Atmosférico de la Ciudad de México, SIMAT, <http://www.calidadaire.df.gob.mx/calidadaire/index.php> (last visited May 29, 2013). Costa Rica has established a national monitoring network and publishes air quality measurements from stations in three cities—San José, Heredia, and Belén—in the major metropolitan area of the capital. *See* Decreto 30221-S—Reglamento sobre Inmisión de Contaminantes Atmosféricos (Costa Rica). Chile is also in the process of drafting policies

to improve air quality in major metropolitan areas that would include a network of monitoring stations. See Ministerio del Medio Ambiente, Gobierno de Chile, Eje Transversal: Regulación Ambiental, <http://www.mma.gob.cl/1304/w3-propertyvalue-16237.html> (last visited May 29, 2013).

99. See CONSEMA Deliberação No. 25, de 13 de junho de 2012, Manifesta-se favorável à minuta de decreto que estabelece novos padrões de qualidade do ar (São Paulo State, Brazil).

100. See, e.g., Emilio Godoy, *The Waste Mountain Engulfing Mexico City*, *GUARDIAN* (Jan. 9, 2012), <http://www.guardian.co.uk/environment/2012/jan/09/waste-mountain-mexico-city>.

101. Ley General para la Prevención y Gestión Integral de los Residuos, D.O. 10.08.2003 (Mexico).

102. See, e.g., Lei No. 12.305 de 2 de agosto de 2010, Institui a Política Nacional de Resíduos Sólidos, D.O.U. 03.08.2010, arts. 33–34 (Brazil).

103. Laws that contain provisions that span the gamut of requirements listed here include the following: Ley No. 24051, Régimen Aplicable a la Generación, Manipulación, Transporte, Tratamiento y Disposición Final de Residuos Peligrosos, B.O. 17.01.1992 (Argentina); Decreto Supremo No. 148, de 12 de junio de 2003, Aprueba Reglamento Sanitario sobre Manejo de Residuos Peligrosos, D.O. 16.06.2004 (Chile); Decreto No. 4741 de 2005, Por el cual se reglamenta parcialmente la prevención y el manejo de los residuos o desechos peligrosos generados en el marco de la gestión integral, D.O. 30.12.2005 (Colombia).

104. See Secretaría de Ambiente y Desarrollo Sustentable de la Nación, Tabla de Restricciones de Ingreso Jurisdiccionales en Materia de Residuos Peligrosos, http://www.ambiente.gov.ar/archivos/web/URP/File/Promociones_Prohibiciones2_julio06.pdf (last visited May 29, 2013) (listing Argentine provincial laws prohibiting or restricting entry of hazardous wastes).

105. See *supra* note 62.

106. E.g., Ley Nacional No. 24051, annexes I, II (Argentina); Decreto Supremo No. 148, de 12 de junio de 2003, arts. 17, 90 (Chile); Decreto No. 4741 de 2005, annexes I-III (Colombia).

107. E.g., Ley General para la Prevención y Gestión Integral de los Residuos art. 19 (Mexico); Ley No. 8839, Ley para la Gestión Integral de Residuos, La Gaceta 13.07.2010, arts. 41–42 (Costa Rica).

108. See Lei No. 12.305 de 2 de agosto de 2010, arts. 33–34 (Brazil).

109. E.g., *id.* art. 33 (listing categories of products and packaging subject to reverse logistics requirements). The principal implementing authority, the Reverse Logistics Orientation Committee, is authorized to expand the set of covered products and packaging, and has initiated reverse logistics requirements for “packaging in general” and pharmaceuticals. See Ministerio do Meio Ambiente, Comitê Orientador Logística Reversa, <http://www.mma.gov.br/cidades-sustentaveis/residuos-solidos/instrumentos-da-politica-de-residuos/comite-orientador-logistica-reversa> (last visited May 29, 2013) (describing the development of reverse logistics programs and listing working groups assigned to certain categories of products and packaging).

110. While there is no regional model, several countries have enacted laws governing the remediation of contaminated sites. See, e.g., Decreto No. 94, de 15 de mayo de 1995, Reglamento que fija el procedimiento y etapas para establecer planes de prevención y de descontaminación, D.O. 26.10.1995 (Chile); Ley Provincia de Buenos Aires No. 14343, Ley de Pasivos Ambientales, B.O. 23.01.2012 (regulating the identification of responsible parties); Lei No. 13577, de 8 de julho de 2009, Dispõe sobre diretrizes e procedimentos para

a proteção da qualidade do solo e gerenciamento de áreas contaminadas, D.O.E. 09.07.2009 (establishing standards and procedures for soil quality and management of contaminated sites) (São Paulo State, Brazil).

111. *E.g.*, Ley General para la Prevención y Gestión Integral de los Residuos art. 2(IV) (“Corresponde a quien genere residuos, la asunción de los costos derivados del manejo integral de los mismos y, en su caso, de la reparación de los daños.”) (Mexico); Ley No. 19300, de 1 de marzo de 1994, sobre Bases Generales del Medio Ambiente, D.O. 09.03.1994, art. 3 (“Sin perjuicio de las sanciones que señale la ley, todo el que culposa o dolosamente cause daño al medio ambiente, estará obligado a repararlo materialmente, a su costo, si ello fuere posible, e indemnizarlo en conformidad a la ley.”) (Chile); Ley No. 8839 art. 45 (“Los generadores de residuos de cualquier tipo y los gestores tienen la responsabilidad de manejarlos en forma tal que no contaminen los suelos, los subsuelos, el agua, el aire y los ecosistemas.”) (Costa Rica); Ley No. 24051 arts. 47–48 (providing for the liability of hazardous waste generators and managers for harms caused by their wastes, regardless of measures taken to transfer or avoid such liability) (Argentina).

112. Ley No. 25675 art. 22 (“Toda persona física o jurídica, pública o privada, que realice actividades riesgosas para el ambiente, los ecosistemas y sus elementos constitutivos, deberá contratar un seguro de cobertura con entidad suficiente para garantizar el financiamiento de la recomposición del daño que en su tipo pudiere producir; asimismo, según el caso y las posibilidades, podrá integrar un fondo de restauración ambiental que posibilite la instrumentación de acciones de reparación.”) (Argentina). Brazil and Costa Rica have adopted insurance or financial guarantee requirements for those who manage or dispose of wastes. Lei No. 12.305 de 2 de agosto de 2010, art. 40 (“No licenciamento ambiental de empreendimentos ou atividades que operem com resíduos perigosos, o órgão licenciador do Sisnama pode exigir a contratação de seguro de responsabilidade civil por danos causados ao meio ambiente ou à saúde pública.”) (Brazil); Ley No. 8839 art. 45 (“[L]as instalaciones de disposición final de residuos deberán contar con garantías financieras para [. . .] de ser necesario, realizar la remediación del sitio si los niveles de contaminación en él representan un riesgo para la salud o el ambiente.”) (Costa Rica).

113. Ley General para la Prevención y Gestión Integral de los Residuos art. 71 (Mexico).

114. Mexico, Peru, and the Brazilian states of São Paulo and Minas Gerais have all undertaken contaminated site inventories in the past five to ten years.

115. Both Argentina and Peru have instituted nationwide programs for the remediation of abandoned mine sites. Ley 24.585, de Protección Ambiental (Código de Minería), 24.11.1995, art. 18 (assigning liability for rehabilitation of contaminated mine sites) (Argentina); Ley 28271, Ley que Regula los Pasivos Ambientales de la Actividad Minera, D.O. 02.07.2004 (establishing a framework to inventory and assign liability for contaminated mine sites) (Peru); *see also* Ley 29134, Ley que Regula los Pasivos Ambientales del Subsector Hidrocarburos, D.O. 17.11.2007 (establishing a framework to inventory and assign liability for contaminated petroleum development sites) (Peru). Argentina is also home to the most notorious contaminated zone in Latin America, the Matanza-Riachuelo Basin. *See supra* note 44. In 2006, Law No. 26168 created the Matanza-Riachuelo Basin Authority (ACUMAR) to be the principal environmental authority of the contaminated zone. Ley No. 26168, Créase la Autoridad de Cuenca Matanza Riachuelo como ente de derecho público interjurisdiccional en el ámbito de la Secretaría de Ambiente y Desarrollo Sustentable de la Jefatura de Gabinete de Ministros, B.O. 05.12.2006. ACUMAR has forced facilities to take various corrective measures, including remediation of soils and groundwater, by requiring companies to submit Industrial Reconversion Plans (Programas de Reversión Industrial) that address remediation, and to obtain environmental

insurance (and thus to take the steps necessary to become insurable), and ordering the closure of noncompliant facilities. See Resolución ACUMAR No. 278, B.O. 21.09.2010, annex II art. 7 (enumerating the required elements of Industrial Reconversion Plans) (Argentina); Resolución ACUMAR No. 372, B.O. 01.10.2010, arts. 1–3 (requiring facilities to present environmental insurance policies, per Ley No. 25675, de 6 de noviembre de 2002, Política Ambiental Nacional, B.O. 27.11.2002, art. 22, as a condition of approval of an Industrial Reconversion Plan) (Argentina).

116. Lei No. 13577, de 8 de julho de 2009, arts. 30–37 (authorizing the Fundo Estadual para Prevenção e Remediação de Áreas Contaminadas—FEPRAC) & art. 32 (reimbursement provision) (São Paulo State, Brazil). In contrast, Costa Rica’s 2010 General Waste Law provides for the government—the Ministry of Health, in conjunction with the relevant municipal authority and any other authorities—to manage any acute risks to human health and the environment, in cases in which the polluter cannot be identified. Ley No. 8839 art. 46.

117. Decreto No. 59263, de 5 de junho de 2013, Regulamenta a Lei No. 13.577, de 09 de julho de 2009 que dispõe sobre diretrizes e procedimentos para a proteção da qualidade do solo e gerenciamento de áreas contaminadas, art. 97 (“O licenciamento de empreendimentos em áreas que anteriormente abrigaram atividades com potencial de contaminação, ou suspeitas de estarem contaminadas, deverá ser precedido de estudo de passivo ambiental, submetidos previamente ao órgão ambiental competente.”) D.D.E. 06.06.2013 (São Paulo State, Brazil).

118. For example, in 2010, Latin America produced 45 percent of the world’s copper, 16 percent of the world’s iron ore, 15 percent of the world’s nickel, and 26 percent of the world’s tin. SUSAN WACASTER ET AL., *The Mineral Industries of Latin America and Canada*, in U.S. GEOLOGICAL SURVEY 2010 MINERALS YEARBOOK: LATIN AMERICA AND CANADA, tbl.4 (July 2012), <http://minerals.usgs.gov/minerals/pubs/country/2010/myb3-sum-2010-latin-canada.pdf>.

119. FAO, *Global Capture Production Statistics Updated to 2011 Data*, tbl. 2 (2013), <ftp://ftp.fao.org/FI/news/GlobalCaptureProductionStatistics2011.pdf>.

120. See, e.g., *Guardian Env’t Datablog, Total Forest Coverage by Country* (Sept. 2, 2009), <http://www.guardian.co.uk/environment/datablog/2009/sep/02/total-forest-area-by-country> (last visited May 29, 2013) (indicating that Brazil had approximately 478,000 hectares of forest, surpassed only by Russia, with approximately 809,000 hectares).

121. Brazil’s tropical forest extent is approximately four times greater than that of the next country, the Democratic Republic of the Congo. *Mongabay.com, Largest Area of Tropical Forest, by Country*, http://rainforests.mongabay.com/deforestation_forest.html (last visited May 29, 2013) (indicating that Brazil had approximately 478,000 hectares of tropical forest, while the Democratic Republic of the Congo had approximately 134,000 hectares).

122. Approximately 3,300 bird species are known from South America; approximately 10,000 globally. See *Avibase—Bird Checklists of the World: South America*, <http://avibase.bsc-eoc.org/checklist.jsp?region=sam>. For comparison, the next most biodiverse continent, Africa, has about half the diversity in proportion to its size: 25.8 percent of the world’s bird species and 20 percent of the land area.

123. E.g., Ley No. 28216, de Protección al Acceso a la Diversidad Biológica Peruana y los Conocimientos Colectivos de los Pueblos Indígenas, D.O. 07.04.2004 (Peru); Proyecto de Decreto XX del XX de 2011, por el cual se reglamenta el acceso a los recursos genéticos, sus productos derivados y el componente intangible asociado y la distribución justa y equitativa de beneficios derivados de su utilización y se dictan otras disposiciones (Colombia), http://www.minambiente.gov.co/documentos/DocumentosBiodiversidad/proyectos_norma/proyectos/2012/250412_proy_dec_recursos_geneticos.pdf.

124. Lei No. 4771, de 15 de setembro de 1965, Código Florestal, D.O.U. 16.09.1965, *superseded by* Lei 12651 de 25 de maio de 2012, Dispõe sobre a proteção da vegetação nativa, D.O.U. 28.05.2012 (Brazil).

125. Lei No. 9605, de 12 de fevereiro de 1999, Dispõe sobre as sanções penais e administrativas derivadas de condutas e atividades lesivas ao meio ambiente, D.O.U. 03.02.1998 (Brazil).

126. Ley 24.585, de Protección Ambiental (Codigo de Minería), B.O. 24.11.1995, art. 18 (assigning liability for rehabilitation of contaminated mine sites) (Argentina); Decreto Supremo No. 016-93-EM, Reglamento para la Protección Ambiental en la Actividad Minera-Metalurgica, D.O. 02.06.1993 (requiring environmental impact studies and setting environmental management standards for mining operations) (Peru); Ley No. 28271, Ley que Regula los Pasivos Ambientales de la Actividad Minera, D.O. 02.07.2004 (establishing a framework to inventory and assign liability for contaminated mine sites) (Peru).

127. *See, e.g.*, Joel Parshall, *Presalt Propels Brazil into Oil's Front Ranks*, J. PETROLEUM TECH. (Apr. 2010), <http://www.spe.org/jpt/print/archives/2010/04/13Brazil.pdf>.

128. As of 2011, Brazil accounted for 23 percent of global biofuel production (438,000 of the 1,897,000 world total barrels per day), second only to the United States. U.S. Energy Info. Admin., International Energy Statistics, <http://www.eia.gov/ies> (last visited May 29, 2013).

129. Brazil formally launched its large-scale biodiesel program in 2005 with the enactment of Lei 11097, de 13 de janeiro de 2005, sobre a Introdução do Biodiesel na Matriz Energética Brasileira, D.O.U. 15.01.2005. While certain tropical plants such as palm oil, jatropha have been touted for higher potential per-acre yields, Brazil continues to rely on soybeans as the predominant feedstock for producing biodiesel. USDA FOREIGN AGRIC. SERV., BRAZIL BIOFUELS ANNUAL REPORT § 4.2 (Aug. 12, 2012), http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Biofuels%20Annual_Sao%20Paulo%20ATO_Brazil_8-21-2012.pdf (last visited May 29, 2013).

130. MINISTERIO DE MINAS E ENERGIA, SECRETARIA DE PLANEJAMENTO E DESENVOLVIMENTO ENERGÉTICO, PLANO DECENAL DE EXPANSÃO DE ENERGIA 2020, at 59, tbl.42 (indicating that at the end of 2009 Brazil derived 71.7 percent of its electricity from hydroelectric projects) (2011) (Brazil), *available at* http://www.cogen.com.br/paper/2011/PDE_2020.pdf.

131. *Id.* at 69, tbls. 48–49 (listing 30 hydroelectric projects, including ten Amazonian dams, expected to begin operating between 2016 and 2020).

132. *E.g.*, Ley para el Aprovechamiento Sustentable de la Energía, D.O.F. 28.11.2008, art. 23 (“Los equipos y aparatos que requieran del suministro de energía para su funcionamiento y que cumplan con los criterios que se señalen en el Reglamento, deberán incluir de forma clara y visible información sobre su consumo energético”) (Mexico); Ley No. 18957, Uso Eficiente de la Energía en el Territorio Nacional, D.O. 16.10.2009, art. 12 (“Sólo podrá comercializarse en el país el equipamiento que utilice energía para su funcionamiento que incluya información normalizada de aplicación nacional referente al consumo y desempeño energético mediante etiquetas o sellos de eficiencia energética.”) (Uruguay); Decreto No. 298 de 2005, Aprueba Reglamento para la Certificación de Productos Eléctricos y Combustibles, D.O. 01.02.2006, art. 2 (Chile).

133. *See, e.g.*, Ministerio de Industria, Energía y Minería Decreto No. 309/011, de 24 de agosto de 2011, art. 1 (providing for 150 megawatts of electrical power to be contracted to wind generators, and for contracting an additional 150 megawatts from wind generators by 2015) (Uruguay); BusinessGreen.com, Uruguay Set to Become World Leader in Wind Power, Jan. 7, 2013, <http://www.businessgreen.com/bg/news/2234025/uruguay-set-to-become-world-leader-in-wind-power> (“Uruguay has set its sights on becoming one of the world’s leading wind power producers as part of plans to produce 90 percent of its electricity from renewable sources by 2015.”).

134. See, e.g., Ley General de Cambio Climático, D.O.F. 06.06.2012, arts. 1–2 (Mexico).

135. As of 2014, for example, Brazil was ranked third in the world for number of projects registered under the Clean Development Mechanism, and Mexico was ranked fifth. See United Nations Framework Convention on Climate Change Secretariat, Distribution of Registered Projects by Host Party (May 2014), available at http://cdm.unfccc.int/Statistics/Public/files/201405/proj_reg_byHost.pdf.

136. See, e.g., Tom Phillips, *Brazil Pledges Deep Emission Cuts in “Political Gesture” to Rich Nations*, GUARDIAN, Nov. 10, 2009, <http://www.guardian.co.uk/environment/2009/nov/10/brazil-emissions> (stating that, in preparation for the December 2009 United Nations Climate Change Conference in Copenhagen, the Brazilian government pledged to cut greenhouse gas emissions “as a ‘political gesture’ aimed at pressing rich nations into agreeing to large cuts in carbon”).

137. See Lei No. 12187, de 29 de dezembro de 2009, Institui a Política Nacional sobre Mudança do Clima, D.O.U. 29.12.2009 (Brazil); Lei No. 13798 de 9 de novembro de 2009, Política Estadual de Mudanças Climáticas, D.O.E. 10.11.2009 (São Paulo State, Brazil); Lei Ordinária Estadual No. 3135, 5 de junho de 2007, Institui a política Estadual sobre Mudanças Climáticas, Conservação Ambiental e Desenvolvimento Sustentável do Amazonas, D.O.E. 05.06.2007 (Amazonas State, Brazil); Lei No. 13594, de 30 de dezembro de 2010, Institui a Política Gaúcha sobre Mudanças Climáticas, D.O.E. 31.12.2010 (Rio Grande do Sul State, Brazil).

138. E.g., Secretaría del Medio Ambiente y Recursos Naturales, Instituto Nacional de Ecología y Cambio Climático, Inventario Nacional de Sustancias Químicas: Base 2009, http://www2.ine.gob.mx/publicaciones/consultaPublicacion.html?id_pub=684 (Mexico’s pilot inventory of industrial chemicals) (Mexico). Costa Rica has a registration system for hazardous chemicals, requiring the chemicals to be registered with the Ministry of Health before being manufactured, imported, stored, distributed, supplied, sold, used, or transported. See Decreto Ejecutivo No. 28113-S, Reglamento para el Registro de Productos Peligrosos, La Gaceta 06.10.1999 (Costa Rica).

139. Argentina Senate Bill No. 3532/2008, for example, incorporated both WEEE and RoHS concepts, whereby producers and importers would have been required to design covered devices so that the six RoHS substances and other contaminants were reduced or eliminated. Proyecto de Ley del Senado No. 3532/2008 art. 16; cf. Projeto de Lei do Senado 173/2009, Estabelece prazo para que computadores, componentes de computadores e equipamentos de informática em geral, comercializados no Brasil, atendam a requisitos ambientais e de eficiência energética (would impose RoHS restrictions on computers and other information technology equipment) (Brazil).

140. See *supra* note 69.

141. See *supra* note 64.

142. See *supra* note 70.

143. ABNT NBR 14725:2013 (adopting GHS standards for terminology, classification, labeling, and safety data sheets on a voluntary basis, becoming mandatory for pure substances on February 3, 2013, and for mixtures on June 1, 2015) (Brazil).

144. Decreto No. 307/009, G.O. 03.07.2009, (adopting GHS labeling standards) (Uruguay); Decreto No. 346/011, G.O. 13.10.2011, art. 2 (extending the implementation of GHS labeling provisions for pure substances until Dec. 31, 2012, and for mixtures until Dec. 31, 2017) (Uruguay).

145. Norma Mexicana NMX-R-019-SCFI-2011: Sistema armonizado de clasificación y comunicación de peligros de los productos químicos, D.O.F. 03.06.2011 (Mexico).

146. See, e.g., Resolución No. 1178 del Servicio Agrícola y Ganadero, D.O. 28.08.1984 (providing for the registry of pesticides for agricultural use) (Chile); Ley No. 73, Ley para Formulación, Fabricación, Importación, Comercialización y Empleo de Plaguicidas y

Productos Afines de Uso Agrícola, R.O. 22.05.1990, art. 9 (same) (Ecuador); Decreto No. 1843 de 1991, D.O. 22.07.1991, arts. 141–145 (setting forth the requirements for an application to register a pesticide product) (Colombia).

147. *See, e.g.*, Paula Pacheco, *Brasil Lidera Uso Mundial de Agrotóxicos*, ESTADÃO DO SÃO PAULO, Aug. 7, 2009, <http://www.estadao.com.br/noticias/impreso,brasil-lidera-uso-mundial-de-agrotoxicos,414820,0.htm> (citing a study by the Kleffmann Group that found that the Brazilian pesticide market, valued at \$US7.1 billion, was the world's largest, exceeding the US\$6.6 billion United States pesticide market).

148. ANVISA, GERENCIA GERAL DE TOXICOLOGIA, PROGRAMA DE ANÁLISE DE RESÍDUOS DE AGROTÓXICOS EM ALIMENTOS (PARA): RELATÓRIO DE ATIVIDADES DE 2010, at 7 (Dec. 2011), <http://portal.anvisa.gov.br/wps/wcm/connect/b380fe004965d38ab6abf74ed75891ae/Relat%C3%B3rio+PARA+2010+-+Vers%C3%A3o+Final.pdf?MOD=AJPERES> (reporting that ANVISA's program to reevaluate the use of pesticides in Brazil, begun in 2002, had resulted in bans on nine active ingredients and restrictions on seven more).

149. In 2012, Brazil reported a recovery rate of 94 percent of the pesticide packaging discarded nationwide. Press Release, [Brasil.gov.br](http://www.brasil.gov.br), *Brasil É Líder em Reciclagem de Embalagens de Agrotóxicos* (Mar. 25, 2013), <http://www.brasil.gov.br/noticias/arquivos/2013/03/25/brasil-e-lider-em-reciclagem-de-embalagens-de-agrotoxicos> (last visited May 29, 2013).

150. *See* Decreto 4704, de 4 de janeiro de 2002, Regulamenta a Lei no 7.802, de 11 de julho de 1989, que dispõe sobre a pesquisa, a experimentação, a produção, a embalagem e rotulagem, o transporte, o armazenamento, a comercialização, a propaganda comercial, a utilização, a importação, a exportação, o destino final dos resíduos e embalagens, o registro, a classificação, o controle, a inspeção e a fiscalização de agrotóxicos, seus componentes e afins, D.O.U. 08.01.2002, art. 10 (setting forth the data submission requirements for applications to register a pesticide product) (Brazil).

151. Mexico's biosafety law, for example, emphasizes the need for gradual, limited releases of GMOs into the environment and includes a substantial risk assessment component. Ley de Bioseguridad de Organismos Genéticamente Modificados, D.O.F. 18.03.2005, art. 9(III-IX) (Mexico).

152. Decreto No. 4680, de 24 de abril de 2003, Regulamenta o direito à informação, assegurado pela Lei no 8.078, de 11 de setembro de 1990, quanto aos alimentos e ingredientes alimentares destinados ao consumo humano ou animal que contenham ou sejam produzidos a partir de organismos geneticamente modificados, D.O.U. 25.04.2003, art. 2 (Brazil).

153. Ley No. 29811, Ley que Establece la Moratoria al Ingreso y Producción de Organismos Vivos Modificados al Territorio Nacional por um Período de 10 Años, D.O. 09.12.2011, art. 1 (Peru). Note, however, that while Ley No. 29811 states its purpose as a GMO moratorium, it provides significant exceptions for research, pharmaceuticals, and food, so the scope of the moratorium is significantly narrower than the law's caption suggests. *See id.* art. 3.

154. *See* Ley No. 300, Ley Marco de la Madre Tierra y Desarrollo Integral para Vivir Bien art. 23(7)–(9) (mandating the elimination of genetically modified crops), G.O. 15.10.2012 (Bolivia); CONSTITUCIÓN POLÍTICA DE ECUADOR 2008 art. 401 (declaring Ecuador to be free of transgenic seeds and plants, but allowing for limited exceptions in the national interest). In Venezuela, while GMO use is formally allowed subject to regulation, *see infra* note 120, there has reportedly been a government policy effectively prohibiting all uses of GMOs. Rubén Arachín, *VoltaireNet.org*, *Venezuela Prohibe la Agricultura Transgénica*, May 11, 2004, <http://www.voltairenet.org/article120873.html> (last visited May 29, 2013).

155. *E.g.*, Ley de Gestión de la Diversidad Biológica, G.O. 01.12.2008, arts. 50–55 (regulating the use of GMOs) (Venezuela).

156. *See, e.g.*, ADRIANA OTERO, USDA FOREIGN AGRIC. SERV., GLOBAL AGRIC. INFO. NETWORK, MEXICO: CENTERS OF ORIGIN FOR CORN PUBLISHED IN THE FEDERAL REGISTER 2 (2012), http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Centers%20of%20Origin%20for%20Corn%20Published%20in%20Federal%20Register_Mexico_Mexico_11-7-2012.pdf (“On November 2, 2012, the Secretariat of Agriculture (SAGARPA) and the Secretariat of Environment (SEMARNAT) published in Mexico’s Federal Register an Agreement to Determine the Centers of Origin and Centers of Genetic Diversity of Corn in Mexico. [. . .] this agreement is part of the legal process required by Mexico’s Biosafety Law and includes a map delineating the areas in seven northern states of Mexico where the use of GM corn seeds will be forbidden. In addition, the law requires very strict requirements with storage and movement of GM corn grains through the areas delineated as centers of origin.”).

157. Parties to the Protocol and signature and ratification of the Supplementary Protocol, Convention on Biological Diversity, <http://bch.cbd.int/protocol/parties/> (last visited May 29, 2013).

158. *E.g.*, Ley No. 740 de 2002, por medio de la cual se aprueba el “Protocolo de Cartagena sobre Seguridad de la Biotecnología del Convenio sobre la Diversidad Biológica,” D.O. 29.05.2002 (Colombia); Decreto No. 5705, de 16 de fevereiro de 2006, Promulga o Protocolo de Cartagena sobre Biossegurança da Convenção sobre Diversidade Biológica, D.O.U. 17.02.2006 (Brazil).

