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The Insistent (and Unrelenting) Challenges of Protecting Biodiversity in Brazil: Finding the Law That Sticks

Colin Crawford

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The Insistent (and Unrelenting) Challenges of Protecting Biodiversity in Brazil: Finding “The Law That Sticks”

Colin Crawford* and Guilherme Pignataro**

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INTRODUCTION

Sérgio Buarque de Holanda, the noted Brazilian sociologist and diplomat, famously observed of Brazil that the Portuguese “exploration of the tropics did not actually proceed as a methodical and rational undertaking, it did not emanate from a constructive and energetic will: it made itself with negligence and a certain abandon.” For Buarque de Holanda, the Portuguese colonizers were members of a “hunter” society “whose ideal is to harvest a

fruit without planting the tree,” in contrast to the Spanish colonizers in South America, who were members of a “worker” society, one that labored by “slow effort, poorly paid and persistent that, however, measures all the possibilities of loss and knows how to take the maximum advantage of little things”¹ Buarque de Holanda’s famous distinction merits remembering when considering contemporary Brazilian efforts to manage the physical and planned environment, for it points to an important aspect of Brazilian history and the resultant culture, namely the absence for several centuries of concentrated efforts to plan and shape social organization and development and to promote sustainable environmental use.

To be sure, there are exceptions in Brazilian history to this generalization, notably the “modest” re-plantation of parts of the Atlantic rainforest around Rio de Janeiro in the latter part of the 19th century,² not to mention the creation of “the state’s first forest preserve” in what is today the Tijuca National Forest around Rio de Janeiro, the “main purpose [of which] was to guard the watershed of the streams that were piped to the city’s reservoir.”³ And although the emphasis on “hunting” values and the premium they place on short-term gains may no longer be true in Brazil, at least not at a formal, structural level (the government now has an extensive legal and administrative hierarchy for urban and environmental planning), it does point to a deep-seated cultural tradition that complicates efforts to limit use of property, environmental organization, and organization of urban spaces.

Moreover, in today’s world, Brazilian urban and environmental regulation encounters other, characteristic features of contemporary Brazilian (and global civil) society, such as rapid population growth,⁴ increased demand for natural resources, and

1. SÉRGIO BUARQUE DE HOLANDA, *RAÍZES DO BRASIL* 44 (16th ed. 2005).

2. WARREN DEAN, WITH BROADAX AND FIREBRAND: DESTRUCTION OF THE BRAZILIAN ATLANTIC FOREST 220-225 (1995).

3. *Id.* at 232.

4. The population of Brazil in 1940 was 41.1 million, with an annual rate of growth for the previous decade of 1.49. By 1991, the increasingly urban population was 146.8 million, with an average annual rate of growth of 1.93 for the previous decade. The urban growth was “chaotic,” with insufficient infrastructure to accommodate the in-country migrants. THOMAS E. SKIDMORE, *BRAZIL: FIVE CENTURIES OF CHANGE* 138-139 (1999). For the decade 1991-2000, the year of the last census, the annual growth rate was 1.64, with a total population of nearly 170,000,000; thus, accelerated population growth in Brazil appears to be moderating somewhat. See Instituto Brasileiro de Geografia e Estatística, *Tabela 1.1.1 – População residente, por sexo e situação do domicílio, segundo os grupos de idade –*

growing interest in exploring (and exploiting) imagined resources in bio-diverse “hot spots” like the Amazon Rainforest and the Atlantic Rainforest, two of the world’s largest tropical rainforest systems.⁵

Given these diverse considerations, Brazil’s relatively new National System of Conservation Units [SNUC]⁶ is a particularly noteworthy legal document. Of course, conservation areas are established not only to protect biodiversity; they serve other functions too. They provide green space, serve as carbon sinks and are aesthetically pleasing, among other things.⁷ But one of their primary purposes is unquestionably biodiversity protection, and this aspect of conservation areas and their treatment in SNUC will be the principal focus of this article.

SNUC is noteworthy for several reasons. First, and in its own right, in the context of protected areas law, SNUC constitutes one of the most comprehensive global efforts to strike a balance between biodiversity protection, on the one hand, and urban growth and economic development on the other. Even the U.S., with its extensive network of environmental law and regulation, has no comparable law that is as comprehensive and nuanced, despite the fact that, since the Progressive Era, the U.S. has been a world leader in setting aside land as public and deserving of special protection.⁸ The most notable piece of U.S. biodiversity legislation is the Endangered Species Act (“ESA”), the focus of which is

Brasil, http://www.ibge.gov.br/home/estatistica/populacao/censo2000/populacao/pop_Censo2000.pdf (last visited Oct. 3, 2007).

5. The Amazon is the largest rainforest in the world. See Instituto Brasileiro do Meio Ambiente e dos Recursos Renováveis (IBAMA), *A maior floresta tropical do Planeta, a Amazônia sul-americana, corresponde a 2/5 da América do Sul e a metade do Brasil*, <http://www.ibama.gov.br/> (follow “Ecossistemas” hyperlink; then follow “Amazônia” hyperlink) (last visited Oct. 3, 2007). It must be said that this interest has been growing for decades. As long ago as 1988, “an intensive worldwide campaign was orchestrated by the international media against the Brazilian government, after some alarming figures concerning the deforestation of the Amazon region were disclosed.” Edésio Fernandes, *Law, Politics and Environmental Protection in Brazil*, 4 J. ENVTL. L. 41, 41 (1992).

6. CODE CIVIL [C. CIV.], Lei 9.985, de 18 de julho de 2000, D.O. de 19.07.2000. (Brazil), available at <http://www.planalto.gov.br/ccivil/LEIS/L9985.htm> [hereinafter SNUC (acronym for the system in Portuguese, “Sistema Nacional das Unidades de Conservação.”)].

7. NÁJILA REJANNE ALENCAR ET AL., *ÁREA DE PROTEÇÃO AMBIENTAL: PLANEJAMENTO E GESTÃO DE PAISAGENS PROTEGIDAS* 11 (2d ed. 2005) (listing various benefits of protected areas); see also MARK A. BENEDICT & EDWARD T. MCMAHON, *GREEN INFRASTRUCTURE: LINKING LANDSCAPES AND COMMUNITIES* 12-13 (2006).

8. See, e.g., GEORGE CAMERON COGGINS ET AL., *FEDERAL PUBLIC LAND AND RESOURCES LAW* 23-24 (6th ed. 2007).

not on complete ecosystems, but on individual species.⁹ However, the U.S. government, which controls federal forests covering “192 million acres of land in 42 states, the Virgin Islands and Puerto Rico,” a system “comprised of 155 national forests, 20 national grasslands, and various other lands under the jurisdiction of the Secretary of Agriculture”¹⁰ is governed by the National Forest Management Act, which does contain a biodiversity protection element.¹¹ Yet comprehensive efforts to protect biodiversity have not met great success in the U.S. Congress; the system of biodiversity protection is a patchwork.¹² For this reason alone, SNUC deserves study by serious scholars of the environment.

Secondly, and crucially, SNUC protects biodiversity in the Brazilian territory, one blessed with one of the highest global indices of biodiversity, estimated at between 10-20% of the known species in the world.¹³ Third, SNUC stands against a background and cultural tradition that historically resisted such interventions, making its implementation particularly challenging. Fourth, and finally, SNUC outlines a system of biodiversity protection that would be ambitious in any country because it *always* limits human use of land, thus challenging any highly individualistic concept of private property rights, and, in many cases, prohibiting it altogether – a legal effort which, for the reasons mentioned above, is particularly audacious given Brazil’s history. It therefore surely merits asking whether such a comprehensive approach is the best way to regulate biodiversity and the competing claims on environmental resources.

*

9. 16 U.S.C. §§ 1531-1544 (2007).

10. JOHN COPELAND NAGLE & J.B. RUHL, *THE LAW OF BIODIVERSITY AND ECOSYSTEM MANAGEMENT* 445 (2d ed. 2006).

11. 16 U.S.C. §§ 1601-1614 (2007).

12. See, e.g., Ecosystem Management Act of 1995, S. 2189, 104th Cong. (1995), reprinted in *THE LAW OF BIODIVERSITY AND ECOSYSTEM MANAGEMENT*, *supra* note 10, at 362-366 (noting that “neither Senator Hatfield’s Ecosystem Management Act nor anything like it stands much chance of being enacted in the foreseeable future”); see also Sherri Langley, *The System of Protected Areas in the United States*, in *DIREITO AMBIENTAL DAS ÁREAS PROTEGIDAS* 116, 116 (Antônio Herman Benjamin ed., 2001) (“The system of protected areas in the United States is uniquely complex.”).

13. Aspásia Camargo et al., *Os Desafios da Sustentabilidade no Período Pós- RIO-92*, in *MEIO AMBIENTE BRASIL: AVANÇOS E OBSTÁCULOS Pós-RIO-92* 27, 31 (Aspásia Camargo et al. eds., 2d ed. 2004). In the Amazon rainforest alone, it is estimated that “there live within it in harmony more than 20,000 [species] of higher vegetation, 1,400 of fish, 300 mammals and 1,300 birds, without speaking of the dozens of thousands [sic] of insect species, other invertebrates and micro-organisms. . . . [T]here exist more plant species in one hectare of the Amazon rainforest than in all of the European territory.” *Id.* at 13.

Because of its geographic reach and the considerable biological resources contained within its extensive national borders, Brazil has, in recent years, become the international poster child for the pressing need for biodiversity protection.¹⁴ In particular, the biological riches of the Amazon rainforest are most often cited, both for its abundance of species of flora and fauna¹⁵ and for a number of inter-related and substantial threats faced by the forest. These threats include road construction,¹⁶ deforestation,¹⁷ displacement of the forest by agriculture (in particular, soybean production)¹⁸ and livestock (especially cattle).¹⁹ There are also smaller, less well known, but in global terms, equally significant – and still geographically extensive – ecosystems whose biodiversity is under threat, including the Atlantic Rainforest, the Serra do Mar, the Pantanal and the Coastal Zone.²⁰

Thus, the international attention given to the protection of biodiversity within the borders of Brazil is merited, both in terms of the scope and scale of the ecosystems the country contains, and also in terms of the variety of species of both flora and fauna that

14. See, e.g., ZYSMAN NEIMAN, *ERA VERDE? ECOSISTEMAS BRASILEIROS AMEAÇADOS* 1 (19th ed. 1998) (observing that while “Brazil still possesses one of the greatest intact natural areas in the entire world,” the U.S. Food and Agriculture Organization nonetheless “considered [Brazil] the country the one that most destroyed its ecosystems in the decades of the 70s and 80s”).

15. In the Amazon rainforest alone, it is estimated that “there live within it in harmony more than 20,000 [species] of higher vegetation, 1,400 of fish, 300 mammals and 1,300 birds, without speaking of the dozens of thousands [sic] of insect species, other invertebrates and micro-organisms. . . . [T]here exist more plant species in one hectare of the Amazon rainforest than in all of the European territory.” Camargo et al., *supra* note 13, at 13.

16. See, e.g., Nicolao Dino C. Costa Neto, *Reflexões Sobre a Proteção Jurídica da Floresta Amazônica*, in *DESAFIOS DO AMBIENTAL NO SÉCULO XXI: ESTUDOS EM HOMENAGEM A PAULO AFFONSO LEME MACHADO* 658, 662 (Sandra Akemi Shimada Kishi et al. eds., 2005) (describing the “Avança Brasil” [*Advance Brazil*] program, which aims to increase the Amazonian bus network with an aim to stimulate the growth of the agro industrial sector and link Brazil to other South American markets).

17. *Id.* at 659 (reporting a very gradual decline in degree of deforestation).

18. See, e.g., Scott Wallace, *Last of the Amazon*, NAT’L GEOGRAPHIC, Jan. 2007, at 41, 61-69 (including a discussion of Mato Grosso state Governor Blairo Maggi, who is also the world’s single largest soy producer).

19. *Id.* at 60-61 (describing the murder of U.S. nun and anti-deforestation campaigner Dorothy Stang, who was killed while opposing turning the rainforest into cattle pasture).

20. These areas are all constitutionally protected. See CONSTITUIÇÃO DA REPÚBLICA FEDERATIVA DO BRASIL [C.F.] art. 225, §4 (1988). See also The Political Database of the Americas, Georgetown University, available at <http://pdpa.georgetown.edu/Constitutions/Brazil/brazil.html> (providing an English translation of the Brazilian Constitution) (last visited Oct. 11, 2007).

inhabit them. Put simply, if, as a global community, we cannot make significant advances in stopping habitat loss and its consequences for biodiversity reduction in Brazil, we are unlikely to succeed anywhere.

Law, of course, is only part of the answer. Brazilians are rightly fond of noting – a not uncommon observation in many so-called “less developed” countries²¹ – that their laws are a model of the form.²² What Brazilians understand, however, is that there is a difference between writing a law and enforcing it. The challenge, Brazilians say, is to write “*a lei que pega*” – “a law that sticks.” The purpose of this article is to examine one law, namely SNUC. The central question propelling this article is, whether SNUC is, or can become, a law that sticks with respect to biodiversity protection.

SNUC was enacted in 2000 and it is now possible to begin a preliminary evaluation of the effectiveness, or likely effectiveness, of the law, one which, as will be explained below, radically seeks to reshape Brazilian law’s management of both public and private property containing significant biologic diversity.²³

Following this introduction, Part I of this article will outline threats to biodiversity within Brazil’s borders. Because this is a topic that has already been explored extensively, this article makes no attempt to cover that ground exhaustively.²⁴ Instead,

21. To the greatest extent possible, this article endeavors to reject the “developed/less developed” dichotomy because the terms obscure as much, and perhaps more, than they clarify. This is particularly true of Brazil, a country of quasi-continental dimensions, with considerable natural and human resources. Brazil is the largest economy in South America with a substantial industrial base, despite one of the worst income distributions in the world. See, e.g., U.S. CENTRAL INTELLIGENCE AGENCY, THE WORLD FACTBOOK (2007), available at <https://www.cia.gov/library/publications/the-world-factbook/geos/br.html#Econ> (describing how Brazil is “[c]haracterized by large and well-developed agricultural, mining, manufacturing, and service sectors, [such that its] economy outweighs that of all other South American countries and is expanding its presence in world markets”). Partly for this reason, Brazil is sometimes mockingly referred to as “‘Belindia,’ an amalgam of the productive capacity of Belgium and the poverty of India.” JOSEPH A. PAGE, THE BRAZILIANS 7 (1995). Consequently, to call Brazil “less developed” hides the complexity of the country’s reality.

22. See, e.g. Fernandes, *supra* note 5, at 45 (finding that despite some gaps, notably in water protection, “on the whole, the legal picture could be considered satisfactory, even before the Constitution of 1988 came into force”).

23. See Ambiente Brasil [Brazil Environment], <http://www.ambientebrasil.com.br/composer.php3?base=/snuc/index.html> & [conteudo=/snuc/categorias1.html](http://www.ambientebrasil.com.br/composer.php3?base=/snuc/categorias1.html) (providing a list of the UCs, which is the standard abbreviation for the Portuguese “Unidadaded de Conservação,” in each category) (last visited Oct. 6, 2007).

24. See, e.g., THE ATLANTIC FOREST OF SOUTH AMERICA: BIODIVERSITY STATUTES,

Part I will attempt to highlight the variety and extent of Brazilian ecosystems and the biodiversity within them. Part I will also discuss current and emerging threats to biodiversity in Brazil, and above all, threats that have become even more real since the United Nation's celebrated "Earth Summit," held in Rio de Janeiro in 1992. In particular, Part I will focus on the threats to biodiversity presented by increasing urbanization and internal migration to the nation's southern cities (most notably Rio de Janeiro and São Paulo). This focus matters because these threats are occurring worldwide, in other equally fragile ecosystems, including, for example, the Caribbean basin²⁵ and the Indonesian archipelago.²⁶

Part II will limn the extensive contours of Brazilian biodiversity legislation. Again, however, because others have already covered this ground in different ways, Part II will not provide an exhaustive review of this topic.²⁷ Instead, Part II aims to assist readers in locating the more recent focus on conservation units, like SNUC, within the broader framework of Brazilian environmental law, and, more specifically, Brazilian biodiversity protection law.

Part III will focus on SNUC in particular, providing both a brief history of its development and an introduction to its basic provisions. Part III will also attempt to locate the law in the context of global biodiversity protection efforts, and, in particular, the U.N. Convention on Biological Diversity and the Cartagena Protocol on Biosecurity. Lastly, Part III will consider the distinctiveness of this law and examine its comprehensive response to the threat to biodiversity.

Finally, Part IV will offer a critique of SNUC in the context of

THREATS, AND OUTLOOK 27-136 (Carlos Galindo-Leal & Ibsen de Gusmão Câmara eds., 2003).

25. As, for example, in the Dominican Republic. See Colin Crawford, *Protecting Environmentally-Sensitive Areas and Promoting Tourism in "The Back Patio of the United States:" Thoughts about Shared Responsibilities in Ecosystem and Biodiversity Protection*, 25 UCLA J. ENVTL. L. & POL'Y, __ nn.15-18 and accompanying text (forthcoming).

26. This and other biodiversity "hotspots" are the focus of the work of various non-profits. See, e.g., Conservation International, <http://web.conservation.org/xp/CIWEB/regions/> (last visited Oct. 6, 2007).

27. See DIREITO AMBIENTAL DAS ÁREAS PROTEGIDAS, *supra* note 12, *passim*; see also Mark A. Drumbl, *Poverty, Wealth, and Obligation In International Environmental Law*, 76 TULANE L.R. 843, 889 (2002) (noting a conflict between poor nations with concentrations of biodiversity and the interests of bio-prospectors from wealthier nations); DEAN, *supra* note 2, at 348-364 (describing the continuing destruction of the Atlantic rainforest into 1990s).

Brazilian social and economic realities. Above all, Part IV will explore the merits and perils of such an extensive and detailed law. SNUC raises, in its language and structure, important questions about the most effective means of environmental regulation. Simply put, this is to ask the following: are environmental protection and conservation better served by detailed legislation, like SNUC, or by more targeted laws, like the U.S. Endangered Species Act? This question is not easily answered. While SNUC is comprehensive, its details will inevitably create confusion among the regulated community and perhaps encourage sporadic enforcement. On the other hand, as critics of the U.S.'s ESA often note, a species-focused approach risks not taking the dynamic nature of ecosystems into account.²⁸

I. THE PRESSURES ON BIODIVERSITY PROTECTION

A. *Brief Profile of Brazilian Biodiversity*

In order to fully appreciate the challenge of biodiversity protection and corresponding economic development and urban growth management in modern Brazil, it is essential to understand the variety of ecosystems that the law seeks to protect. As a country of near-continental dimensions, Brazil is, like the United States, home to a vast array of ecosystems, each with their own special features and characteristics. The significance and variety of Brazilian ecosystems is such that a number of the most important biomes receive constitutional protection.²⁹ In the subsections that follow, the aim is not to be exhaustive, but rather to suggest the range and variety of Brazilian ecosystems. What the list illustrates is the immensity of the challenge in protecting Brazilian biodiversity; by definition, such variety complicates the application of a single legal response. At the same time, the list helps frame the need for a law that, like SNUC, provides multiple types of conservation reserve.

1. The Amazon

The world's largest tropical rainforest system and Brazil's best know ecosystem, the Amazon Rainforest, lies within Brazil

28. See, e.g., NAGLE & RUHL, *supra* note 10, at 309 (noting environmentalists' criticisms of Habitat Conservation Plans); see also *id.* at 313-314 (comparing species protection and ecosystem management approaches).

29. C.F. art. 225 (IV).

and eight neighboring countries.³⁰ It comprises 7% of the world's land mass and an estimated 20% of its biodiversity, making it a centrally important ecosystem in global terms. Indeed, one hectare (equivalent to 2.47 acres) of the Amazon Rainforest contains more tree species than in all of North America. This extreme biodiversity characterizes animal and insect species as well.³¹

2. Atlantic Rainforest

The world's second largest tropical rainforest system, the Atlantic Rainforest, extends inward from Brazil's coast, from the Northeast (the State of Rio Grande do Norte) to the South (the State of Rio Grande do Sul). The Atlantic Rainforest has suffered so greatly as the result of 500 years of intense exploitation that it is often labeled "the most threatened tropical forest in the world."³² As a result, it is now a mere 7% of its original size.³³ Nonetheless, it is the forest that "exhibits the greatest plant diversity on the planet. It is believed that this may reach 25,000 plant species, many of which exist only in this ecosystem." Where in a temperate European forest there may grow on average 10 species per hectare, in the Atlantic rainforest, 150 species develop in an equivalent area.³⁴ Some speculate that it is an even more biodiverse system than the Amazon Rainforest: "nowadays it is considered one of the most important groups of ecosystems of the planet. And one of the more endangered too."³⁵

3. *Pantanal*

The *Pantanal*, derived from the word *pantano*, which means "swamp," is one of the world's largest wetland systems, covering over 100,000 square kilometers. During the wet season, the

30. Sixty percent of the Amazon rainforest is in Brazilian territory. The remainder is distributed across Bolivia, Colombia, Ecuador, Guiana, French Guiana, Peru, Surinam and Venezuela. See Costa Neto, *supra* note 16, at 658.

31. See EMPRESA BRASILEIRA DE PESQUISA AGROPECUÁRIA, ATLAS DO MEIO AMBIENTE DO BRASIL 82 (1994) [hereinafter EMBRAPA]; see also "Initiative para la Integración de la Infraestructura Regional Suramericana, <http://americas.irc-online.org/aptp/4019> (on regional initiatives).

32. NEIMAN, *supra* note 14, at 39; see also Virginia Morell, *The Rain Forest in Rio's Backyard*, NAT'L GEOGRAPHIC, Mar. 2004, at 8.

33. See ATLANTIC FOREST OF SOUTH AMERICA, *supra* note 24, at xi ("The Atlantic Forest region of South America tops the world in statistics of habitat loss, with over 93 percent of the original range of the forest already gone").

34. See NEIMAN, *supra* note 14, at 36-37.

35. EMBRAPA, *supra* note 31, at 101. The growing awareness of its destruction has led to calls for government action. See *Brazilian President Urged to Protect Atlantic Forest*, 30 INT'L ENV'T REP 577, 577 (July 25, 2007).

region, located in Brazil's western interior, sees such high water levels that "the 4,000 kilometers of rivers that feed the *Pantanal* overflow the huge prairie, attracting innumerable animal and bird species and reviving the area's rich plant life."³⁶ During this time, the *Pantanal* is home to hundreds of bird species, and is famous for the *piracema* – the indigenous name of the long journey of many species of anadromous fish that travel up its rivers to spawn.³⁷

4. *Araucárias* Forest

The *Araucárias* Forest constitutes 15% of Brazilian territory. It has been described as "a kind of temperate forest that is found in high regions of Serra do Mar and southern Brazil, and specifically in the States of Paraná, Santa Catarina and Rio Grande do Sul. The *Araucárias* Forest is characterized by a specific tree, the distinctive pine species known as the *pinheiro-do-pará*, the Linnaean name of which, *Araucaria angustifolia*, gives the biome its name. Over 95% of *Araucária* Forests have been devastated due to harvesting and to make way for fast-growing eucalyptus plantations (used in cellulose production) and to plant other, faster-growing pines, desired for furniture and paper production."³⁸ Consequently, many species of the striking tree are endangered today.

5. *Cerrado*

*Cerrado*³⁹ "is a generic name given to a conjunction of vegetative formations, at times dominated by herbaceous plants and at others by bushes and small trees. In its original area, this type of vegetation occupied 25% of Brazilian territory." To the naked eye, the landscape appears dry and parched. However, this appearance conceals a biome characterized by a substantial quantity of subterranean water and an underground river system, which contains biodiversity comparable, according to some, to the Amazon Rainforest.⁴⁰

6. *Caatinga*

Caatinga is another desert-like Brazilian biome that occupies

36. EMBRAPA, *supra* note 31, at 90.

37. *See id.*

38. 3 SÉRGIO LINHARES & FERNANDO GEWANDSZNAJDER, *BIOLOGIA HOJE* 393 (2002).

39. NEIMAN, *supra* note 14, at 51.

40. *See* EMBRAPA, *supra* note 31, at 86.

11% of the Brazilian territory and 70% of the country's Northeast.⁴¹ In winter, it may look as if everything has died. *Caatinga* is very dry – plants that survive there in great number lose their leaves in order to retain water and cacti are common. With spring, rain restores the landscape to a vibrant green. The environmental challenge of managing this area relates largely to soils that do not retain water. Since the time of the Brazilian Empire (1822-1889), the Northeast region containing the *Caatinga* has been plagued by a lack of water, and repeated government efforts to solve this problem have been mostly unsuccessful. The current government of Luiz Ignácio “Lula” da Silva has committed to divert the São Francisco River (one of the country's most important rivers) in order to solve the regional problem of perennial drought.⁴²

7. Coastal Ecosystems

Coastal environments have their own characteristic biodiversity features, and Brazil's Coastal Zone, a once extensive network of mangrove swamps, is no exception. In Brazil, as elsewhere, the Coastal Zone is distinctive as a “[p]oint of encounter of the hydrosphere, the geosphere and the atmosphere,” resulting in the “cradle of marine life.”⁴³ Unfortunately, because almost 50% of Brazil's population is located in the Coastal Zone, the area is also the most devastated Brazilian ecosystem.⁴⁴ As a result, this ecosystem is threatened by real estate speculation, road construction, and deforestation that uses wood as fuel.⁴⁵

a. Mangrove Swamps

Mangrove swamps typically occur where rivers meet the sea and, as a result, receive a great quantity of sediments. The resulting soils are compact, making it difficult for most vegetation to take root. The remaining Mangrove species thus serve a key function of collecting within their gnarled roots great quantities of

41. See *id.* at 94.

42. See, e.g., Mike Kepp, *Brazil Attorney General Seeks Injunction from Supreme Court on Aqueduct System*, 30 INT'L ENV'T REP. 575, 575 (July 25, 2007) (discussing the seeking of an injunction against the government's São Francisco river basin project on the grounds that the government did not comply with licensing requirements); Larry Rohter, *A Vast Brazilian Project for Water Diversion Is Greeted by Widespread Skepticism*, N.Y. TIMES, Mar. 28, 2005, at A8. This is an act that calls into question the Lula government's commitment to environmental values. See *infra* notes 76-77 and accompanying text.

43. EMBRAPA, *supra* note 31, at 104.

44. See, e.g., NEIMAN, *supra* note 14, at 79.

45. See *id.* at 81.

organic matter.⁴⁶ They serve a wide variety of other functions, such as a buffer against tropical storms, protection of the coastline from erosion, and as a breeding ground for fish and animal species. Mangroves send water and nutrients to other ecosystems as well, and “are among the principal suppliers of nutrients for the coastal marine community, favoring intense fishing activity in tropical areas.”⁴⁷

b. Restinga

Like Mangrove swamps, *Restinga* is a semi-aquatic, coastal ecosystem characterized by sandy soils that cannot retain either water or nutrients in great quantity. As a result, *Restinga* is characterized by plants that can be found in other ecosystems, such as the Atlantic rainforests, but that have adapted to live in this harsher environment.⁴⁸

B. Specific Pressures

In general terms, the specific pressures to which Brazilian biodiversity is subject are familiar enough, such as the struggle over economic development in the face of calls to preserve the environment and unplanned urban growth.⁴⁹ In the context of a developing country like Brazil, the pressures are also well-known, notably the perceived short-term need to sacrifice environmental concerns while generating exports and, in turn, earn foreign currency to meet interest payments on foreign debt,⁵⁰ and also seek opportunities to compete in global markets.⁵¹ In the specific case,

46. See *id.* at 77.

47. *Id.* at 78; see also Carlos Muñoz Piña, *Guía Rápida para Estimar el Valor Monetario de los Beneficios Ecológicos de los Manglares*, in *EL ECOSISTEMA DE MANGLAR EN AMERICA LATINA Y LA CENCA DEL CARIBE: SU MANEJO Y CONSERVACION* 238, 238-242 (Daniel O. Suman ed., 1994).

48. See NEIMAN, *supra* note 14, at 80.

49. See, e.g., Edésio Fernandes, *Learning From the South*, in *ENVIRONMENTAL STRATEGIES FOR SUSTAINABLE DEVELOPMENT IN URBAN AREAS: LESSONS FROM AFRICA AND LATIN AMERICA* 1, 1-8 (Edésio Fernandes ed., 1998).

50. See, e.g., Carmen G. Gonzalez, *Trade Liberalization, Food Security, and the Environment: The Neoliberal Threat to Sustainable Rural Development*, 14 *TRANSNAT'L L. & CONTEMP. PROBS.* 419, 456 n.209 (Fall 2004) (arguing that the “neoliberal policy prescriptions of the IMF, the World Bank, and the WTO reinforce the economic specialization in agro-export production and the monocultural, chemical-intensive production techniques that produce hunger and environmental degradation in the developing world”).

51. See, e.g., Costa Neto, *supra* note 16; see also Marcelo Dias Varella, *O Acúmulo de Lógicas Distintas no Direito Internacional: Conflitos Entre Comércio Internacional e Meio Ambiente*, in *DESAFIOS DO AMBIENTAL NO SÉCULO XXI: ESTUDOS EM*

however, both because of Brazil's size and the uniqueness of some of the ecosystems described above, the need to control these pressures is enormous. For example, the demand for natural resources has increased so rapidly in Brazil that, "[d]uring the past 40 years, close to 20 percent of the Amazon rain forest has been cut down – more than in all the previous 450 years since European colonization began. The percentage could well be far higher; the figure fails to account for selective logging, which causes significant damage but is less easily observed than clear-cuts. Scientists fear that an additional 20 percent of the trees will be lost over the next two decades."⁵² It is not an overstatement to say, therefore, that if one believes that protecting biodiversity is necessary in the long-term, both from an environmental and an economic perspective, the need for a comprehensive law like SNUC is enormous – provided, of course, that the law is enforced.

1. Urban Growth

In Brazil as elsewhere, "the industrial phenomena, especially in its beginnings, cannot be disassociated from the urban one."⁵³ South America is the most densely urbanized continent in the world,⁵⁴ and Brazil, its largest and most populous country, is no exception. Brazil began to industrialize in earnest in the 1950s, during a period in which the governments of Presidents Getúlio Vargas and Juscelino Kubitschek actively sought to bring major transnational corporations into the country.⁵⁵ This, in turn, led to a huge migration from the poorer states of the north and northeast to the major urban centers of the south and southeast, especially São Paulo and Rio de Janeiro, that continues unabated until today.⁵⁶ The population growth in these urban centers, of course, puts pressure on the ecosystems located there, such as the Atlantic Rainforest.

HOMENAGEM A PAULO AFFONSO LEME MACHADO 635, 635-657 (Sandra Akemi Shimada Kish et al. eds., 2004).

52. Wallace, *supra* note 18, at 49.

53. EUSTÁQUIO DE SENE & JOÃO CARLOS MOREIRA, GEOGRAFIA GERAL E DO BRASIL 313 (1998).

54. As a region, not just South America, but all of Latin America is more urbanized than any other area in the world. See, e.g., Jean-Claude Bolay & Adriana Rabinovich, *Ciudades intermedias: ¿Una nueva oportunidad para un desarrollo regional coherente en América Latina?*, in GLOBALIZACION E INTERMEDIACION EM AMERICA LATINA 17-20 (2004) (analyzing United Nations data on urban Latin America).

55. See, e.g., SKIDMORE, *supra* note 4, at 133-147.

56. See *id.* at 141-143.

2. Deforestation

Deforestation in Brazil is a subject that has received considerable attention, both domestic⁵⁷ and international.⁵⁸ The consequences of it have been well-covered elsewhere, and do not require extensive repeating here, except to say that adverse environmental consequences include loss of plant and animal biodiversity⁵⁹ and water loss. Water loss occurs with deforestation for various reasons, including the fact that the rainforest itself serves as a reservoir, retaining water and stabilizing watersheds, while denuded landscapes change water flow patterns.⁶⁰ Thus, the loss of plant matter affects both water quantity and supply. This is serious both for Brazil and, in the longer term, the world, since Brazil contains 8% of the world's freshwater supply.⁶¹

3. Land Grabs

Recently, a major problem in forested Brazilian ecosystems has been related to logging. Although logging and its adverse environmental consequences in the Amazon region have received more attention, the logging (and attendant deforestation) is, in fact, only one small part of a process of environmental degradation. To be specific, logging and other, often unlicensed extractive activities have resulted in an abundance of unauthorized roads:

In Brazil, the events set in motion by logging are almost always more destructive than the logging itself. Once the trees are extracted and the loggers have moved on, the roads serve as conduits for an explosive mix of squatters, speculators, ranchers, farmers, and, invariably, hired gunmen. The land sharks follow the roads deep into previously impenetrable forest, and then destroy tracts to make it look as if they own them.⁶²

57. See Maria Helena Moreira Alves, *São Paulo: the political and socioeconomic transformations wrought by the New Labor Movement in the city and beyond*, in *WORLD CITIES BEYOND THE WEST* 299, 303 (Josef Gugler ed., 2004).

58. See Edésio Fernandes, *A Nova Ordem Jurídico-Urbanística no Brasil*, in *DIREITO URBANÍSTICO: ESTUDOS BRASILEIROS E INTERNACIONAIS* 3-6 (Edésio Fernandes & Betânia Alfonsin eds., 2006).

59. See generally Wallace, *supra* note 18.

60. See, e.g., BENEDICT & McMAHON, *supra* note 7, at 64-65 (2006) (describing the role of forests in water production); see also EDUARDO CORAL VIEGAS, *VISÃO JURÍDICA DA ÁGUA* 30 (2005).

61. See Antônio Herman Benjamin et al., *The Water Giant Awakes: An Overview of Water Law in Brazil*, 83 *TEX. L. REV.* 2185 (2005).

62. Wallace, *supra* note 18, at 49. Cf. André Lima, *Direitos Socioambientais, Políticas Públicas e Desenvolvimento Territorial*, in *O DIREITO PARA O BRASIL*

A consequence is that land ownership claims increase, creating enforcement difficulties for already-overburdened enforcement authorities. Competing ownership claims present special challenges in the enforcement of SNUC.⁶³

4. Soybeans

As of 2004, Brazil produced 24% of the world soybean crop and was the world's second largest producer, behind only the U.S.⁶⁴ This crop has become an important source of foreign exchange for Brazil;⁶⁵ however, the environmental cost is enormous. Soy monoculture replaces diverse tropical forests, introduces petro-chemical fertilizers, and changes the ecology as nutrient-rich soils are enriched to sustain production.⁶⁶ Much of the soy plantation occurs in the interior, and especially in the Amazon region:

Blairo Maggi, governor of the state of Mato Grosso, is seen by the environmental movement as the poster boy for predation. Maggi is "O Rei a Soja," King of Soy, the world's largest single producer. Maggi acquired a less flattering honorific when Greenpeace gave him its Golden Chain Saw award in 2005, [the interior state of] Mato Grosso having led Brazil in Amazon deforestation for the third straight year, coinciding with his first three years in the governor's palace.⁶⁷

In 2006, Maggi was reelected as Governor of Mato Grosso state.⁶⁸ Maggi is the latest in a long line of political bosses who have dominated the Brazilian political landscape for centuries, doing as they wish with the land.⁶⁹

SOCIOAMBIENTAL 319, 330 (André Lima ed., 2002) (reporting data on Amazon forest law following highway construction).

63. See *infra* Section III.

64. See World Soybean Production 2004, http://www.soystats.com/2005/page_30.htm (last visited Oct. 10, 2007).

65. Soybeans exports rose from about 24 million metric tons ("mmt") in 1995 to over 50 mmt in 2005. See U.S. Department of Agriculture Economic Research Service, *Soybeans and Oil Crops: Market Outlook*, <http://www.ers.usda.gov/Briefing/SoybeansOilcrops/2007baseline.htm> (last visited Oct. 10, 2007).

66. See, e.g., Gonzalez, *supra* note 50, at 446-9 (describing the environmental aspects of the Green Revolution in developing world.); Wallace, *supra* note 18, at 65 (noting that soybean production requires large amounts of agrottoxins).

67. Wallace, *supra* note 18, at 61.

68. See Janaina Rochido, *Brazil re-elects left-wing president but most governors are centre-right*, CITY MAYORS, Nov. 18, 2006, available at http://www.citymayors.com/politics/brazil_governors.html.

69. See *infra* note 90 and accompanying text.

The fact that Maggi could be reelected, despite this adverse publicity, also strikes at the heart of a central contradiction in Brazilian domestic policy. In the first place, despite the existence of strong environmental laws, the country continues to face a serious political problem, namely inadequate "internal mobilization" of the population as to the necessity of environmental protection for both human health and long-term economic growth.⁷⁰ This is a complicated story. Its many elements include the comparative passivity of the less privileged classes, a posture cultivated over centuries of repression;⁷¹ failures in providing basic services, like education, to the majority;⁷² and the fact that "preservation policies [are] simply ignored by dominant classes, since they always implied some economic cost to capital."⁷³

More immediately, while politicians and public officials tout the importance of environmental protection and take steps to enforce it,⁷⁴ there is also a strong push to promote economic development in the soy industry and other sectors where Brazil has witnessed steady growth.⁷⁵ Indeed, this contradiction can be seen in the government of President Luiz Ignacio "Lula" da Silva. Lula's first and only environmental minister, Marina da Silva, is a noted environmental campaigner. At the same time, the President himself has complained of "all the obstacles I have with the environment," claiming that this stands in the way of his economic development goals.⁷⁶ His government has repeatedly been criticized for pursuing economic development projects that threaten environmental values. This is seen perhaps nowhere

70. Fernandes, *supra* note 5, at 41 & *passim*.

71. See, e.g., SKIDMORE, *supra* note 4, at 39 (describing the Brazilian history of the "insidious" process of "socialization of the young into an automatic acceptance of the social hierarchy and their place in it").

72. See Timothy J. Power & J. Timmons Roberts, *A New Brazil? The Changing Sociodemographic Context of Brazilian Democracy*, in DEMOCRATIC BRAZIL ACTORS, INSTITUTIONS AND PROCESSES 236, 251-254 (Peter R. Kingstone & Timothy J. Power eds., 2000).

73. Fernandes, *supra* note 5, at 50.

74. See, e.g., José Carlos Carvalho, *A Vocação Democrática da Gestão Ambiental Brasileira e o Papel do Poder Executivo*, in MEIO AMBIENTE NO SÉCULO XXI 260-273 (2003) (citing a former federal environmental official celebrating achievements in environmental protection).

75. See ÉDIS MILARÉ, *DIREITO DO AMBIENTE A GESTÃO EM FOCO* 72 (5th ed., 2007) (commenting on the economic pressures in Brazil to have weak environmental licensing requirements and the errant belief that sustainability will reduce economic growth).

76. Larry Rohter, *Brazil Gambles on Monitoring as Loggers Advance in Amazon*, N.Y. TIMES, Jan. 14, 2007, at 11 (describing new government policy to auction timber-cutting rights).

better than in the controversy over the proposed construction of two dams, Jirau and Santo Antônio, in the far western Amazon state of Rondônia, projects environmentalists claim will seriously threaten biodiversity and the rainforest. When environmental regulators refused to license the dams, the President publicly complained.⁷⁷

5. Cattle

Since 2004, Brazil has been the world's largest beef exporter.⁷⁸ This comes at a direct cost to Brazil's forests: "[i]n general terms, the advance of the livestock-raising frontier . . . represents the principal cause of deforestation."⁷⁹ Again, this provides needed revenues, but at a huge environmental cost. The environmental burden begins with the way that land is cleared for pastures in the Amazon and other forested ecosystems. The traditional Brazilian practice is to make a pasture by means of a *queimada*, a planned burn. The result, of course, is that the biodiversity of the burned area is almost entirely destroyed, not to mention that habitats are displaced and the ecological balance of nearby areas is altered.⁸⁰ What is more, cattle production, like soy, makes huge demands on water resources: "[e]very kilogram of beef produced takes 100,000 liters of water."⁸¹ Because the rainforest itself serves as a water receptacle,⁸² beef production thus puts a double strain on water resources, since clearing the land removes an important water source and then imposes an activity that strains resources. In other words, the clearing of land for the pasture is

77. See, e.g., Larry Rohter, *Both Sides Say Dam Project Is Pivotal Issue for Brazil*, N.Y. TIMES, June 11, 2007, at A10.

78. See U.S. Food and Agriculture Service, *World Beef Overview*, <http://www.fas.usda.gov/dlp2/circular/2004/04-03LP/beefoverview.html> (reporting that "Brazil is forecast to become the world's largest beef exporter in 2004") (last visited Sept. 28, 2007).

79. Roberto Smeraldi, *A Negociação Sobre Florestas: Evolução no Quadro Internacional e no Brasil*, in MEIO AMBIENTE BRASIL: AVANÇOS E OBSTÁCULOS PÓS-RIO-92, *supra* note 13, at 112 (describing how this typically occurs via illegal land transfers).

80. See Costa Neto, *supra* note 16, at 659-660 (describing the adverse ecological effects of burning in the Amazon).

81. David Pimental, *Eight Meaty Facts About Animal Food*, in LIVESTOCK PRODUCTION: ENERGY INPUTS AND THE ENVIRONMENT, reprinted in CORNELL UNIVERSITY SCIENCE NEWS (Aug. 7, 1997), available at <http://www.news.cornell.edu/releases/Aug97/livestock.hrs.html> (noting, by contrast, "[s]ome 900 liters of water go into producing a kilogram of wheat. Potatoes are even less 'thirsty,' at 500 liters per kilogram").

82. See *supra* note 60 and accompanying text.

only the beginning of a process of ecosystem modification with huge consequences for land use and resource management.

As indicated at the outset of this sub-section, the above is meant to be a representative and not an exhaustive list. What it does clearly demonstrate, however, is the variety and complexity of environmental pressures on Brazil's vast terrain and varied ecosystems, and the complicated social and historical reality in which those pressures are exerted. It is no surprise that legal responses to protect its diverse environments are correspondingly varied and complicated.

II. THE REACH AND VARIETY OF BRAZILIAN BIODIVERSITY PROTECTION LAW

In evaluating the extent of Brazilian biodiversity legislation, it is essential for the U.S. reader to appreciate the fact – historically and currently – of land concentration: “[i]n Brazil, 1.6% of the landowners control roughly half (46.8%) of the land on which crops could be grown. Just 3% of the population owns two-thirds of all arable lands.”⁸³ By contrast, in the U.S., with its system of national and state parks and forests, nearly 28% of the land of the U.S. is owned in fee simple by the federal government; the Bureau of Land Management alone controls “nearly one-tenth of the total national land surface.”⁸⁴

It is true that, for some parts of Brazil, the official percentage of public land is high: “[i]n theory, 70 percent of the [Amazon] jungle is public land.” The reality of use, however, complicates this situation considerably since “miners, ranchers and especially loggers have felt free to establish themselves in unpoliced areas, strip the land of valuable resources and then move on, mostly in the so-called arc of destruction on the eastern and southern fringes of the jungle.”⁸⁵ Formal government ownership does not always equate to government control, and into the vacuum left by official inatten-

83. Movimento dos Trabalhadores Rurais Sem Terra (Brazil's Landless Workers Movement), <http://www.mstbrazil.org/?q=about> (last visited Sept. 29, 2007); see also SKIDMORE, *supra* note 4, at 52 (contrasting the U.S., where the Homestead Act of 1862 made available wider access to small tracts of land, with Brazil, where unequal land ownership “has had major implications for economic inequality . . . because it institutionalized the concentration of legal land ownership in a country where land was the principal source of wealth”).

84. COGGINS ET AL., *supra* note 8, at 1.

85. Röhler, *supra* note 76.

tion step those intent on short-term gain.⁸⁶ This centuries-long tradition of land exploitation⁸⁷ recalls Buarque de Holanda's characterization of the "hunting" spirit that established the country.⁸⁸ Still today, that theory and reality do not always match up in Brazilian public land law.

Furthermore, dating back to the division of land by the Portuguese into what became Brazil, historically, a relatively small number of landowners exercised control over the land within the nation's borders.⁸⁹ These landowners were typically among the most powerful figures in the country, both politically and economically.⁹⁰ It needs to be appreciated, therefore, that while the biodiversity laws reflect a significant stage in defining public interest in private land, the role of private property, which is thought to be one of the deepest held values in the U.S.,⁹¹ has much deeper roots still in the Brazilian civil law tradition. This is true despite the fact that, since the Constitution of 1934, "the *social function* of property has been explicitly recognized."⁹² Nonetheless, as Edésio Fernandes observes:

"The private property right is conceived in a most individualistic way: the limits and contents of economic exploitation of a given real property are to be exclusively determined by the individual interests of its owner, who is not supposed to satisfy any social interest in the use of the good, apart from less significant restrictions of the order of neighbourhood [sic] relations.

Almost unlimited, the private property right basically constituted an exchange-value, and therefore land and houses were fundamentally considered as commodities."⁹³

86. Lima, *supra* note 62, at 324 (noting that the future use of Amazonian land is being left "unpredictable and vulnerable by action or non-action of public power").

87. See, e.g., DEAN, *supra* note 2, at 100-101 (describing the resistance of 18th century farmers to replace efficient but destructive slash-and-burn techniques with plows); see also Fernandes, *supra* note 5, at 47 (stating that "private interest ideology always was hegemonic" in Brazil).

88. BUARQUE DE HOLANDA, *supra* note 1.

89. See, e.g., BORIS FAUSTO, A CONCISE HISTORY OF BRAZIL 111 (2001) (describing how the 1850 Law on Land, enacted shortly after the end of slavery, sought to perpetuate the control of large landowners).

90. The so-called "colonels" (*coroneis*) refers to a kind of political patron cum boss whose power depended in large measure on his disproportionate political and economic power. The term is most often used with a mix of exasperation, resignation and contempt for their perceived self-interest and corruption. See *id.* at 160-161.

91. See, e.g., JOSEPH SINGER, INTRODUCTION TO PROPERTY 18, 24-25 (2d ed. 2005).

92. Fernandes, *supra* note 5, at 47 (emphasis in original).

93. *Id.*

As a result, it needs be remembered that the laws described below are constantly under threat of not “sticking” due to historical and legal traditions that long antedate the more recent invention of “environmental” law. It is also true, however, that despite unequal landholding patterns, the 1988 Constitution allows the state to seize land to serve a “social function.” Although still not yet extensively used in Brazil, the social function of property is widely used at a rhetorical level, and the existence of the mechanism points to changing conceptions of landholding.⁹⁴ To be sure, this newer conception is reflected in many new environmental laws, including SNUC.

Thus, under a law like SNUC, it is today possible to appropriate property in the name of the state, provided the private owner is properly compensated. This rejection of the notion that property rights are inviolable is of potentially great significance in Brazil. However, successful implementation of a law like SNUC faces other challenges. In Brazil’s more recent history, the military dictatorship of 1964-1984 “was founded in the mistaken perspective of the idea that under-developed nations and those in development, in order to confront socio-economic problems of great gravity, ought not to divert . . . resources to protect the environment. Pollution and environmental degradation were seen as a lesser evil.”⁹⁵ All of this occurred, moreover, even as the military dictatorship enacted laws ushering in principles of environmental management that are still in effect, including a comprehensive forest code, enacted in 1965,⁹⁶ and a national environmental policy, enacted in 1981.⁹⁷ The latter law, in fact, created the basic environmental enforcement scheme still in effect in Brazil to this day.

In short, a new democratic system does not turn the ship around overnight, however, and the heritage of resource exploitation continues. Professor Milaré’s observations echo Buarque de

94. See ORGANIZATION OF AMERICAN STATES INTER-AMERICAN COMMISSION ON HUMAN RIGHTS, REPORT ON THE SITUATION OF HUMAN RIGHTS IN BRAZIL, CH. VII: Land Ownership and the Rights of Rural Workers (1997), <http://www.cidh.oas.org/countryrep/brazil-eng/chapter%207%20.htm#LAND%20OWNERSHIP> (last visited Oct. 12, 2007).

95. MILARÉ, *supra* note 75, at 57.

96. See CÓDIGO FLORESTAL [C. FLOR.], Lei No. 4.771, de 15 de setembro de 1965, D.O. de 16.09.1965. (Brazil), available at http://www.planalto.gov.br/ccivil_03/Leis/L4771.htm.

97. POLÍTICA NACIONAL DO MEIO AMBIENTE [POL. NAC.], Lei No. 6.938, de 31 de agosto de 1981, DOFC de 02.09.1981. (Brazil), available at https://www.planalto.gov.br/ccivil_03/leis/l6938.htm.

Holanda's distinction about the "hunter" spirit brought to Brazil by the Portuguese:

"Our Nation, in fact, recorded, in that period [of the dictatorship], elevated levels of economic growth without, however, worrying itself with environmental safeguards: as a result, this option to grow at whatever cost raised the Brazilian to an impious – still not stopped – aggression against nature, that, exhausted, begins to calculate the price of the disheartening balance: sinister stains of desertification now appear in the *gaucho* pampas, in the northeast region of Paraná [state], in the Northeast and in various points in Amazônia."

These "sinister stains" were so severe that, by 2002, the country was losing on average 18,600 square kilometers of green space per year. In São Paulo, the nation's richest state, 190,000,000 tons of soils are lost every year.⁹⁸ The point here is that history, both distant and more recent, establishes patterns that are hard to break, so that making a law like SNUC "stick" will be a real challenge.

To be sure, making SNUC "stick" is part of a larger process of defining civil society, a process the nation has been ongoing since the end of the military dictatorship in 1984 and the enactment of the so-called Citizen's Constitution in 1988. Brazilian environmental law today provides a number of provisions that restrict the rights of individual property owners over their property. The federal Constitution also authorizes the creation of specially protected territorial spaces.⁹⁹ Unlike the relatively concise U.S. Constitution, Brazil's extensive and highly detailed "Citizen's" federal Constitution of 1988 boasts 10 titles and 250 articles.¹⁰⁰ As of this writing, it has, moreover, been amended 53 times. As such, it is a highly detailed document, and lays out a wide number of rights, including a vast array of social and economic rights and obligations, that affect all citizens. Among those details is the constitutional provision creating Specially Protected Territorial Spaces and establishing that everyone has the right to "an ecologically balanced environment."¹⁰¹

The provision additionally imposes a corresponding duty on both the Government and the community¹⁰² to defend and pre-

98. See MILARÉ, *supra* note 75.

99. See C.F. art. 225 III.

100. See The Political Database of the Americas, Georgetown University, *supra* note 20 (providing an English translation of the Brazilian Constitution).

101. C.F. art. 225 III (3) ("ao meio ambiente ecologicamente equilibrado").

102. See *id.* ("ao poder público e à coletividade").

serve the environment on behalf of present and future generations.¹⁰³ Furthermore, this constitutional provision directs that, within all units of the Brazilian federation, including municipalities, states, and the union,¹⁰⁴ the “public power” defines the limits and components that merit special protection.¹⁰⁵ Therefore, in theory, any federal entity is constitutionally empowered to create a UC.¹⁰⁶ The alteration or suspension of the law in application to these spaces and components is permitted only by an express process of alteration detailed in SNUC.¹⁰⁷ Important to an understanding of SNUC and other Brazilian environmental legislation is that fact that the constitutional provision also forbids any activity that “compromises the integrity of the attributes [of the territorial spaces] justifying their protection.”¹⁰⁸

It is especially noteworthy here that the constitutional provision speaks not only of the protected “territorial spaces,” but also of their “components.” The distinction is important because, as it has been interpreted, the Constitution both authorizes protection of types of protected areas and of individual parts of those areas.¹⁰⁹ For instance, when a Conservation Unit is created, a higher level of protection may be granted to a particular species, a water body, or even a traditional community existing within it.

A. *Permanently Preserved Forest Areas*

In fact, the protection of forests predates the Constitution of 1988. Current forest protection laws have their foundation in the New Forest Code of 1965.¹¹⁰ The rights of private property owners

103. *See id.* (“o dever de defendê-lo e preservá-lo para as presentes e futuras gerações”). This last portion is the principle that has come to be recognized in international environmental law as the principle of “inter-generational equity.” *See* Rio de Janeiro Declaration on Environment and Development, Principle 3, *reprinted in* PHILIPPE SANDS & PAOLO GALIZZI, *DOCUMENTS IN INTERNATIONAL ENVIRONMENTAL LAW* 18, 19 (2004) [hereinafter *Rio Declaration*].

104. *See* C.F. arts. 29-31.

105. SNUC, *supra* note 6, art. 22.

106. *See* C.F. art. 27.

107. *See* SNUC, *supra* note 6, art. 22 § 7.

108. C.F. art. 225 § 1(III) (“[I]ncumbe ao poder público . . . definir, em todas as unidades da Federação, espaços territoriais e seus componentes a serem especialmente protegidos, sendo a alteração e a supressão permitidas somente através de lei, vedada qualquer utilização que comprometa a integridade dos atributos que justifiquem sua proteção.”).

109. *See id.*

110. *See* C. Flor., Lei No. 4.771, de 15 de setembro de 1965, D.O. de 16.09.1965. (Brazil), available at http://www.planalto.gov.br/ccivil_03/Leis/L4771.htm. The fact that Brazil has had a forestry law since 1965 renders somewhat odd the January 2007 assertion of *New York Times* Brazil correspondent Larry Rohter that the Lula

in areas designated as forests meriting permanent preservation are severely restricted. The property owner may neither cut down trees nor any kind of vegetation in designated areas.¹¹¹ The definition of what can constitute a designated area is broad and can, for example, include riparian vegetation.¹¹²

In practice, the reach of these owner obligations can be controversial. For instance, some commentators interpret the obligation not to cut vegetation in a literal sense, such that there is no obligation to restore an area where vegetation has been cut down if the owner is not directly responsible.¹¹³ This highly formalistic reading would make the Permanently Protected Forest Area classification an external limitation on the property, rather than an inextricable element of the property right. However, another interpretation, and one that is gaining support, maintains that this obligation is an internal, inherent element of the property right – a defining characteristic of the property.¹¹⁴ Moreover, such an interpretation would be in line with the constitutional view of the social function of property.

Given that protection of riparian vegetation prevents river-bank erosion¹¹⁵ and, therefore property devaluation, this latter interpretation makes perfect sense not just in environmental terms, but in economic terms as well. Of course, as U.S. lawyers and policymakers know, educating the public and, in particular, private property owners, on their long-term environmental and economic interests can be a challenge.¹¹⁶

A more complicated issue relates, however, to restoration. If “permanent protection” is an inherent feature of the property, is a current owner thus obliged to reforest it, even if that owner did

government is attempting “to create Brazil’s first coherent, effective forest policy.” Rohter, *supra* note 76.

111. See C. FLOR., Lei No. 4.771, de 15 de setembro de 1965, D.O. de 16.09.1965., arts. 7 and 10 (Brazil), available at http://www.planalto.gov.br/ccivil_03/Leis/L4771.htm (detailing restrictions on cutting single trees or trees within a defined hilly areas).

112. See *id.* art.2(a).

113. See MARIA HELENA DINIZ, 4 CURSO DE DIREITO CIVIL BRASILEIRO 219-221 (2002) (speaking of the “*direito das coisas*,” the “rights of things”).

114. See NICALAO DINO DE CASTRO E COSTA NETO, PROTEÇÃO JURÍDICA DO MEIO AMBIENTE: I- FLORESTAS 203-204 (2003).

115. See EDWARD A. KELLER, ENVIRONMENTAL GEOLOGY 63 (6th ed. 1992) (describing flooding and other results of unstabilized soils).

116. See, e.g., Dale A. Whitman, *Deconstructing Lingle: Implications for Takings Doctrine*, 40 J. MARSHALL L.REV. 573, 582-588 (2007) (arguing that “in reality, governmental objectives and purposes remain highly relevant to taking analysis” despite arguments to the contrary).

not cause the damage? The law appears to answer this question in the affirmative, extending the obligation not just to owners, but also possessors: “[t]he property owners and possessors, beyond the rights that they possess, are also obligated to act in order to maintain or recover the structure-less environment.”¹¹⁷ However, as scholars of the 25-year struggle over the retrospective joint and several liability of the U.S. hazardous waste cleanup law well know, this may be easier said than done.¹¹⁸

Moreover, although now understood to fall within the constitutional protection of the environment, the protected forest areas were originally created in a different political and social climate in Brazil, namely the dictatorship of 1930-1945, which issued the first Forest Code. This law was later changed by the New Forest Code,¹¹⁹ during yet another dictatorship, that of 1964-1984. As a result, these laws speak of designating areas for preservation through the coercive authority of the state. Article 2 of the New Forest Code provides a clear example of this when it declares that, “[i]t shall be considered permanent preservation by virtue of the sole effect of this law, the forests and other forms of natural vegetation as follows [a long list omitted].”¹²⁰ The law leaves no defense to anyone whose interests are damaged by this provision.

As will be seen in Part III below, however, SNUC requires a more transparent, democratic exercise of the public power.

B. Forest Legal Reserve

In addition to Permanently Protected Forest Areas, the 1965 law also created an entity known as a Legal Reserve¹²¹ – sometimes called a Forest Legal Reserve so as to distinguish it from other types of reserves. Essentially what this designation does is declare that certain areas are to be managed in a way that, in common parlance, we now call “sustainable.” Accordingly, such reserves must be managed to assure their continued existence because they are “goods of common interest to all the inhabitants of the country,” even when privately held.¹²²

117. JOSÉ ROBSON DA SILVA, PARADIGMA BIOCÊNTRICO: DO PATRIMÔNIO PRIVADO AO PATRIMÔNIO AMBIENTAL 193 (2002).

118. See Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C.A. §9607 (2002).

119. See C. FLOR., Lei No. 4.771, de 15 de setembro de 1965, D.O. de 16.09.1965. (Brazil), available at http://www.planalto.gov.br/ccivil_03/Leis/L4771.htm.

120. *Id.* art. 2.

121. See *id.* art. I, §2 (III).

122. *Id.* art. 1.

A Legal Reserve constitutes an “area localized in the interior of a rural property or possession, except for the Permanently Preserved Forest Areas, necessary to the sustainable use of natural resources, the conservation and rehabilitation of ecological processes, the conservation of biodiversity and shelter and the protection of native flora and fauna.”¹²³ In broad terms, this might be said to correspond to the management plans for federal forests in the U.S.¹²⁴

There are four types of Forest Legal Reserves, and the law is quite specific as to exactly where, physically, they are located and what percentage of that physical area must be so designated. The first such Legal Reserve is situated in the legally defined “rural” region of the Brazilian Amazon. At a minimum, 80% of the region must constitute such a reserve.¹²⁵ This area constitutes much of interior, non-coastal Brazil – ironically (and tragically), in the states most hard hit in recent decades by deforestation.¹²⁶ The second such Reserve is a minimum of 35% of a rural *cerrado* ecosystem¹²⁷ located within the larger Amazon basin.¹²⁸ The third and fourth Reserves are catchall categories constituting 20% of, respectively, “a forest area or other kinds of localized native vegetation” or “rural property situated in an area of general country.” The third can be located in “other regions of the country,” and the fourth can be located in “whatever region of the Country.”¹²⁹

The interpretive controversy about whether these Reserves constitute an internal or external limitation on the property, described above in relation to the Permanently Preserved Forest Areas, has also been echoed in relation to the Forest Legal Reserves. However, an article to the New Forest Code, added in 2006, makes clearer the obligation of the property owner or possessor. Article 44 of the New Forest Code now requires that the owner or possessor adopt one or more of the following actions: reforestation of a minimum of 1/10th of the property every three (3) years; finding a way to effect “natural regeneration” of the reserve; or creation of a comparable legal reserve of equivalent

123. *Id.* art. 2, § 2° (III.).

124. *See, e.g.*, U.S. Forest Service, *National Forest System Land Management Planning*, 36 C.F.R. Part 219 (2005).

125. *See* C. FLOR., Lei No. 4.771, de 15 de setembro de 1965, D.O. de 16.09.1965., art. 16 (I) (Brazil), available at http://www.planalto.gov.br/ccivil_03/Leis/L4771.htm.

126. *See, e.g.*, Wallace, *supra* note 18, at 49.

127. *See supra* notes 39-40.

128. *See* C. FLOR., Lei No. 4.771, de 15 de setembro de 1965, D.O. de 16.09.1965., art. 16 (II) (Brazil), available at http://www.planalto.gov.br/ccivil_03/Leis/L4771.htm.

129. *Id.*

“ecological importance.”¹³⁰ Compared to U.S. law, this recalls a response to the call for “no net loss” of wetlands,¹³¹ a policy that has been criticized because of the difficulty of determining equivalence.¹³²

III. NATIONAL SYSTEM OF CONSERVATION UNITS (SNUCs)

A. *Global Biodiversity Protection*

SNUC must be understood against a global backdrop, and, in particular, in light of concerns about biodiversity protection, since protected areas are a central means to guarantee biodiversity. In 1994, Brazil signed the Convention on Biological Diversity,¹³³ one of the instruments opened for signature at the United Nations Conference on the Environment and Development, held in Rio de Janeiro in 1992. The Convention’s objectives are to conserve biological diversity and promote “sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.”¹³⁴ At once, the Convention respects states’ “sovereign right to exploit their own resources pursuant to their own environmental policies,” but also mandates “the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.”¹³⁵ Also, importantly, the Convention obligates states to “[d]evelop national strategies, plans or programmes [sic] for the conservation and sustainable use of biological diversity.”¹³⁶

This is not to suggest that the Convention prompted Brazil to enact SNUC; far from it. As described in the following sections, Brazil has been in the business of thinking about biodiversity protection for nearly 30 years – well before the entry into signature of international accords on the issue, including a 1981 law creating

130. *Id.* art 44.

131. See KIM DIANA CONNOLLY ET AL., WETLANDS LAW AND POLICY: UNDERSTANDING SECTION 404 6-7 (2005) (detailing elements of the “no net loss” of wetlands policy popularized by the George H.W. Bush administration in 1988).

132. See ROBERT V. PERCIVAL ET AL., ENVIRONMENTAL REGULATION: LAW, SCIENCE, AND POLICY 701-702 (5th ed. 2006) (articulating the view that the “no net loss” policy can replace apples for oranges).

133. See MILARÉ, *supra* note 75, at 556.

134. United Nations Convention on Biological Diversity, art. 1 (June 5, 1992), *reprinted in* DOCUMENTS IN INTERNATIONAL ENVIRONMENTAL LAW, *supra* note 103, at 696-724.

135. *Id.* art. 3.

136. *Id.* art. 6(a).

"Ecological Stations" and "Areas of Environmental Protection".¹³⁷ Moreover, there were a number of laws and regulations creating conservation areas, and thus promoting biodiversity protection, in the decades that followed.¹³⁸

B. National Environmental Policy Act

The National Environmental Policy Act of 1981 is, as Fernandes notes, "a very modern and sophisticated legal text, which deals with the environmental question from a very realistic and stimulating perspective."¹³⁹ As he further notes, it is a creature of its time, in global terms, and thus lays out "a set of preventive, controlling and repressive measures,"¹⁴⁰ including not only Environmental Impact Assessments ("EIAs"), but also a wide range of environmental licensing obligations¹⁴¹ and an elaborate administrative enforcement structure.¹⁴² In terms of protected areas and biodiversity, the Policy Act speaks extensively about the need to maintain ecological equilibrium and ecosystem protection,¹⁴³ in addition to an explicit commitment to create protected areas by federal, state and municipal authorities. Indeed, the provision uses phrases, specifically, "relevant ecological interest" and "extractive reserves,"¹⁴⁴ that, nearly 20 years later, were incorporated into the scheme of SNUC, as described in detail below.¹⁴⁵ That being said, it is judged by some to be a failure, as a law that didn't stick. Fernandes maintains that "[u]nfortunately, its provisions have been ignored daily,"¹⁴⁶ noting both problems of inter-agency competition and conflict, and under-funding to fulfill its mission.¹⁴⁷

137. Lei No. 6.902, de 27 de abril de 1981, D.O.U. de 28.04.1981. (Brazil), *available at* https://www.planalto.gov.br/ccivil_03/leis/l6902.htm. This law clearly constitutes the forerunner of SNUC. A common criticism, however, is that it did not provide for a local voice and local management. *See, e.g.,* Paulo Nogueira-Neto, *Evolução Histórica das ARIEs e APAs*, in *DIREITO AMBIENTAL DAS ÁREAS PROTEGIDAS*, *supra* note 12, at 363, 365.

138. *See* Nogueira-Neto, *supra* note 137, at 366-371.

139. Fernandes, *supra* note 5, at 45-46.

140. *Id.* at 46.

141. *See* POL. NAC., Lei No. 6.938, de 31 de agosto de 1981, DOFC de 02.09.1981., art. 10 (Brazil), *available at* https://www.planalto.gov.br/ccivil_03/leis/l6938.htm.

142. *See id.* arts. 6-8.

143. *See id.* art. 2 (I), art. 4 (II), and art. 4 (V) (regarding equilibrium and ecological balance); *see also id.* art. 2 (IV) (regarding ecosystem protection).

144. *Id.* art 9 (VI).

145. *See infra* Part III.

146. Fernandes, *supra* note 5, at 48.

147. *See id.*

C. *National Biodiversity Policy*

In addition, Brazil announced a National Biodiversity Policy in a 2002 Decree Law. This law announced Brazil's intent to formalize "principles and directives for the implementation, in the form of a law, of a National Biodiversity Policy" in light of Brazil's treaty commitments pursuant to the U.N. Convention on Biological Diversity.¹⁴⁸ The principle terms of the policy are laid out in an accompanying annex.

To a great extent, the annex tracks the principles of the U.N. Convention,¹⁴⁹ such as the intrinsic value of biodiversity protection;¹⁵⁰ respect for national sovereignty, provided there is no damage to neighboring environments;¹⁵¹ respect for traditional cultural values;¹⁵² balance between conservation and sustainable development;¹⁵³ and reduction of negative market effects of activities affecting biodiversity.¹⁵⁴

Moreover, the law reflects the influence not only of the U.N. Convention on Biological Diversity, but also of the Cartagena Protocol on Biosecurity, as reflected in its statement of general objectives: "[t]he National Biodiversity Policy has as its general objective the promotion, in the form of integration, of biodiversity conservation and the sustainable utilization of its components, with the just and equitable sharing of the derivative benefits in the utilization of genetic resources, of components of genetic patrimony and of traditional knowledge associated with these resources."¹⁵⁵ The law is lengthy, and space does not permit a full treatment of it here; what is noteworthy, however, is that it is dedicated to conservation, and not preservation. The commitment to conservation is both explicitly stated in a lengthy article on the

148. Decreto No. 4.339, de 22 de agosto de 2002, D.O.U. de 23.08.2002. (Brazil), available at https://www.planalto.gov.br/ccivil_03/decreto/2002/D4339.htm. As scholars of civil law will know, the decree law is a form of Executive lawmaking by which the Chief Executive issues a binding legal directive.

149. See MILARÉ, *supra* note 75, at 562-564.

150. Compare Annex I *supra* note 148, with Convention on Biological Diversity art. 1, *supra* note 103, at 700.

151. Compare Annex I, *supra* note 148, with Convention on Biological Diversity art. 3, *supra* note 103, at 701.

152. Compare Annex I, *supra* note 148, with Convention on Biological Diversity art. 10(c), *supra* note 103, at 705.

153. Compare Annex I, *supra* note 148, with Convention on Biological Diversity art. 8(i), *supra* note 103, at 703.

154. Compare Annex I, *supra* note 147, with Convention on Biological Diversity arts. 11, 20, *supra* note 103, at 705-710.

155. Decreto No. 4.339, de 22 de agosto de 2002, D.O.U. de 23.08.2002., art. 5 (Brazil), available at http://www.planalto.gov.br/ccivil_03/decreto/2002/D4339.htm.

subject,¹⁵⁶ and in other features of the law, such as its commitment to management of scientific knowledge¹⁵⁷ and to traditional practices.¹⁵⁸ Although these commitments are thoroughly integrated into SNUC, a document that came into effect two years earlier, SNUC reflects a commitment to *both* conservation and preservation. Indeed, as described below, this distinction is fundamental to SNUC's scheme.¹⁵⁹

In a civil law system, where a legislative enactment and a decree law are contradictory, the former prevails. Nonetheless, in practical terms this apparent contradiction between the two laws in fact creates uncertainty. SNUC nominally deals with protected areas, of which biodiversity is but one – if not the central – concern. At the same time, however, the fact that the National Biodiversity Policy, a decree with powerful implications for the management of protected areas, has such a strongly conservationist ethic could, in practice, present problems for the enforcement of SNUC. Particularly, problems may develop in regard to the Complete Protection Reserve described below because SNUC opponents might use the policy to justify their activities. Moreover, given Brazil's history of land and resource exploitation – a common lament of its most sophisticated academic analysts¹⁶⁰ – the Biodiversity Policy's emphasis on conservation above all else does not bode well for the rigorous enforcement of SNUC's preservationist provisions.

D. A Brief History of Conservation Units in Brazil

As with biodiversity protection in general, the Brazilian tradition of defining specially protected areas is one of long duration, despite the strong legal protection accorded private property. Indeed, some commentators observe that the origins of today's Conservation Units (UCs) can be found in the designation of "sacred" woods or royal hunting reserves, in which hunting was permitted only with the monarch's express authorization.¹⁶¹ Dur-

156. See *id.* arts. 11, 13.

157. See *id.* art. 10.

158. See *id.* art. 14.

159. See *infra* Part III.

160. See, e.g., MILARÉ, *supra* note 75, at 57 (lamenting the "growth at any cost" philosophy of the military dictatorship).

161. Antônio Herman Benjamin, *Introdução à Lei do Sistema Nacional de Unidades de Conservação*, in DIREITO AMBIENTAL DAS ÁREAS PROTEGIDAS, *supra* note 12, at 276, 284 (citing C.R. Margules & R.L. Pressey, *Systematic Conservation Planning*, 405 NATURE 243 (2000)).

ing the imperial period in the 19th Century, they restricted cutting the country's eponymous tree, the *pau-brasil* (prized for its sturdy and vermillion-colored wood), and even criminalized the usurpation of public lands.¹⁶² In modern terms, however, the original model for Brazil's UCs is that of Yellowstone National Park, created in the U.S. in 1872.¹⁶³ Subsequently, other nations followed the U.S. lead, such as South Africa's Kruger National Park, created in 1898, and Brazil's National Park of Itatiaia (*Parque Nacional de Itatiaia*), created in 1937 in the interior of Rio de Janeiro State.¹⁶⁴

The immediate origins of the SNUC have been traced to the 1970s. In 1976, an international report on nature preservation in the Amazon led to the elaboration of the first phase of a "Plan for a System of Brazilian Conservation Units," published in 1979. The second phase of the Plan was issued in 1982. This plan had as its objectives, "[t]o identify the more important areas for nature conservation, to propose the creation of UCs, to protect them, and to indicate the actions necessary to implement, maintain and administer the system."¹⁶⁵ This two-part Plan, moreover, proposed the creation of most types of specific UCs eventually enacted into law with SNUC.¹⁶⁶

The greatest number of UCs were created during the military dictatorship of 1964-1984, for reasons both external and internal. At a time that the government was seeking loans in order to engage in huge construction projects, international banks demanded conservation practices as well. Brazil also acted opportunistically, using Conservation Units as a way to take land from traditional communities.¹⁶⁷ Nonetheless, many of these Conservation Units existed on paper only to satisfy the demands of international lending institutions.¹⁶⁸ Finding "the law that sticks" is not a new Brazilian phenomenon. Many of the military dictatorship-era UCs were created only, as Brazilians say, "for the English to see," meaning formal legal steps were taken, but were not substan-

162. See PAULO DE BESSA ANTUNES, DIREITO AMBIENTAL 556-57 (7th ed., 2005).

163. See Antônio Herman Benjamin, *O Regime Brasileiro de Unidades de Conservação*, 21 REVISTA DE DIREITO AMBIENTAL, Jan.- Mar. 2001, at 33.

164. See *id.* at. 33-34.

165. Maurício Mercadante, *Uma Década de Debate e Negociação: a História da Elaboração da Lei do SNUC*, in DIREITO AMBIENTAL DAS ÁREAS PROTEGIDAS, *supra* note 12, at 190, 191.

166. See *id.*

167. See *id.*

168. See CARLA MORSELLO, ÁREAS PROTEGIDAS PÚBLICAS E PRIVADAS: SELEÇÃO E MANEJO 187 (2006).

tively enforced.¹⁶⁹ Moreover, even when they were concrete, these UCs usually suffered from inadequate or no management and were not funded to be enforced.

In light of this situation, after more than 12 years in the making, Brazil created SNUC: “[a]s with all environmental legislation in a country that sees its natural patrimony and its environment destroyed by so many evils and exposed to the wrath of predators, [SNUC] appeared with messianic expectations destined to redeem, at least in part, that which was lost and to develop that which was found healthy.”¹⁷⁰ The terms of SNUC were further clarified two years later, in a federal decree law.¹⁷¹ SNUC streamlined and standardized the creation, modification, and management of the UCs. Importantly, it also clarified the purpose and ends of different types of environmental reserve.

Before proceeding to a description of the SNUC taxonomy, it merits asking why the law was of such long gestation. There are several reasons for this. First, the period from 1988-2000 was one of intense law-making in Brazil, with the restoration of democracy and the new Constitution; there were many laws to draft and enact subsequent to the adoption of the new Constitution. Second, as noted above, there were already in affect various laws and regulations for UCs, so that the area was not – at least legislatively – being entirely neglected. Third and perhaps most important to understand the shape that SNUC eventually took, there were serious and lengthy debates about the weaknesses of prior UC legislation and regulation, and arguments about how to avoid those mistakes again.

Key to this process was a federal deputy, Fábio Feldmann. Feldmann was harshly critical above all of what many viewed as a common failure of earlier protected areas legislation, namely the

169. This phrase has its origins in the times of Brazilian slavery. England abolished slavery before Brazil, which was the last country in the Americas abolish slavery in 1888. However, Britain, a major trading partner crucial to Brazil's economy, had pressured Brazil for many decades to sign treaties agreeing to end the slave trade. Those treaties were, it was said, signed “for the English to see” (i.e. form and not substance). See, e.g., Secretaria Municipal de Educação, Prefeitura da Cidade do Rio de Janeiro, *A Lei Para Inglês Ver*, available at http://www.multirio.rj.gov.br/historia/modulo02/ingles_ver.html (last visited Oct. 8, 2007) (describing the origins of the phrase); see also SKIDMORE, *supra* note 4, at 54-56 (recounting this history); Mercadante, *supra* note 165, at 197 (confirming that many UCs before SNUC were never implemented).

170. MILARÉ, *supra* note 75, at 653.

171. Decreto No. 4.340, de 22 de agosto de 2002, D.O.U. de 23.08.2002. (Brazil), available at http://www.planalto.gov.br/CCivil_03/decreto/2002/D4340.htm.

"incapacity" of the "conservationist vision" to give a fixed look at a [UC] as a factor in local and regional development, to situate the creation and management of these areas within a larger process of the social and economic promotion of the involved communities."¹⁷² He argued passionately against what would likely be perceived as an intervention of the Public Power in an act that would be perceived as "violent, authoritarian, unjust and illegitimate".¹⁷³ Feldmann believed that the "conception" of the UC had been "exported" to the "countries of the Third World" from the U.S. and other developed nations.¹⁷⁴ But, he said, the situation in the developing world "is radically different. Our parks and reserves are encircled, commonly, by extreme poverty. These [protected] areas survive . . . like islands in an agitated sea of social pressures." Feldmann further objected that the conception in the government's 1992 proposal for the creation of SNUC, the justifications focused only on "extinction of species, loss of biodiversity in itself. At no time did it comment as to what constitutes the loss of people's quality of life. Much less reflect on the role of [UCs] in the development process."¹⁷⁵ In this, Feldmann then turned to international statements of a newer conception of environmental sustainability. He quoted, for example, from the *Our Common Future*, the celebrated publication of the Brundtland Commission, in 1987, as follows: "[m]odels of development must be altered to become compatible with the preservation of the planet's highly valued biological diversity."¹⁷⁶ He also looked to the work of the International Union for the Conservation of Nature and the World Resources Institute, and their "Global Strategy for Biodiversity," published in 1992, noting their endorsement of the view that "[i]n many parts of the world . . . the best way to reinforce protected areas consists in linking them better to the local social and economic necessities."¹⁷⁷

172. Mercadante, *supra* note 165, at 196 (quoting Fabio Feldmann).

173. *Id.* at 197 (quoting Feldmann).

174. *Id.* (quoting Feldmann). But see Miguel Serediuk Milano, *Unidades de Conservação - Técnica, Lei e Ética para a Conservação*, in DIREITO AMBIENTAL DAS ÁREAS PROTEGIDAS, *supra* note 12, at 27 (rejecting the notion that the Latin American and Brazilian UC models are copies of North American models).

175. Mercadante, *supra* note 165, at 199 (quoting Feldmann quoting Mensagem no. 176/92).

176. *Id.* at 200 (quoting Feldmann quoting U.N. World Commission on Environment and Development, *Our Common Future*, U.N. Doc. A/42/427 (Aug. 4 1987).

177. *Id.* at 201 (quoting Feldman quoting WORLD RESOURCES INSTITUTE ET AL., GLOBAL BIODIVERSITY STRATEGY: GUIDELINES FOR ACTION TO SAVE, STUDY, AND USE EARTH'S BIOTIC WEALTH SUSTAINABLY AND EQUITABLY (1992)).

These lengthy critiques in the end led Feldmann and his collaborators to propose four important reconfigurations for SNUC: (1) to value biodiversity in social and economic terms; (2) to protect food sources, living spaces and other material conditions of traditional populations, respecting their culture and promoting them socially and economically; (3) to protect and encourage the customary use of biological resources, in accordance with traditional cultural practices; and (4) to protect and value the knowledge of traditional populations, especially in forms of ecosystem management and sustainable use of natural resources.”¹⁷⁸

The importance of these proposed changes cannot be underestimated. They mattered in at least two respects. First, it need be remembered that in Brazil, the “national political context” historically “openly benefited economic power at the expense of social needs and popular interests.”¹⁷⁹ Thus, the changes proposed and, as described below, ultimately incorporated into SNUC, constituted a direct repudiation of a deeply-held political value. Second, because SNUC makes local and traditional input and knowledge a central condition for the creation of a UC, it reflected willingness for the State to take a position contrary to its customary position. Where in the past, “[s]tate intervention with social purposes was minor and marginal, basically aiming to minimize impacts rather than to formulate public policies for a proper spatial organization,” SNUC would do the opposite. It stood to constitute a repudiation of the past where “[t]here was no broad environmental policy guiding and making compatible the activities of the many agencies responsible for spatial management and exploitation of resources.”¹⁸⁰ Where in the past this situation decisively contributed to aggravating the process of environmental deterioration,”¹⁸¹ SNUC promised to be an environmental statute that contained the potential to promote a different result.

E. Types of Conservation Unit within SNUC

The Brazilian system of UCs is detailed and extensive in its reach. By virtue of its detail, to U.S. eyes, the itemized law resembles a hybrid of a legislatively-enacted statute and a regulation promulgated pursuant to that statute. The law provides for the creation of two framework UC categories and many smaller dis-

178. *Id.* at 204.

179. Fernandes, *supra* note 5, at 48.

180. *Id.*

181. *Id.*

nations within each of those larger categories. In some instances, areas already protected as Permanently Preserved Forest Areas or Legally Reserved Forest Areas can be contained within the boundaries of a UC. In that event, Brazilian law provides that the more restrictive designation shall apply. Moreover, the federal law grants not just federal authorities but also state and local authorities the power to create UCs within their jurisdiction. On the one hand, this delegation of authority allows for the maximum possible application of the UC device. On the other hand, this creates the possibility for jurisdictional conflicts.

A prime example can be seen in the conflict SNUC triggers between the creation of a UC and land use planning responsibilities. Pursuant to the federal Constitution, municipalities have responsibility for the "adequate territorial organization, by means of planning and control of the use, division and occupation of urban land."¹⁸² At the same time, however, in the case of one type of UC, the Environmental Protection Area, SNUC provides that these areas are designed to "discipline the process of [land] occupation and to assure the sustainable use of natural resources."¹⁸³ A conflict could thus arise when, for example, a federal entity created a UC within the boundaries of a municipality, since the *municipality* has constitutional authority to exercise land use planning. The resolution of such possible conflicts remains unclear.¹⁸⁴

1. Framework and Individual Categories

SNUC's two framework categories are the "Complete Protection UCs" and the "Sustainable Development UCs". SNUC further details 12 individual UC categories. Five of the individual categories are kinds of Complete Protection UCs; the remaining seven individual categories are forms of Sustainable Development UCs. The difference between these two framework categories relates to the nature of protection offered by the UC, the nature of permitted activities within the UC's boundaries, and the permissible components within the UC. Broadly speaking, the two framework categories reflect a well-known distinction in U.S. environmental law between conservationist and preservationist"

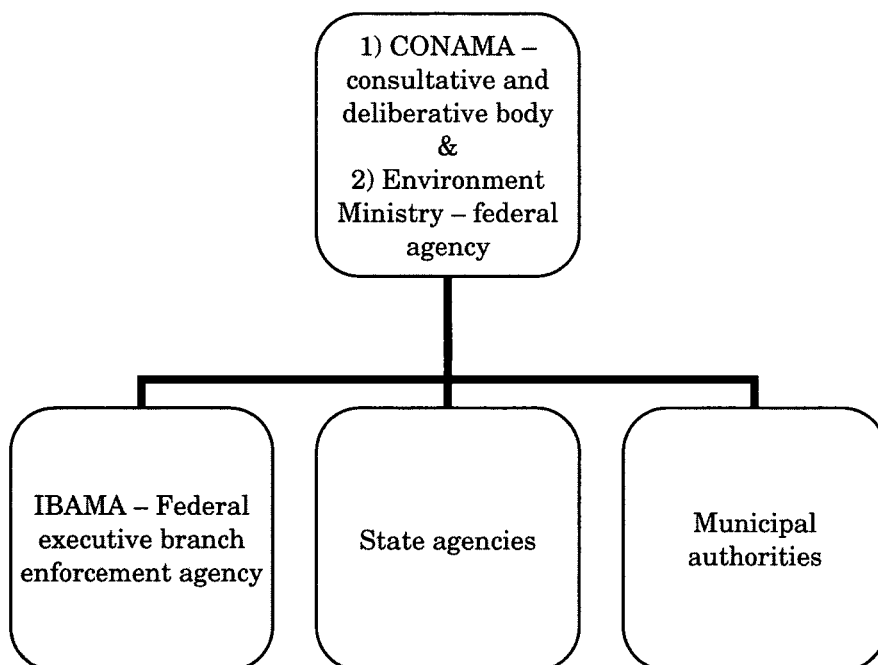
182. C.F. art. 30(VIII) ("Compete aos Municípios: . . . adequado ordenamento territorial, mediante planejamento e controle do uso, do parcelamento e da ocupação do solo urbano.").

183. SNUC, *supra* note 6, at art. 15.

184. ANTUNES, *supra* note 162, at 649-650.

ends.¹⁸⁵ This distinction, almost never as neat in practice as it may appear in theory,¹⁸⁶ reflects a struggle between different environmental interests. Those with greater social concerns – the anthropocentrists – advocated the “sustainable use” UCs, while more biocentric advocates argued for the creation of Complete Protection UCs.¹⁸⁷

Administration of the UCs is disperse and does not reside within a single regulatory body or institution, as reflected in the chart below:



The two supreme federal agencies work in tandem. CONAMA, the National Environmental Council (*Conselho Nacional de Meio Ambiente*) is the Brazilian environmental regulation agency, with responsibility to establish general rules on

185. See, e.g., PERCIVAL ET AL., *supra* note 132, at 8-16 (describing various strands of ideology in U.S. environmentalism).

186. For example, the opening paragraph of the U.S. National Environmental Policy Act of 1969 § 101, 42 U.S.C. 4331 (2007), speaks of recognizing “the critical importance of *restoring* and *maintaining* environmental quality to the overall welfare and development of man. . . .” (emphasis added). This language arguably presents a contradiction since “restoration” implies returning to an environmental ideal – a preservationist goal – while “maintenance” refers to a conservationist end.

187. See, e.g., Mercadante, *supra* note 165, at 199 (quoting Feldmann’s legislative critique of early SNUC drafts for valuing biologic environment at sake of quality of life of people who live in them).

environmental issues, in somewhat the way that the Council on Environmental Quality (CEQ) does in the U.S.,¹⁸⁸ although historically CONAMA has been a more active rulemaking body than is true of the CEQ. CONAMA was created by the National Environment Policy Act, a statute that roughly corresponds to the act of the same name in the U.S.¹⁸⁹

The Environment Ministry, like the Environmental Protection Agency in the U.S., is a Cabinet-level agency that is directly subordinated to the President of Brazil. With respect to implementation and enforcement of SNUC, the Ministry is responsible for integrating the management of Conservation Units. IBAMA, the Brazilian Environmental Institute (*Instituto Brasileiro do Meio Ambiente*) is the day-to-day enforcement branch of the federal Ministry, with direct responsibility for UC management at the federal level.

Although space does not permit a full catalog of the administrative structure at the state and municipal level, it merits noting that because under the federal Constitution both states and municipalities have autonomy,¹⁹⁰ they also have authority to create their own agencies with jurisdiction to oversee the management of UCs within their boundaries.

a. Complete Protection UCs

Complete Protection UCs were created from a perspective that “assumes that human habitation of forests leads inevitably to compromise their ecological value”. Advocates of this framework category “viewed environmental destruction as a demographic and economic process” that needed to be slowed down since “people deforest because it pays, and more people deforest more.”¹⁹¹

Virtually no direct use of any kind – whether commercial or

188. 42 U.S.C. §§ 4341-4347.

189. POL. NAC., Lei No. 6.938, de 31 de agosto de 1981, DOFC de 02.09.1981., arts. 8 (Brazil). See also Roger W. Findley, *Pollution Control in Brazil*, 15 ECOL. L.Q. 1, 18-22 (1988) (recounting early history of CONAMA). In April 2007, a new agency, Instituto Chico Mendes de Conservação da Biodiversidade, was created and it is to assume some of IBAMA's biodiversity preservation duties. See, e.g., Marcela Rebelo, *Publicada MP que cria Instituto Chico Mendes de Conservação da Biodiversidade*, Radiobrás Agência Brasil, April 27, 2007, available at <http://www.agenciabrasil.gov.br/noticias/2007/04/27/materia.2007-04-27.9153428197/view> (last accessed February 27, 2008).

190. C.F. art. 18.

191. Stephan Schwartzman, *Indians, Environmentalists and Tropical Forests: the Curious History of the “Ecologically Noble Savage*, in DIREITO AMBIENTAL DAS ÁREAS PROTEGIDAS, *supra* note 12, at 111.

not – is permitted within a Complete Protection UC, which prohibit “any alteration, activities or modalities of utilization in disagreement with its objectives, its Management Plan and its regulations.”¹⁹² This means that any endeavor involving the “consumption, collection of material, damage or destruction”¹⁹³ within the UC is banned. Moreover, nothing can be done until elaborated in the Management Plan, and even then, every activity developed in Complete Protection UCs must be limited to those that “guarantee the integrity of the resources that the Unit aims to protect, assuring to the traditional populations who happen to reside there the necessary conditions and ways to satisfy their material, social and cultural needs.”¹⁹⁴ In light of strong private property tradition in Brazilian law, a particularly interesting feature of the different types of Complete Protection UCs mentioned below is the law’s efforts to balance private interests against the larger concern with protecting biodiversity as a matter of public interest.

There are five types of Complete Protection UCs, namely Ecology Stations, Biologic Reserves, National Parks, Natural Monuments and Wild Life Refuges,¹⁹⁵ and this paper will now turn to a detailed examination of them.

i. Ecology Stations and Biologic Reserves¹⁹⁶

Although formally different designations, there is virtually no difference, in either theoretical or practical terms, between Ecology Stations and Biologic Reserves. In effect, they are almost the same, both designed to minimize human activity and enable research within them. In all other aspects, these UCs are designed to minimize the intrusion of human actors within their boundaries to the greatest possible extent. Consequently, the only uses permitted within the confines of either one are (1) public visits only for educational purposes consistent with the UC’s Management Plan and (2) scientific research pursuant to prior authorization from the responsible administrator.¹⁹⁷ Moreover, whenever either such type of UC is created, any private property within the confines of the UC must be declared public property by the exercise of eminent domain power and the owner must be compensated for

192. SNUC, *supra* note 6, at art. 28.

193. *Id.* at art. 7, §1 and art. 2(IX).

194. *Id.* at art. 28.

195. *Id.* at art. 8.

196. *Id.* at arts. 9, 10.

197. *Id.* at art. 9, §§ 2-3 (“Ecologic Stations”) and art. 10, §§ 2-3 (“Biologic Reserve”).

the value of the property.¹⁹⁸

One textual difference in the legal description of the two types of UC involves modifications to the UC. The text describing the Ecologic Stations enumerates permissible modifications as activities that: (1) regenerate altered ecosystems; (2) perform species management in order to preserve biological diversity; (3) collect components of ecosystems for scientific purposes; (4) engage in scientific research whose environmental impact is the lesser of (a) "simple observation" or (b) controlled collection of components within the UC up to a maximum of three percent (3%) of the total extension of the unit or a limit of 1,500 (fifteen hundred) hectares, whichever is less.¹⁹⁹ Although there is no similar list in the case of Biologic Reserves, by analogy it is likely that similar restrictions would apply in that context since otherwise there is no discernible distinction between the two categories. The scientific research provision must, by any measure, be deemed a confusing one, however, since a "simple observation" is both undefined but, presumably, always less intrusive than the alternative.

ii. National Parks

The basic objective of National Park UCs is to create spaces in which it is possible to preserve highly-valued natural ecosystems and locations of scenic beauty, while at the same time permitting scientific research, development of environmental education and interpretive activities that help explain these spaces to the public, eco-tourism and recreation that brings people into contact with nature.²⁰⁰ As in the U.S., the National Parks recognize these UCs as properties held in the name of the entire public.

iii. Natural Monuments

A Natural Monument UC²⁰¹ is a designated, protected area of exceptional scenic beauty or one that contains rare natural phenomena.²⁰² Unlike the other types of Complete Protection UC described above, private property is permissible within the boundaries of a Natural Monument UC, so long as the private property use does not interfere with the activities and objectives of the Nat-

198. *Id.* at art. 9, §10 and art. 10, §1.

199. *Id.* at art. 9, §4.

200. *Id.* at art. 11.

201. *Id.* at art. 12.

202. This category, also used in the U.S., is part of an International Union for the Conservation of Nature (IUCN) taxonomy. See Langley, *supra* note 12, at 132-133.

ural Monument. Of course, in practice this is easier said than done, and conflicts between owners and the state in its role as guardian of natural resources, are to be expected.²⁰³ The law therefore provides that if the objectives of this type of unit cannot be reconciled with the activities engaged in by the private owner, the property is appropriated by the state and the owner compensated.

iv. Wildlife Refuges

Biodiversity protection is, as indicated at the outset of this article, a central aim of the SNUC law, as is clear in the law's creation of a UC category for Wildlife Refuges. The aim of this UC is to ensure the protection of conditions that will provide for the continued existence of and help sustain the reproduction of species or communities of local flora and resident or migratory fauna.²⁰⁴ As with Natural Monument UCs, the law contemplates that the objectives of this UC may be compatible with the use of the land and the natural resources on it by private owners. However, in the case of a disagreement or conflict, once again, the property is appropriated by the state and the owner compensated.²⁰⁵

b. Sustainable Development UCs

By contrast to the Complete Protection UCs, more activities are permitted within Sustainable Development UCs, which permit "direct" uses involving the collection and use of natural resources, whether for commercial purposes or not. In other words, the UC law defines "sustainable use" as environmental exploitation in a way that guarantees the ability to consume renewable resources while at the same time assuring the continued vitality of biodiversity in the UC.²⁰⁶ This definition, which seeks to balance environmental protection and social and economic needs, is one that is currently favored in international envi-

203. For example, on a visit to Paraty, Rio de Janeiro state, on May 25, 2007, I was told by residents of the Quilombo Campinho da Independência, a community of the descendants of escaped slaves, whose lands have legislative protection, that UCs were being used to deprive them of lands to which they said they were entitled. Although, as of yet, there is little judicial law regarding UCs, this conflict is without doubt typical of many to come.

204. SNUC, *supra* note 6, at art. 13.

205. *Id.* at art. 13, § 2.

206. A "direct use" is defined as one that "involves the collection and use, commercial or not, of natural resources." *Id.* at art. 2(X). An "indirect use" is that which "does not involve consumption, collection, harm or destruction of natural resources." *Id.* at art. 2(IX).

ronmental protection.²⁰⁷ All other activities, however, namely those that do not “agree with the objectives” of the SNUC, are forbidden.²⁰⁸ Some analysts of SNUC argue, moreover, that until a Management Plan is created, no activity whatsoever is permitted within a UC.²⁰⁹

As with a national forest in the U.S., various economic activities are permitted within Sustainable Development UCs. There are seven types of Sustainable Development UCs,²¹⁰ namely (1) Environmental Protection Area; (2) Area of Relevant Ecological Interest; (3) National Forests; (4) Extractive Reserves; (5) Fauna Reserves; (6) Sustainable Development Reserves; and (7) Privately-Owned Reserves of Natural Patrimony.

i. Environmental Protection Area

An Environmental Protection Area²¹¹ is one with little or no human habitation that contains abiotic, esthetic or cultural attributes deemed especially important to the quality of life and the health of the human population. It may occur in private as well public property. Its basic aim is the protection of biological diversity, and to do so by managing the process by which land is occupied so as to insure the sustainability of natural resources. As such, the Environmental Protection Area is an environmental management device central to the protection of the environment in urban and urbanizing environments. By contrast to scientific research in Complete Protection UCs, however, the law permits scientific research in Environmental Protection Areas “in keeping with the needs of the management of the UC.” When the UC is privately-owned, moreover, that language explicitly is understood to give the private owner the ability to control the research agenda

207. For example, paragraph 5 of the Johannesburg Declaration on Sustainable Development, adopted in 2002 at the U.S. World Summit on Sustainable Development, states as follows: “We assume a collective responsibility to advance and strengthen the interdependent and mutually reinforcing pillars of sustainable development — economic development, social development and environmental protection — at the local, national, regional and global levels.” U.S. World Summit on Sustainable Development, Aug. 26-Sept. 4, 2002, *Johannesburg Political Declaration*, ¶ 5, available at http://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/POI_PD.htm.

208. SNUC, *supra* note 6, at art. 28.

209. GUILHERME VILLELA PIGNATARO, SISTEMA NACIONAL DE UNIDADES DE CONSERVAÇÃO 55 (2007) (The monograph was submitted to the Law Department of the Pontifícia Universidade Católica do Rio de Janeiro and is on file with the authors.).

210. SNUC, *supra* note 6, at art. 14.

211. *Id.* at art. 15.

and development of that property.²¹² In other words, in terms of the degree of intrusion onto private property, this type of UC and the Sustainable Development UCs in general are more in keeping with the historical respect under Brazilian law for the rights of private property owners.

In this as in other UCs, a public participation component is key. Each Environmental Protection Area must have a Council presided over by a representative of the public entity responsible for its administration and constituted by stakeholders, including private citizens.²¹³

ii. Area of Relevant Environmental Interest

An Area of Relevant Environmental Interest²¹⁴ refers to an area of small physical dimension that typically is characterized by little, if any, human occupation. The Area is nonetheless designated as meriting environmental protection in order to protect "extraordinary natural characteristics" or in order to protect rare biota typical to the region. Such areas may also be formed to regulate their permissible use so as to make them compatible with nature conservation.

These areas may consist of private and public properties. As so often, the issue of how to handle private property is problematic, and this portion of SNUC treats private property by shifting responsibility from legislators to regulators: "Respecting constitutional limits, there may be established norms and restrictions for the utilization of a private property located in an Area of Relevant Ecological Interest."²¹⁵

Unfortunately, the "constitutional limits" do not help clarify the rights at stake. On the one hand, the Constitution guarantees property rights,²¹⁶ although property must also fulfill its "social function,"²¹⁷ which is not further defined. The Constitution further provides, on the other hand, that "the law shall establish a procedure for taking property by necessity or public utility, or for social interest, providing that it is just and was previously indemnified in cash, saving the anticipated cases in this Constitution."²¹⁸ For the private property owner, these provisions could offer cold

212. *Id.* at art. 15, § 4.

213. *Id.* at art. 15, § 5.

214. *Id.* at art. 16.

215. *Id.* at art. 16, § 2.

216. C.F. art. 5(XXII).

217. *Id.* at art. 5(XXIII).

218. *Id.* at art. 5(XXIV).

comfort. Arguably biodiversity protection serves any of a “social function,” “necessity or public utility” or “social interest.” Thus, this provision seems destined to generate interpretive conflicts and disputes that, if history is any guide, will be won by the land-owner. In sum, the combination of constitutional and statutory provisions indicates that the power is left largely in the hands of the executive branch, with little clear guidance from the legislature. In the U.S., this well might be considered a delegation problem by which the legislature failed clearly to delegate authority to a regulatory agency²¹⁹ – an act that well might lead to invalidation of the law.

iii. National Forests

The provision creating National Forests²²⁰ seeks to protect areas with forest cover with a predominance of “native species”, a term that remains undefined in the law.²²¹ As such, the provision endeavors to (1) to permit the sustainable and multiple uses²²² of forest resources and (2) scientific research with an emphasis on methods of sustainable exploration of native forests. This type of UC may exist on public land only. As with Areas of Relevant Environmental Interest, however, private lands may be appropriated for public use, provided the owner is compensated as described in the previous paragraph.²²³

Public visitation on UCs designated as National Forests is permitted, subject to compliance with the terms established by the administrative agency responsible for its management.

219. See RICHARD J. PIERCE ET AL., ADMINISTRATIVE LAW AND PROCESS 36-37 (3d ed. 1999).

220. SNUC, *supra* note 6, at art. 14. Because states and municipalities have autonomous constitutional powers, these forests can also be state or municipal. *Id.* at art. 17, § 6.

221. In Brazil, as elsewhere, this is problematic since, over centuries, new species have been introduced and adopted as “native.” See, e.g., DEAN, *supra* note 2, at 225 (describing the introduction of non-Brazilian tropical trees in the 1850s).

222. SNUC, *supra* note 6, at art. 17. This focus on multiple resource uses reflects a change typical of Brazilian environmental law. For instance, the National Hydro-resources Policy demands that hydro-resources “always must” be used in proportion to the “multiple uses” of water. Lei No. 9.433, de 8 de janeiro de 1997, D.O.U. de 9.1.1997. (Brazil), available at <http://www.planalto.gov.br/CCIVIL/LEIS/L9433.htm>. Cf. Decreto No. 24.643 de 10 de julho de 1934, Col. Leis. Rep. Fed. Brasil, 4: 679, dez. 1934, available at http://www.planalto.gov.br/ccivil_03/decreto/D24643.htm. (favoring the use of water for hydroelectric power generation).

223. SNUC, *supra* note 6, at art. 17, §1. The specific law detailing and governing the expropriation procedure is Decreto Lei No. 3.365 de 21 de junho de 1941, D.O.U. de 18.7.1941. (Brazil), available at http://www.planalto.gov.br/ccivil_03/decreto-lei/Del3365.htm. The 1988 Constitution reaffirmed this state power. C.F. art. 5(XXIV).

Research is not only permitted, but also encouraged subject, again, to the prior authorization of the relevant administrative agency. Each National Forest must have a Consultative Council, with a presidency responsible for its administration and constituted by representatives of public institutions, civil society organizations and, if appropriate, members of the resident traditional population.²²⁴

Any discussion about a National Forest UC would be incomplete without consideration of another new law, namely the Public Forest Management Law of 2006.²²⁵ An important feature of this new law is its plan for granting concessions for the “efficient and rational” use of forests that will contribute to local, state and federal “sustainable development.”²²⁶ The new law locates primary responsibility for management of the forests with the state,²²⁷ although permits the issuance of concessions to private parties,²²⁸ following an environmental licensing and qualification process.²²⁹ Given the abuse of forests for private gain, and the criticism Brazil has endured as a result of this abuse,²³⁰ an important aspect of the new law is that it articulates criteria to be used in selecting concessionaires and is very specific about the type and contents required for the concession contract.²³¹ Furthermore, the new law

224. Decreto No. 6.040 announced this new definition of the term “traditional peoples and communities” as “culturally different groups that possess their own forms of social organization, occupy and use territories and natural resources as conditions for their cultural, social, religious, ancestral and economic reproduction, using knowledge, innovations and practices generated and transmitted by tradition.” Decreto No. 6.040, de 2, de fevereiro de 2007, D.O.U. de 8.2.2007. (Brazil), *available at* http://www.planalto.gov.br/CCIVIL/_Ato2007-2010/2007/Decreto/D6040.htm. In order to fall under the definition of traditional populations, a “culturally distinct group” must have depended on the local ecosystem for at least three generations. Mercadante, *supra* note 165, at 230. *See also* PAULO AFFONSO LEME MACHADO, DIREITO AMBIENTAL BRASILEIRO 803 (13th ed. 2005) (discussing the definition of traditional populations).

225. Lei No. 11.284, de 2 de março de 2006, D.O.U. de 3.3.2006. (Brazil), *available at* http://www.planalto.gov.br/ccivil_03/_Ato2004-2006/2006/Lei/L11284.htm.

226. *Id.*

227. *Id.* at art 5.

228. *Id.* at arts.10-16.

229. *Id.* at arts.18-19.

230. *See, e.g.*, André Rizek, *Ratos e, Agora, Cupins* [“Rats and, Now, Termites”], VEJA, June 8, 2005, *available at* http://veja.abril.com.br/080605/p_120.html (describing a federal police sting operation that led to the arrest of various officials of the environmental enforcement agency, IBAMA, involved in a scheme to profit from illegal timber harvests in the Amazonian state of Mato Grosso); Larry Rohter, *Amazon Forest Still Burning Despite the Good Intentions*, N.Y. TIMES, Aug. 23, 2002, at A1, *available at* 2002 WLNR 4037000 (noting weaknesses in IBAMA enforcement).

231. Lei No. 11.284, de 2 de março de 2006, D.O.U. de 3.3.2006, arts. 26-35 (Brazil).

identifies specific price terms for which materials harvested in such forests must be contracted,²³² and creates penalties for non-compliance with contracted terms, including revocation of the concession.²³³ In what has previously been a highly corrupt business, these are admirable legislative steps towards transparency, as are the CONAMA regulations issued pursuant to this new law, which create a system for identifying and tracking harvested material, in much the way that, in the U.S., the Resource Conservation and Recovery Act of 1976 ("RCRA")²³⁴ creates a manifest that follows hazardous waste from "cradle to grave."²³⁵

Whether this law, and its attendant regulations "stick", of course remains to be seen. At a minimum, however, they reflect an encouraging effort to elaborate upon and create a transparent system for securing the goal of SNUC to protect biodiversity. Taken together, the laws represent an intelligent and carefully-thought through effort to balance the environmental and economic values of public forests.

iv. Extractive Reserves²³⁶

Extractive Reserves are forms of UC defined as areas utilized by traditional populations, whose subsistence depends upon resource extraction and raising small livestock (chickens and fish, for example).²³⁷ Its basic objectives are both to protect the culture and way of life of these populations and to assure the sustainable use of the natural resources or the unit. In this, the Extractive Reserves UC reflects an important principle of contemporary Brazilian environmental law, namely that the environment refers not only to the biological environment, but also the cultural, human-made environment.²³⁸ As such, extractive reserves are composed

232. *Id.* at arts. 36-40.

233. *Id.* at arts. 44-45.

234. RCRA, 42 U.S.C. §§ 6901-6992k (2007).

235. PERCIVAL ET AL., *supra* note 132, at 320 (outlining RCRA's statutory structure). CONAMA enacted two resolutions to implement this system. See Resolução CONAMA No. 378, de 19 de outubro de 2006, D.O.U. de 20.10.2006. (Brazil), available at <http://www.mma.gov.br/port/conama/res/res06/res37806.pdf>; Resolução CONAMA No. 379, de 19 de outubro de 2006, D.O.U. de 20.10.2006. (Brazil), available at <http://www.mma.gov.br/port/conama/res/res06/res37906.pdf>.

236. Policies for managing extractive reserves antedate SNUC. A good English language treatment of the pre-SNUC system is ENVIRONMENTAL LAW INSTITUTE, BRAZIL'S EXTRACTIVE RESERVES: FUNDAMENTAL ASPECTS OF THEIR IMPLEMENTATION (1995).

237. SNUC, *supra* note 6, at art. 18.

238. See, e.g., National Environmental Policy Act, 42 U.S.C. § 4321 (2007) (reflecting the same principle).

exclusively of public property used by traditional populations.²³⁹ Once designated, any private property inside the UC must be appropriated to the State and the owners indemnified for his or her loss as described above for other UCs.²⁴⁰ Public visitation of Extractive Reserve UCs is permitted, providing that it is compatible with "local interests" and consistent with the Management Plan. Scientific research is both permitted and encouraged within an Extractive Reserve, subject as always to prior authorization by the administrative entity responsible for the UC.²⁴¹

The title of this reserve is somewhat deceptive and should not be understood to permit managed extraction by anyone other than already resident traditional populations. Hunting and mining are expressly forbidden,²⁴² and "commercial exploration of timber resources is permitted only on a sustainable basis and in light of consideration of the other activities conducted within the Extractive Reserve, in conformance with or permitted by the Management Plan of the Unit."²⁴³

Management of Extractive Reserves is handled by a Deliberative Council composed of representatives of public bodies, civil society organizations and traditional societies resident in the area.²⁴⁴ Presumably the Deliberative Council will decide whether commercial timber extraction is possible, and on what terms, subject to the Management Plan. Again, given the corruption that has followed logging activities, especially in the Amazon, a transparent, enforceable process is crucial. It is thus important to note that another provision of the SNUC regulates "commercial exploration of products, sub-products or services obtained or developed from natural, biological, scenic or cultural resources, or from the exploration of the image of the Conservation Unit, . . . [and] will depend upon the previous authorization of and will subject the

239. Use of the areas is to be regulated by contract; the resident traditional populations obligate themselves to participate in the preservation, recuperation, defense and maintenance of the UC. SNUC, *supra* note 6, at art. 23.

240. *Id.* at art. 18, § 1.

241. *Id.* at art. 18, § 4.

242. *Id.* at art. 18, § 6.

243. *Id.* at art. 18, § 7.

244. *Id.* at art. 18, § 2. In practice, the Deliberative Council will be the National Environmental Council, CONAMA, "with the attributes to accompany the implementation" of SNUC. *Id.* at art. 6 (I). CONAMA was created by article 6(II) of the National Environmental Policy of 1981, Lei No. 6.938, de 31 de agosto de 191, D.O.U. 2.9.1981. (Brazil), available at http://www.planalto.gov.br/ccivil_03/Leis/L6938org.htm.

explorer to a payment”²⁴⁵ While the nature of the authorization and amount of payment are left to subsequent regulation, the provision merits attention, particularly when coupled with the Extractive Reserve provision. Taken together, they suggest an effort to reduce the possibility of corruption by creating a detailed legal process that must comply with detailed regulations.

This, however, is a delicate balance to strike. Such burdensome restrictions on timber extraction, while having as their object protection of forests as natural resources, requiring protection from market pressures, could also suffocate the very subsistence communities the Extractive Reserve provision aims to protect, in the event that those communities are not populated by individuals well positioned to comply with detailed legal applications and record-keeping requirements.

v. Fauna Reserve

A Fauna Reserve UC²⁴⁶ is an area with an animal population of native species, whether terrestrial or aquatic, resident or migratory, as established in technical-scientific studies about sustainable economic management of such resources. A Fauna Reserve UC exists only on public lands. As with Extractive Reserve UCs, any private property within its limits must be appropriated to the State and the owners indemnified as described above for other UCs. In most other respects – public visitation, the ban on hunting and commercialization of products within the UC – Fauna Reserves are handled like Extractive Reserves. To date, no Fauna Reserves have been created by the Brazilian government, although one was proposed in late 2007.²⁴⁷

vi. Sustainable Development Reserves

Sustainable Development Reserve UCs are areas that are home to traditional populations whose existence is based on “sustainable systems of natural resource exploration,” developed over the course of generations. The basic objective of these UCs, as with so many Sustainable Development UCs, is two-fold: they are

245. SNUC, *supra* note 6, at art. 33.

246. *Id.* at art. 19.

247. *Id.* at art. 19, §§ 2-4. See also *Consulta pública para a criação da Reserva de Fauna do País acontece amanhã* [Public hearing for the creation of the first Fauna Reserve in the country to take place tomorrow] (Oct. 1, 2007) available at http://www.ibama.gov.br/novo_ibama/paginas/materia.php?id_arq=5621 (last accessed Feb. 27, 2008).

designed both to preserve nature and the way of life of traditional populations but also, at the same time, to help improve the lives of affected populations. In particular, the Sustainable Development Reserve UC aims to provide means to “value, conserve and improve the knowledge of and environmental management techniques developed by these populations.”²⁴⁸ As with other Sustainable Development UCs described above (such as National Forests), the Sustainable Development Reserve UCs are exclusively public,²⁴⁹ although as in Extractive and Fauna Reserves, use for private purposes by traditional populations is permitted.²⁵⁰ These UCs have a Deliberative Council charged with management oversight, as with comparable UCs.²⁵¹

Importantly, however, the administrative rules that must be developed for management of the Sustainable Development UCs must, be more detailed than for some other types. For example, these rules must identify both areas that merit “complete” protection — where “indirect” use only is permitted — and those which are “sustainable”, meaning those where “direct” resource use is permitted.²⁵² Even sustainable areas must, however, provide “ecological corridors” and “shock absorber zones,” devices familiar to U.S. environmental professionals and planners.²⁵³

In striking contrast to many of the Complete Protection UCs, which are closed to the public, the Sustainable Development UC actually is designed to encourage (1) public visitation and (2) scientific research. The justification for this is that public visitation is compatible with the educational purposes of this type of UC. Moreover, their creation supposes that scientific research focused on nature conservation can improve the “relation” of the resident population to their environment, by informing them of the results of the research through environmental education programs.²⁵⁴ In addition, (3) Sustainable Development Reserve UC rules must take account of the “dynamic equilibrium” between the size of the

248. *Id.* at art. 20, § 1.

249. *Id.* at art. 18, §10. Therefore, private properties must be appropriated to the State and the owners indemnified. *Id.* at art. 20, § 2.

250. *Id.* at art. 23. Pursuant to article 23 of the SNUC, once again, possession and use of these areas by traditional populations will be regulated in contract. *Id.*

251. *Id.* at art. 18, § 2.

252. SNUC, *supra* note 6, at art. 20, § 6. For statutory definitions of “direct” and “indirect” see *supra* note 206.

253. See, e.g., JOHN R. NOLON, OPEN GROUND: EFFECTIVE LOCAL STRATEGIES FOR PROTECTING NATURAL RESOURCES 268-294 (2003) (reporting different strategies for habitat preservation).

254. SNUC, *supra* note 6, at art. 20, § 5 (II).

population and the areas to be conserved.²⁵⁵ On its face this may sound appealing, but on reflection the phrase is maddeningly vague, and invites abuse by skillful advocates who could argue that the population's interests are superior to any environmental interests at stake. In the U.S. context, such vague language could well trigger an administrative delegation problem.²⁵⁶

vii. Private Reserve of Natural Patrimony

Private Reserves of Natural Patrimony²⁵⁷ consist of privately-owned land that is designated for perpetual use as a property in which biological diversity will be preserved. There is a historical basis for this form of reserve, dating back to the last military dictatorship. The Forest Code of 1965 provided that "the owner of non-preserved forest, in the terms of this law, may seek to protect it in perpetuity, if its existence is verified in the public interest by the forest authority."²⁵⁸

These UCs are similar to conservation easements on private land in the U.S., where the conservation obligation runs with the land in perpetuity.²⁵⁹ Distinct from other forms of UC, protection for Private Reserves is sought by the individual private land owner, and not by the State. In this instance, the private owner signs a formal agreement with the State to have his or her property so designated and, upon signature, the agreement is noted on the title in the Public Real Estate Registry. Furthermore, a Private Reserve strictly limits the form of activities that may be conducted within the UC. Absolutely no commercial activities are permitted;²⁶⁰ only scientific research, and public tourism, recreational or educational activities are allowed. For this reason, many consider this effectively a Complete Protection UC rather than a Sustainable Development UC, even though the law classifies it as

255. *Id.*

256. PIERCE ET AL., *supra* note 219, at 36-37.

257. SNUC, *supra* note 6, at art. 21.

258. *See, e.g.*, ALENCAR ET AL., *supra* note 7, at 45. Article 6 of the Brazilian Forest Code of 1965, Lei No. 4.771, de 15 de setembro de 1965, D.O.U. de 16.9.1965. (Brazil), available at <http://www.planalto.gov.br/ccivil/Leis/L4771.htm>, was revoked with the SNUC's passage.

259. SNUC, *supra* note 6, at art. 21.

260. *Id.* Interestingly, the original text of the law also permitted mineral exploration. *Id.* at art. 21, § 2(III). Such activities, however, are obviously incompatible with the objectives of any kind of Unit of Conservation and were deleted from the current text of the law by a Presidential line item veto. *See* Mensagem No. 967, de 18 de julho de 2000, available at http://www.planalto.gov.br/ccivil_03/Leis/Mensagem_Veto/2000/Mv0967-00.htm.

of the latter type.²⁶¹

Not surprisingly, however, many private owners do not have the ability to administer a UC.²⁶² The law therefore provides a mechanism for federal UC authorities to help guide the owner with respect to the management of such a UC, particular with respect to relevant scientific and technical concerns.²⁶³

F. Designating a Conservation Unit

The previous section explains the elaborate SNUC scheme, which makes possible the creation of a wide range of conservation reserves. What it does not do is make clear how exactly a particular UC is to be created, and what criteria will be used to determine that an area merits one designation and not another. In Brazil, "the establishing of the first Conservation Units, the National Parks, followed aesthetic criteria and, only later, inclusive with the creation of new mechanisms of protected areas . . . more technical criteria have been adopted."²⁶⁴ Dias argues that this change occurred with the creation of the New Forest Code. While the first Forest Code sought the protection of beautiful vistas or sites of great cultural importance, the New Forest Code sought to protect ecosystems containing threatened species or a shortage of resources for commercial exploitation.²⁶⁵ However, other factors and influences led to the criteria used in the law to determine how to create a UC, and influence in practice whether a UC is created at all.

One such factor was "[t]he distance and isolation between [UCs]."²⁶⁶ The few UCs in existence before 2000 existed to preserve certain types of habitat, such that distance between UC was relatively unimportant. The UCs then in existence also were of relatively large size, so that they were considered self-sustainable,

261. CASTRO & NETO, *supra* note 114, at 203-04.

262. For example, this type of reserve has been created by Brazilian personalities like the singer Ney Matogrosso, the photographer Sebastião Salgado, the journalist Miriam Leitão, and others, although none of them are well placed to manage such a resource. See Folha Verde, RPPN – Reserva Particular de Patrimônio Natural, <http://folhaverde.wordpress.com/2007/05/25/rppn-reserva-particular-do-patrimonio-natural/> (last visited October 6, 2007).

263. SNUC, *supra* note 6, at art. 21, § 3.

264. NURIT BENSUSAN, CONSERVACAO DA BIODIVERSIDADE EM AREAS PROTEGIDAS 43 (2006).

265. *Id.* at 43.

266. *Id.* at 43 (citing B.F.S. Dias, O Papel Das Unidades de Conservação Face a Convenção Sobre Diversidade Biológica e à Constituição Federal de 1988: Uma Análise Conceitual Hierarquizada (1994)).

and the question of species migration between UCs was of little importance.²⁶⁷

Still another, historical pressure influencing the criteria used to establish Brazilian UCs was the influence of "international credit and economic aid agencies, which pressured for the implementation of [a system of] of protected areas as a condition for financing the big projects typical of the Brazilian 'economic miracle'." Moreover, due to the huge external debt that Brazil experienced as a consequence of these activities, especially in the Amazon, the dynamic of development and of creation of protected areas was a norm dictated in great part by these agencies.²⁶⁸

In addition, of course, an element that strongly influences the choice of areas meriting special protection was the price that the government was willing to pay; unwillingness to devote resources to purchase UCs is another factor that impedes their development. It is perhaps not surprising, then, to note Carla Morsello's observation that "what can be said about the Brazilian federal system of UCs, [is that] . . . they are not representative of the ecosystems in the country. The solution," she continued, is not only "to establish more and bigger reserves. The real solution is to create new protected areas in the places where they will contribute more to the conservation of biodiversity, with a basis in plans that consider the ecological aspects at regional and national levels."²⁶⁹ This kind of planning is not a part of the comprehensive law. Without it, however, the law may well not stick.

In fact, however, there is a constitutional basis for engaging in such planning. The environmental article – Article 225 – provides, *inter alia*, that "all have the right to an ecologically equilibrated environment." This requirement imposes on public authorities a number of duties, including the obligation to "(1) preserve and restore essential ecological processes and promote the ecological management of the species and ecosystems; (2) preserve the diversity and integrity of the nation's genetic patrimony . . . and (3) define, in all the units of the Federation [meaning at the national, state and municipal levels], especially protected areas and their components to be especially protected, and, . . . (4) protect the fauna and flora, . . . prohibiting the practices that put in

267. MORSELLO, *supra* note 168, at 180.

268. *Id.* at 183 (citing W.H. Fisher, *Megadevelopment, Environmentalism, and Resistance: The Institutional Context of Kayapo Indigenous Politics in Central Brazil*, 53 HUM. ORGAN. 220-32 (1994)).

269. MORSELLO, *supra* note 168, at 182.

risk their ecological function, provoke species extinction or submit animals to cruelty."²⁷⁰ Clearly these provisions provide constitutional authority for UC creation.

1. Creating a Conservation Unit

In the creation of a UC, almost every UC must adhere to two basic pre-requisites: there must be technical studies prepared for its creation and there must be public consultation.²⁷¹ Ecologic Stations and Biological Reserves are exempt from this public consultation, probably due a confidence in the abilities of scientific and technical personnel, and not wanting to constrain their activities inside these distinctive types of UC.²⁷²

For U.S. readers, accustomed to thinking of public consultations as means to inform and involve the broader public as much as, if not more than, private property owners, the impetus for the public consultation requirement is especially interesting. As noted at the outset, the tradition of respect for private property holding runs especially deep in the Brazilian legal and social tradition.²⁷³ In addition, the 1988 Constitution constitutes an explicit rejection of the authoritarian rule that characterized Brazilian government until 1984. Thus, the public consultation provision is understood both as a means to avoid authoritarianism and also to insure appropriate protection of private property rights, since the power to hold private property is to be respected and its limitation undertaken only with the greatest care.²⁷⁴ At the same time, however, to be legitimate, public consultation requires that the local population and other interested stakeholders receive "adequate and intelligible information,"²⁷⁵ as in U.S. law.²⁷⁶ Thus, the public consultation requirement aims both to protect private property holders and inform the affected public.

The justification for technical studies is more predictable.

270. C.F. art. 225, § 1(VII).

271. SNUC, *supra* note 6, at art. 22, § 2. Two forms of UC, the Ecological Station and the Biological Reserve, may dispense with the public consultation requirements. *Id.* at art. 22, § 4.

272. *But see* PIERCE ET AL., *supra* note 219, at 122 (1999) ("The traditional 'expertise' rationale through the use of specialized agencies has fallen into disfavor in recent years in response to the contention of many observers of the process that agencies often do not have a good understanding of their areas of responsibility.").

273. *See, e.g.*, SINGER, *supra* note 91, at 18; Fernandes, *supra* note 5, at 47; REPORT ON THE SITUATION OF HUMAN RIGHTS IN BRAZIL, *supra* note 94.

274. *See* C.F. art. 5, § 1(III).

275. SNUC, *supra* note 6, at art. 22, § 3.

276. *See, e.g.*, PIERCE ET AL., *supra* note 219, at 324-26.

They are needed simply to inform about the consequences of the designation of an area as a UC, just as in an environmental impact review in the U.S. and much of the world.²⁷⁷

Another area of contention with respect to the creation of UCs relates to the definition of the Public Power authorized to secure their designation. Clearly, the Executive can do so; this is within its constitutional authority.²⁷⁸ However, the Legislature is also theoretically competent to create a UC, as the voice of the public will.²⁷⁹

Some argue that the Judicial Branch also has authority to create a UC on the basis that it is part of the Public Power.²⁸⁰ On the other hand, others maintain that the Judiciary cannot create UCs on the grounds that to do so would harm the principle of separation of the Powers and, in the SNUC case especially, there are requisites to the creation of a UC that are not compatible with the jurisdictional function, such as the need to solicit scientific research and public consultation.²⁸¹

2. Special Characteristics

A distinctive feature of Brazil's UC law is that it incorporates important innovations in integrated wildlife and ecosystem management.²⁸² Article 25 details requirements for the creation of buffer zones and ecological corridors.²⁸³ A buffer zone is an area around the UC that protects it from external ecological damage, creating some limitations on occupation of this area. Ecological corridors, by contrast, are wildlife management areas created to permit the migration of species from one UC to another. All UCs must have a buffer zone and, "if convenient", an ecological corridor, excepting Environmental Protection Area and Private Reserve of Natural Patrimony UCs.²⁸⁴ The language of conve-

277. In Brazil, the Environmental Impact Assessment ("EIA") is constitutionally prescribed. *Cf.* C.F. art. 225(IV). *See also* POL. NAC., *supra* note 97, at art. 10 (requiring licensing for any activity that will cause environmental harm); NEPA, 42 U.S.C. § 4332(c) (enacting the EIA in the U.S.); Rio Declaration Principle 17, *supra* note 103, at 21 (advocating use of the EIA at a national level).

278. *Cf.* C.F. art. 37.

279. MACHADO, *supra* note 224, at 763.

280. CASTRO & NETO, *supra* note 114, at 174.

281. This is not an established position, but one advanced by, e.g., CATSRO & NETO, *supra* note 114, at 173 (citing possible case authority).

282. *See generally* NAGLE & RUHL, *supra* note 10, at 313.

283. These terms are defined in SNUC, *supra* note 6, at art. 2(XVII) and (XIX) respectively.

284. *Id.* at art. 25.

nience is, of course, problematic, since it establishes no duty and can easily be explained away.

Importantly, the rules for the administration of and the limits of the buffer zones and ecological corridors may be defined both at the time the UC is created or later, a provision that allows for the application of new knowledge relating to integrated ecosystem and wildlife management.

Moreover, SNUC's so-called "mosaic" provision²⁸⁵ contemplates situations in which multiple UCs may border or overlap one another or other private or public protected areas.²⁸⁶ In such situations, the law provides that the management of such a grouping must be done in "an integrative and participatory form, taking into account its distinct conservation objectives, [and] the manner [in which] to make compatible the presence of biodiversity, valuing of social diversity and sustainable development in a regional context."²⁸⁷ Recognition of a "mosaic" area requires recognition by the Environment Ministry. Once established, the mosaic area must have a Consultative Council, including representatives of public entities and civil society. The mosaic's Consultative Council is responsible for coordinating the management of the UCs of which it is composed.²⁸⁸

3. Developing a Management Strategy

Not unlike the "cooperative federalism" held to be a distinctive feature of U.S. environmental law,²⁸⁹ the federal Brazilian UC law in turn directs that the actual exercise of authority over a UC is exercised at the local (rather than at the state) level. To this end, "all Conservation Units shall have a management plan"²⁹⁰ that constitutes the management strategy.²⁹¹ This strategy must take into account the various requirements imposed by the law –

285. *Id.* at art. 26. See also Decreto Lei 4.340, *supra* note 171, at arts. 8-11 (regulating the implementation terms of the mosaic provision).

286. SNUC, *supra* note 6, at art. 26.

287. *Id.*

288. Decreto No. 4.340, *supra* note 171, at art. 9. See also SNUC, *supra* note 6, at arts. 17-20 (establishing rules for all other administrative councils).

289. PERCIVAL ET AL., *supra* note 132, at 103-107. (discussing this and other models of federal-state relations).

290. SNUC, *supra* note 6, at art. 27.

291. *Id.* at art. 2(XVII). According to the terms of the law, a "management plan" is "a technical document by which, based on the general objectives of a conservation unit, establishes its zoning and the norms that must guide the use of the area and the management of its natural resources, including the implementation of the physical structures necessary to manage the unit." *Id.*

the UC area, its buffer zone, the ecological corridors, and the recognition of the importance of integrating a UC into the social and economic life of neighboring communities.²⁹² However, the management strategy is very much a local product. In the case of Extractive Reserve, Sustainable Development Reserve and Environmental Protection Area UCs, for example, popular participation of the resident population in the articulation and implementation of the management strategy is required.²⁹³

The law also recognizes, however, that such plans – particularly when they involve a public participation process – are not developed overnight. Thus, the management strategy needs to be formulated within five (5) years from the date of creation of the UC.²⁹⁴ However, in the case of Complete Protection UCs, until the management strategy is implemented, all activities and construction must be limited only to those “destined to guarantee the integrity of the resources that the unit aims to protect, assuring the traditional population who happen to be residents in the area the conditions and necessary means for the satisfaction of their material, social and cultural needs.”²⁹⁵

4. Management

UC management is distinctive in that it is not left entirely to state or other official, governmental entities. Specifically, UC management can be conducted directly by official entities or can be achieved in association with “Civil Society Organizations of Public Interest” (*Organizações da Sociedade Civil de Interesse Público* – OSCIP). To perform this function, an OSCIP must be determined to act in the public interest, and specifically to have as its mission objectives related to those of UCs – such as habitat and biodiversity protection. Furthermore, such an OSCIP must be a non-profit.²⁹⁶ An OSCIP is chosen to manage a UC through a public bidding process.²⁹⁷

292. *Id.* at art. 27, §1.

293. *Id.* at art. 27, §2.

294. *Id.* at art. 27, §3.

295. *Id.* at art. 28.

296. See Lei No. 9.790, de 23 de março de 1999, art. 1, D.O.U. 24.3.199. (Brazil), available at <http://www.planalto.gov.br/ccivil/LEIS/L9790.htm> (authorizing the creation of OSCIPs). OSCIPs are roughly equivalent to tax-exempt “401(C)(3)” organizations in the U.S. There are particular requirements for an OSCIP managing a UC. Its objectives must include environmental protection or promotion of sustainable development. Decreto No. 4.340, *supra* note 171, at art. 22.

297. See Lei No. 8.666, de 21 de junho de 1993, D.O.U. 6.7.1994. (Brazil), available at <http://www.planalto.gov.br/ccivil/Leis/L8666cons.htm> (stating that the choice of the

The entity responsible for management of the UC is required to work with the scientific community in order to promote research into fauna, flora and other aspects of UCs, and engage in sustainable development of natural resources, always taking care to value the knowledge of traditional populations.²⁹⁸ If it chooses, moreover, the management entity may, by written agreement, transfer the research obligations to national research institutions²⁹⁹, including universities, for example.

Interestingly, the law also expressly permits donations and resources to support administration of the UCs. These may come from sources, "national or international, with or without limitations, originating in private or public organizations or from [private] persons who desire to collaborate in its conservation."³⁰⁰ Although this provision may on its face seem unremarkable, it in fact addresses a delicate matter. To generalize, Brazilians tend as a nation to be rather nationalistic and resistant to suggestions that they share sovereignty in any manner over natural resources within Brazilian territory.³⁰¹ In the biodiversity context, this nationalism can be especially heartfelt, given the potential material wealth its bio-riches could provide to the country.³⁰² One government survey found that 75% of the population believes that the U.S and other wealthy nations have designs on its bio-riches, and above all the Amazon.³⁰³ A leaked military intelligence report officially confirmed this fear, saying that "[t]he main [non-governmental organizations working in the Amazon region] are, in reality, pieces in the great game in which hegemonic powers are engaged to maintain and augment their domination. Certainly, they serve as cover for these secret services."³⁰⁴ Given the predominance of these views, it is hard to imagine how, practically and

OSCIP to manage a UC is accomplished through the public bidding process used by the national government in any situation).

298. SNUC, *supra* note 6, at art. 32.

299. *Id.* at art. 32, § 3.

300. *Id.* at art. 34. The Portuguese language does not use the phrase "private persons," but rather, "physical persons" (*peçoas físicas*), a Brazilian legal category that corresponds to the category of "private person" in the English language.

301. See, e.g., CASTRO & NETO, *supra* note 114, at 664-666 (considering the delicate subject of shared responsibility for Amazon management).

302. Although, in practice, Brazilian behavior seems to indicate that the nation does not really adopt this long-range view. See *supra* notes 1, 92-94 and accompanying text.

303. Larry Rohter, *In the Amazon: Conservation or Colonialism*, N.Y. TIMES, July 27, 2007, at A4.

304. *Id.* (quoting a Brazilian military intelligence report).

politically, this provision can be exploited to its fullest possible extent.

G. *Final Observations About SNUC*

As the preceding discussion makes clear, a central aim of SNUC is to strike a balance between environmental protection and “sustainable” economic development of environmental resources. Consequently, key features of the SNUC address both the scientific and commercial implications of the law. That is, it reflects a current view that the value of conservation lies not only in the environmental benefits to biodiversity³⁰⁵ and human health,³⁰⁶ but also in possibilities for scientific exploitation of areas of particular environmental interest and their industrial and commercial applications, above all in biotechnology.³⁰⁷

1. Commercialization

“The commercial exploration of products, sub-products, or services obtained or developed from natural, biological, scenic or cultural resources, or the exploration of the Conservation Unit image³⁰⁸ [sic] depend upon previous authorization and subject the explorer to payment, except the Environmental Protection Area and the Private Reserve of Natural Patrimony.”³⁰⁹ The Private Reserve of Natural Patrimony is excepted because it is not public land, so that the ownership rights cannot be interfered with, in keeping with the Brazilian legal tradition respecting the integrity of private ownership. For the same reason, the owner is not compelled to use products commercialized from his own land. In the case of the Environmental Protection Area, the exception is consistent with the reverence for private property that the UC con-

305. See, e.g., NAGLE & RUHL, *supra* note 10, at 15-48.

306. See, e.g., HOWARD FRUMKIN, LAWRENCE FRANK & RICHARD JACKSON, URBAN SPRAWL AND PUBLIC HEALTH: DESIGNING, PLANNING AND BUILDING FOR HEALTHY COMMUNITIES 1-25, 216-222 (2004).

307. This is, of course, what, in part, prompted drafting of the Cartagena Protocol on Biosafety to the Convention on Biological Diversity (“Cartagena Protocol”), one of the opening declarations to which states that parties to the Convention recognize “that modern biotechnology has great potential for human well-being if developed and used with adequate safety measures for the environment and human health.” Cartagena Protocol on Biosafety to the Convention on Biological Diversity, Feb. 23, 2000, 39 I.L.M. 1027. See also Andrew C. Revkin, *Biologists Sought a Treaty; Now They Fault It*, N.Y. TIMES, May 7, 2002, at F1 (reporting that competition fostered by beliefs in potential for tropical species to yield scientific results).

308. SNUC, *supra* note 6, at art. 33. What appears to be meant here is photographing or visual mapping of the area.

309. *Id.*

sistently receives in the SNUC law. (This is true, for example, even in contrast to the Private Reserve of Natural Patrimony – where there is a voluntary limitation of the uses of the property. In the case of the Private Reserve, however, the concept is incompatible with commercial exploitation.)

Any commercial exploration, however, must “agree with the objectives of each unit category.”³¹⁰ Such activities furthermore, are subject to a public vetting requirement. New authorizations of commercial exploration of public domain UC’s resources and services “are only permitted if anticipated in the Management Plan, [approved] by a decision of the [responsible] agency and [given a] hearing before the relevant Conservation Unit council.”³¹¹

2. Scientific Research

Similarly, the manner in which scientific research may be conducted within a UC is carefully circumscribed. For example, the SNUC law provides that scientific research inside the boundaries of a UC cannot put at risk surviving examples of species within protected ecosystems. In addition, as suggested in some of the examples of UC described above,³¹² the administrative entity responsible for the management of a UC must approve any scientific research, excepting within an Environment Protection Area or Private Reserve of Natural Patrimony UCs.³¹³ These exceptions exist because, in the case of the Private Reserve of Natural Patrimony, the property is private, and in the case of the Environment Protection Area, the law strikes a balance, allowing greater respect for private property within the boundaries of this type of UC. In sum, the requirement to conduct scientific research stems from the realization that research can both benefit future environmental protection and also better the material circumstances of the human population. However, the provision clearly strives to safeguard against the possibility that any such research would be conducted in a purely self-interested way and, above all, so as not to further impair environmental quality.³¹⁴

310. Decreto No. 4.340, *supra* note 171, at art. 25.

311. *Id.* at art. 26.

312. *See infra* Parts III(D)(1)(a)(i-ii), III(D)(1)(b)(I, iii, iv and vi).

313. SNUC, *supra* note 6, at art. 32, §2.

314. This is, of course, a notoriously difficult balance to strike and one that has been especially present in global discussions about biodiversity protection. *See* U.N. Convention on Biological Diversity, arts. 17-19, June 5, 1992, 1760 U.N.T.S. 79.

3. Compensation for Activities That May Significantly Degrade the Environment

SNUC and its implementing Decree Law also seek mitigation for possible harm to fragile and protected environments.³¹⁵ Specifically, activities that are considered those that may significantly degrade environmental quality³¹⁶ must compensate for their harm even before beginning the activity. This compensation is measured in advance, by means of an EIA.³¹⁷ This compensation must be in an amount at least 0.5% of the anticipated total cost of the activity, as determined by the relevant environmental regulator.³¹⁸ These mitigation payments are then used to protect resources within these UCs.³¹⁹

There is much to admire in this requirement. First and foremost, the compensation requirement at once incorporates the polluter pays principle and a version of the precautionary principle into Brazilian environmental law – the latter in that the payment presumably discourages investments that will effect environmental harm. The requirement is problematic, nonetheless, and for several reasons. First, it may discourage investments because it is a fixed rate, so that the higher the investment the higher the compensation payment. Second, it represents a break from a central principle of civil compensation, namely that payments shall be made only when damage has occurred because a right has been infringed upon.³²⁰ Third, it is legally questionable for the law to establish a minimum, but not a maximum amount of compensation. This may be true both because it may unjustly enrich if there is a minimum compensation,³²¹ and if there is no maximum and there are no defined criteria for calculating the amount, other

315. See SNUC, *supra* note 6, at art. 36; Decreto No. 4.340, *supra* note 171, at arts. 31-34.

316. CONAMA's first official resolution lists activities that degrade environmental quality. See Resolução CONAMA No. 001, de 23 de janeiro de 1986, D.O.U. de 17.2.86. (Brazil), available at <http://www.mma.gov.br/port/conama/res/res86/res0186.html>.

317. SNUC, *supra* note 6, at art. 36.

318. *Id.*

319. *Id.*

320. See Antonio Gidi, *Class Actions in Brazil – A Model for Civil Law Countries*, 51 AM. J. COMP. L. 311, 345 (2003) (discussing the difficulty of vindicating “unattached” rights in a civil law jurisdiction like Brazil). Similar concerns, of course, drive decisions in U.S. law as well. See RICHARD A. EPSTEIN, TORTS 606 (1999) (noting the challenge of establishing damages for pure economic loss).

321. See Lei. No. 10.406, de 10 de janeiro de 2002, arts. 884-885, D.O.U. de 11.1.2002, (Brazil), available at <http://www.planalto.gov.br/CCIVIL/leis/2002/L10406.htm>.

constitutional and legal principles may be violated.³²²

Furthermore, in practical terms such penalties may not be appropriately applied. There are not yet sufficient examples of this penalty being applied to evaluate the provision's effectiveness. Nonetheless, without better fiscal enforcement nationally, it is doubtful, sadly, that the true penalty will be assessed – that, to answer the question with which this article began, the provision may well not “stick”. This is at true for at least three reasons. First, Brazil is a country where “many people *pretend* to pay taxes, and the state *pretends* to provide services.”³²³ Second, in terms of the political will required to impose the penalty, even the President has complained about environmental impediments to growth,³²⁴ making one wonder whether environmental officials will have the stomach to impose significant penalties. Third and finally, when IBAMA's own regulators, the ones who have been charged with enforcement, have in very recent history involved themselves in a scheme to flout logging restrictions in one of the country's most precious and at risk ecosystems, namely the Amazon,³²⁵ assessment of such penalties at appropriate amounts is doubtful. That is, the calculation of nothing less than .5% of the “total anticipated costs” is an invitation to manipulation, and past performance does not give confidence that regulators will err on the side of the environment.

IV. *Critique: SNUC Potential and Potential Pitfalls*

The question with which this article began was whether SNUC is a law that will “stick.” This section aims to outline an answer to that question, in light of the extensive description of the law and the environments it aims to protect, which appears above.

The final section will begin by highlighting SNUC's strengths. It will then identify problems with the law and its enforcement, and amplify that discussion with reference to current legal debates about it in Brazil. Finally, the section will conclude with an assessment of SNUC's future prospects as a law that “sticks.”

SNUC's great strengths are two. The first is its descriptive

322. Édís Milaré & Priscila Santos Artigas, *Compensação Ambiental: questões controversas*, in REVISTA DE DIREITO AMBIENTAL 113 (Antônio Herman V. Benjamin & Édís Milaré eds., 43rd ed., July-Sept. 2006).

323. Kurt Weyland, *The Brazilian State in the New Democracy*, in DEMOCRATIC BRAZIL: ACTORS, INSTITUTIONS AND PROCESSES, 57 (Peter R. Kingstone & Timothy J. Power eds., 2000) (applying the Argentine saying to Brazil).

324. Rohter, *supra* note 76, at 1.

325. See *supra* note 35 and accompanying text.

achievement. The law reflects a carefully thought out scheme for protection that goes beyond its commitment to "conservation" in the title. That is, SNUC presents a model for those who wish to create environmental protection areas that serve both conservationist and preservationist ends. True, the law has some repetitions that could be collapsed without harm, such as the distinction between Ecological and Biologic Reserves – a distinction, as they used to say, without a difference. It also has some vagueness typical of nearly any statute,³²⁶ but in the overall scheme of a law that seeks with great success to provide a comprehensive framework that serves biodiversity protection and related goals, this is unsurprising and correctable. At the same time, SNUC incorporates features like wildlife corridors, vegetation buffers and aims to grapple with the difficulty of "mosaic" protected areas. This is a particularly complicated matter in a federative government like Brazil's where, as in the U.S., competing jurisdictional claims (federal, state, local) must be accommodated at once. In these aspects, SNUC is to be admired, again, for its comprehensive design.³²⁷

Second, in the context of a nation state that has (like most) not demonstrated a deep commitment to protect traditional populations,³²⁸ SNUC's consistent respect for the essential role, rights and obligations of communities resident within protected areas reflects an advance in Brazilian social, legal and environmental thinking about the interests that are encompassed within terms like "environmental protection" and "sustainable development." At least on paper, furthermore, this recognition injects an essential popular voice in the process. Similarly, SNUC's commitment to transparency of process and citizen participation in the definition and management of areas to be protected and designated to receive protection under the law are noteworthy and positive advances in that they promise to help insure that SNUC can be used not to further strengthen the rights of individual landowners but to serve the interests of the entire nation.

Once again, it must be remembered that these provisions are also part of a larger process to construct participatory democracy in Brazil.³²⁹ Historically, Brazilians have tended to defer judg-

326. PIERCE ET AL., *supra* note 219, at 36-37.

327. ANTUNES, *supra* note 162, at 664.

328. *But see* FAUSTO, *supra* note 89, at 336 (noting that the dismissive attitude towards indigenous people appears to be changing).

329. *See, e.g.,* Boaventura de Sousa Santos, *Participatory Budgeting in Porto Alegre: Toward a Redistributive Democracy*, 26 POL. & SOC'Y 461-510 (1998) (explaining that participatory budgeting efforts have gained positive attention in

ment on national management to the powers that be, rather than engaging in sustained, broad-based movements for social transformation.³³⁰ If actors and institutions in Brazilian civil society take seriously SNUC's provisions for citizen (and especially local) participation and UC management, this will help guard against hegemonic corporate control and also promote transparency. In the process, participation in the creation of UCs will constitute an expression of the public desire to build solid democratic institutions.

This being said, civil society organizations have not incorporated the environmental question into their activism: "there has never been a proper political treatment of the environmental question by most of the existing socio-political agents, and therefore its political character has always been minimized, if not ignored."³³¹ These words were published fifteen years ago, but still today they remain largely true. In 1992, Fernandes further argued that the "[c]auses and costs of pollution must be deeply analyzed in order to demystify developmentalist appeals."³³² Sadly, the development-at-any-cost attitude of even a populist, leftist President and his government,³³³ demonstrate that this "deep analysis" has not occurred, or at least has not penetrated government and industrial circles that matter. This amounts to, regrettably, an affirmation of Fernandes' observation that "[t]he new Constitution may have replaced the liberal fundamentals of the former liberal economic order, but it still keeps much of the traditional liberal and obsolete structure of distribution and exercise of political power."³³⁴

In short, SNUC faces significant challenges if it is truly to stick. First, it will require diligence to insure that SNUC's

southern Brazilian municipalities); see also Sérgio Gregório Baierle, *The Explosion of Experience: The Emergence of a New Ethical-Political Principle in Popular Movements in Porto Alegre, Brazil*, in CULTURES OF POLITICS/POLITICS OF CULTURES: RE-VISIONING LATIN AMERICAN SOCIAL MOVEMENTS 118-138 (Sonia E. Alvarez, Evelina Dagnino & Arturo Escobar eds., 1998).

330. SKIDMORE, *supra* note 4, at 39. Since the last dictatorship, however, the power of civil society has clearly been unleashed. See, e.g., MARIA HELENA MOREIRA ALVES, STATE AND OPPOSITION IN MILITARY BRAZIL (1985); Kathryn Hochstetter, *Democratizing Pressures from Below? Social Movements in the New Brazilian Democracy*, in CULTURES OF POLITICS/POLITICS OF CULTURES: RE-VISIONING LATIN AMERICAN SOCIAL MOVEMENTS, 162-181 Sonia E. Alvarez, Evelina Dagnino & Arturo Escobar eds., 1998).

331. Fernandes, *supra* note 5, at 52.

332. *Id.* at 54.

333. See *supra* notes 76-77.

334. Fernandes, *supra* note 5, at 54.

breadth of coverage is implemented in fact. That is, given the nation's history of resource exploitation for short-term gain and the inattention to previous pieces of landmark environmental legislation like the National Biodiversity Policy,³³⁵ much needs to be done in order to insure SNUC's effective implementation. Given past history, for example, it is easy to imagine SNUC being applied in such a way so as to allow almost exclusively for the creation of liberally-interpreted Sustainable Use UCs instead of Complete Protection UCs, resulting in a triumph of the predatory resource exploitation that has characterized much of Brazil's history. In this connection, for example, the recent effort of the Lula government seeking to sell concessions "to sustainably work up to 13 million hectares of forested land" in the Amazon basin is not promising, because it represents a variation on a common theme in Brazilian history, namely the turning over of state oversight to private interests.³³⁶ The same can be said, regrettably, of another new Presidential decree law that ostensibly "streamlines" bio-prospecting rules by granting umbrella licenses rather than project-specific requests. Not only does this once again weaken the state oversight role, but the decree law also "eliminates the requirement that bio-prospecting scientists or companies submit a benefit-sharing contract when seeking approval".³³⁷ The latter provision effectively eliminates the need to focus on a local voice and local resident interests.

Second, and on a related point, SNUC risks being abused by land speculators who will use the law as a front to protect their interests. For example, in parts of the coastal Atlantic rainforest in southern Rio de Janeiro state, conflicts are brewing between *quilombolos* – descendents of escaped slaves who have over centuries created distinct communities – and *caiçaras*, ethnically-distinct fishing communities that evolved from inter-marriage between Portuguese settlers, Indians and African slaves, and Indians. The conflicts pit the *quilombolos* and *caiçaras* against the Indians, members of the former two groups claiming that

335. See *supra* Part III.B.

336. *Brazil to Begin Selling Forest Concessions*, 30 INT'L. ENV. REP. 577 (2007). This activity is sought in Lei No. 11.284, de 2 de março de 2007, D.O.U. de 3.3.2006. (Brazil), available at http://www.planalto.gov.br/CCIVIL_03/_Ato2004-2006/2006/Lei/L11284.htm; see also Rohter, *supra* note 76, at A11 (discussing the Brazilian government's policy of auctioning off timber rights to large tracts of the rain forest to private bidders).

337. *Brazilian Presidential Decree Streamlines Rules on Bio-Prospecting, Pending New Law*, 30 INT'L. ENV. REP. 575 (2007).

Indian assertions of rights in what should be SNUC-protected areas are really just fronts for real estate speculators from Rio de Janeiro and São Paulo, primed to exploit the area for vacation home development.³³⁸ The complaints maintain that SNUC designations are being used to force out other, distinct ethnic and racial communities, exploiting the protection for “traditional communities” under the law. Moreover, the “traditional” values of many of these communities, historically isolated and impoverished, face radical change. Within traditional communities in the Amazon, for example, the more entrepreneurial youth are naturally drawn to participate in the hurly burly of an exploitative frontier culture dominated by land speculators, drug traffickers and cattle ranchers.³³⁹ Thus, the fact that “traditional community” was, finally, given a legal definition in 2007³⁴⁰ may not ensure implementation of a strategy that balances environmental protection and development.

In sum, in monitoring the successful implementation of SNUC, it is essential to remember that the Brazilian democratic project is still a relatively new one, not yet 25 years old. Of course, as always and everywhere, more resources are needed for enforcement, and in particular resources need to be devoted to “demand a socio-economic development plan and investments in infrastructure to integrate territory, break regional isolation and include Brazil in the development plan of the South American continent.”³⁴¹

In the end, the challenge is much more than a matter of money. As Lima observes: “[t]he State, as an organism in a constant (if slow) process of transformation, needs to offer innovative mechanisms that will secure the new Rights, among which jump out the popular demand for greater participation in socio-environmental public policies.”³⁴² As he further notes, this will mean more than voting in elections, the use of collective action devices in the courts, or “even limited and legitimate participation in sporadic

338. This information is based on a visit to the coastal Atlantic rainforest in southern Rio de Janeiro by Colin Crawford on May 26, 2007. See also Sergio Leitão, *Presença Humana em Unidades de Conservação: É Possível?*, in *O DIREITO PARA O BRASIL SOCIOAMBIENTAL*, 73, 78 (André Lima ed., 2002) (arguing that SNUC’s failure to classify Indians and Quilombolos as traditional populations is a “grave” omission).

339. Lima, *supra*, note 62 at 331.

340. See Decreto No. 6.040, art. 3(I).

341. Lima, *supra* note 62, at 333 (referring to the Amazon, specifically). This same point can be made about the entire country.

342. *Id.* at 341.

public audiences.”³⁴³ In other words, making SNUC stick will require informing the public of its existence, and their role in perfecting it. Most Brazilian environmental legislation, starting with the Constitution, includes a commitment to environmental education.³⁴⁴ Biodiversity and protected areas education must be a central part of any effort to guarantee SNUC’s effectiveness. But this education need be more than a matter of identifying the biological and environmental benefits of biodiversity and protected areas. Instead, education must engage in a political discussion, in the sense of educating the *polis* – the people – about the complex inter-relation of environmental protection, socio-economic needs and realities, and developmental decisions and acts. This, finally, is to call for the mobilization of a broader-based process that politicizes “the treatment of the environmental question, for which purpose one must go beyond the humanitarian dimension in which it is frequently located.”³⁴⁵ That is, effective, long-term implementation of SNUC will require integrating the notion in the nation’s social and economic development strategy at all levels – not just the federal, but at the state and local levels as well.

343. *Id.*

344. C.F. art. 225. *See also* SNUC, *supra* note 6, at art. 5(IV).

345. Fernandes, *supra* note 5, at 54.

