

# PROMOTING AND FINANCING THE DEVELOPMENT OF AN ENVIRONMENTAL INFRASTRUCTURE IN A POST-CASTRO CUBA

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Among the many challenges a post-Castro Cuba will face is the environmental condition of the island after four decades of environmental neglect and mismanagement. Besides creating a new political and socio-economic framework, Cuba's new leaders will have to ensure that economic development does not occur at the expense of environmental and human health concerns, an unfortunately common condition in many developing countries.

This article addresses the Cuban environmental crisis and the legal and economic factors involved in the resolution of this crisis through development of an adequate environmental infrastructure. The goal is to present recommendations to promote the development of such an infrastructure, which today is essentially non-existent. The article will summarize and critique present environmental laws, followed by an analysis of economic factors at play in a post-Castro, transition Cuba, including a review of the sources of funding available for environmental infrastructure projects. Lastly, recommendations of legal, economic, and policy reforms intended to promote infrastructure development are provided.

## THE CUBAN ENVIRONMENTAL CRISIS

### **The Cuban Environment: A Priority for a Free Cuba**

The enormity of tasks and issues awaiting a transitional post-Castro government is evident in the volume of scholarly analysis devoted to the subject. Although the majority of this research focuses on the

political, economic, and social "environments" in which Cubans will live, another key consideration is the actual physical environment in which Cubans will develop their new society. A Cuban citizen's newfound political and economic freedom will be incomplete without adequate safeguards for the land, waters, and air of the island, especially in an economy where tourism will comprise a major source of revenue. For these reasons, the environment must always remain an integral component to the national agenda of Cuba.

Cuba's future leadership must avoid the all-too-common debate of "economy versus environment." Such a debate is essentially meaningless in Cuba, where, by virtue of the moral, aesthetic and economic value of its geography and natural resources (and their limits), a healthy environment will actually contribute to a healthy economy. A Cuban environmental infrastructure, besides being a much-needed investment for its people, will serve as a positive investment in its economy, not a drain. Clean beaches, safe and sanitary drinking water, clean air, protected forest reserves and arable soil, free of contaminants, will be essential in promoting an enhanced quality of life for Cubans, as well as in the development of a tourism industry.

Unfortunately, the Castro regime's policies, especially in the midst of the economic chaos brought about by the collapse of the Soviet Union, have been wholesale environmental destruction in exchange for

foreign currency.<sup>1</sup> In fact, the current regime's view of the environment has alternated between disregard and cynicism, destroying it at times in the name of socialist progress while claiming a keen interest in environmental protection, albeit in the hopes of receiving international grant monies.<sup>2</sup>

### Current Environmental Conditions in Cuba

**Soil:** Cuban soils are negatively impacted by a combination of factors, the great majority of which are directly due to official government practices and policies. For example, the official agricultural model followed by the Castro regime involves the clearing of low-quality soils that are prone to erosion.<sup>3</sup> In fact, erosion remains one of the most serious problems facing Cuba, as indicated by the estimate that 50% of the arable soil in Cuba is eroded.<sup>4</sup> Another contributing factor to soil erosion is Cuba's high rate of deforestation.<sup>5</sup>

Salinization of soils is also a serious problem,<sup>6</sup> as is pollution by toxic metals associated with strip mining.<sup>7</sup> Lastly, soils are also polluted by the many dumpsites dotting the Cuban landscape, the majority of which are illegal.<sup>8</sup>

**Deforestation and Loss of Habitat/Biodiversity:** Cuba's Special Period, with its lack of fuels, has triggered an increased demand for firewood, which has in turn elevated rates of deforestation.<sup>9</sup> In fact, based on official reports of the Cuban government, forests constituted 26.8% of Cuban land area in 1993<sup>10</sup> but had decreased to 21% by 1996.<sup>11</sup> Most importantly, 75% of deforestation is occurring in old-growth forests, where the majority of endemic species dwell, contributing to extinctions.<sup>12</sup>

In fact, loss of natural habitats, on land and in the sea, has led to the loss or disappearance of native species, as has introduction of non-native species.<sup>13</sup> On land, accelerated deforestation, poaching, and collection for sale are among the factors causing extinctions.<sup>14</sup> In Cuban waters, pollution of bays and rivers, both from agricultural runoff and toxic waste, has resulted in the loss of coral reef habitats.<sup>15</sup> Coral reefs are also being extracted from the sea, to use calcium carbonate in nickel processing operations.<sup>16</sup>

**Waters:** Among the environmental problems identified in Cuban waters are: (1) accelerated rate of extraction from aquifers; (2) intrusion of salt water into aquifers due to accelerated extraction; (3) contamination of rivers, streams, estuaries, coastal zones, and

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1. Carlos Wotzkow, *Naturaleza Cubana* (Miami: Ediciones Universal, 1998).

2. Id.

3. Sergio Díaz-Briquets and Jorge F. Pérez-López, "The Environment and the Cuban Transition," in *Cuba in Transition—Volume 7* (Washington: Association for the Study of the Cuban Economy, 1997).

4. Agencia Ambiental Entorno Cubano (AAMEC), *Situación Ambiental de Cuba*, Informe Anual de la AAMEC (1997).

5. Sergio Díaz-Briquets and Jorge F. Pérez-López, "The Special Period and the Environment," in *Cuba in Transition—Volume 5* (Washington: Association for the Study of the Cuban Economy, 1995).

6. Id.

7. Díaz-Briquets and Pérez-López, "The Environment and the Cuban Transition."

8. Id.

9. Id.

10. AAMEC, *Situación Ambiental de Cuba*.

11. Id.

12. Id.

13. Díaz-Briquets and Pérez-López, "The Environment and the Cuban Transition."

14. AAMEC, "Desaparecen Especies de la Avifauna Cubana," *CUBAECO* # 1 (October 1997).

15. Díaz-Briquets and Pérez-López, "The Environment and the Cuban Transition."

16. Id.

bays by industrial waste, chemical runoff, and sugar industry wastes.<sup>17</sup>

Contamination with pollutants is reported in a wide range of locations on the island. Urban rivers are polluted with raw sewage, solid waste, and such industrial waste as waste oils, cement, greases, and detergents.<sup>18</sup> In rural locations, rivers are contaminated with coffee bean husks and waste, and industrial waste.<sup>19</sup> Rivers in rural areas are also contaminated with waste from sugar mills, many of which lack industrial waste treatment equipment (estimated by some authorities as 70%), and thereby pollute rivers with hydrocarbons, acids, and grease.<sup>20</sup> Coastal zones and bays, primarily Havana Bay, are contaminated as well with hydrochloric acid, lead, oils and greases, fertilizers, and industrial wastes.<sup>21</sup>

Pedraplenes, or causeways, built to link the Cuban mainland with small keys for the purposes of promoting tourism wreak havoc on stream systems and harbor environments,<sup>22</sup> closing them off from the ocean and resulting in concentration of toxic pollutants in those waters.

Oil spills also occur, causing extensive damage to marine life and seabirds<sup>23</sup> and polluting waters with heavy metals, oil, and toxic wastes.<sup>24</sup> Marine exploita-

tion of sand and coral mud also deteriorates the marine ecosystem and degrades beaches.<sup>25</sup>

**Air:** Although the Special Period has resulted in an overall decrease in industrial production,<sup>26</sup> air pollution continues to be a problem in Cuba. Cuban cement factories, often with little or no filtration technology, emit smoke and dust into the atmosphere.<sup>27</sup> Mining, especially for nickel, also results in production of mercury, arsenic, smoke, and nitric and sulfuric acid wastes.<sup>28</sup>

The Cuban government's reliance on cheap imported low-quality oil has also generated dense clouds of smog over La Habana and near power plants.<sup>29</sup> Domestic oil is also generally of a low-quality, and likewise produces high amounts of contaminants upon combustion.<sup>30</sup>

### CAUSES FOR THE LACK OF A CUBAN ENVIRONMENTAL INFRASTRUCTURE

The key contributing cause of the Cuban environmental crisis is the lack of an adequate environmental infrastructure under the existing system of government. As in other socialist countries, Cuba's central planning has led to environmental abuse.<sup>31</sup> As the owner of virtually all property and industry, the Castro regime is the major source of pollution on the is-

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17. Sergio Díaz-Briquets and Jorge F. Pérez-López, "Water, Development, and Environment in Cuba: A First Look," in *Cuba in Transition—Volume 3* (Washington: Association for the Study of the Cuban Economy, 1993).

18. AAMEC, *Situación Ambiental de Cuba*.

19. Id.

20. Id.

21. Id.

22. José R. Oro, *The Poisoning of Paradise: The Environmental Crisis in Cuba* (Miami: Endowment for Cuban American Studies, 1992), p. 11.

23. Id., at 57.

24. Id., at 58.

25. Id., at 52-53.

26. Id., at 48.

27. Id., at 49.

28. Id., at 51-52.

29. Díaz-Briquets and Pérez-López, "The Special Period and the Environment."

30. Id.

31. Díaz-Briquets and Pérez-López, "Water, Development, and Environment in Cuba: A First Look," citing Feshbach and Friendly, *Ecocide in the USSR* (New York: Basic Books, 1992).

land.<sup>32</sup> Likewise, as the sole determiner of environmental policy, the regime has exclusive power and discretion over the Cuban environmental infrastructure. In this capacity, the regime has engaged in central planning, focusing on the quantity, rather than the quality, of output and favoring heavy industrialization.<sup>33</sup> Lastly, there is a complete lack of public participation in environmental decision-making.<sup>34</sup>

Further, as will be discussed below, Cuba's environmental laws are relatively young, and authorities are relatively inexperienced in applying such laws. In most cases, authorities are simply unwilling or unable to apply them due to official state policy and limited financial resources. Considering Cuba's competing economic priorities, such as increasing industrial development and output, and lobbying efforts designed to attract foreign investment, it is not surprising that environmental enforcement is sacrificed. In addition, current Cuban statutes do not mandate the aggressive development of a comprehensive environmental infrastructure. Thus, the leading causes of the lack of an infrastructure are essentially a combination of legal, practical, and economic factors.

### Existing Environmental Law

The key Cuban environmental law is Law No. 33, also called the "Law on Environmental Protection and the Rational Use of Natural Resources."<sup>35</sup> The law is a brief document, only 25 pages long, and is intended to "establish the basic principles to conserve, protect, improve and transform the environ-

ment and the rational use of natural resources, in accordance with the integral development policies" of the Cuban government.<sup>36</sup> The Law consists of four chapters: (1) general provisions; (2) specific areas of environmental protection and the use of natural resources; (3) organization of administrative and enforcement agencies/entities; and (4) enforcement procedures.

Unfortunately, rather than creating an effective procedural and substantive legal framework, the Law provides only a broad policy statement, with undefined and vague terms.<sup>37</sup> For example, the Law requires "proper treatment" of wastes before release into the environment, but does not define and clarify the term "proper treatment" nor does it define "wastes." The law also fails to set standards and contamination limits,<sup>38</sup> making it virtually unenforceable. Like the rest of the statute, the Chapter setting out fines is vague and ill-defined.<sup>39</sup>

Perhaps responding to its critics, the Cuban government has stated that the Law does not include clear definitions of management categories, since such regulations should be promulgated by the legislature.<sup>40</sup> However, to date, none have been created.<sup>41</sup> Similarly, enforcement provisions remain inoperative and are not applied.<sup>42</sup> In fact, as will be discussed below, in practice, environmental laws are seldom applied and are not considered in policy-making decisions.<sup>43</sup>

In 1997, the Cuban government promulgated Law No. 81, which focuses on pollution control. Like its

32. See, e.g. AAMEC, "Fuentes Contaminantes del Ambiente en Cuba," *CUBAECO* # 2 (October 1997).

33. Díaz-Briquets and Pérez-López, "The Environment and the Cuban Transition."

34. *Id.*

35. Wotzkow, *Natunmaleza Cubana*.

36. B. Ralph Barba and Amparo E. Avella, "Cuba's Environmental Law," in *Cuba in Transition—Volume 5* (Washington: Association for the Study of the Cuban Economy, 1995).

37. *Id.*

38. *Id.*

39. *Id.*

40. Wotzkow, *Natunmaleza Cubana*, p. 71.

41. *Id.*

42. *Id.*

43. Barba and Avella, "Cuba's Environmental Law."

predecessor, the law is overly broad and ill-defined, but sets out enforcement guidelines, sanctions, and violations. Its effectiveness remains to be seen, as authorities have not yet fully initiated implementation of the law.

Also, Cuba's law focuses primarily on current compliance rather than on cleaning up past contamination. Because no law exists addressing pre-existing contamination, there is no impetus for state-owned industry or foreign investors to address these problems, thus acting as a disincentive to the development of an infrastructure to address past contamination.

There are also no general requirements for treatment of wastes prior to disposal. In the absence of such requirements, parties seeking to comply with the spirit of the law have no guidance and compliance efforts are thereby negatively affected.

### Environmental Regulatory Entities

Following promulgation of Law 33, the Commission for the Environment and Natural Resources (COMARNA) was created for the stated purposes of preventing environmental damage, public education regarding the environment, development of a system of environmental control, and establishment of penalties for violations of the law.<sup>44</sup> However, those laws proposed by COMARNA, and approved by the National Assembly of the People's Power, are never or poorly enforced.<sup>45</sup> Another flaw is the absence of standards or concentrations for pollutants.<sup>46</sup> In addition, although the laws provide for fines, license revocations, bonds, prosecution and imprisonment, the vagueness and lack of standards hamper the law's effectiveness.<sup>47</sup>

Currently, all environmental policy continues to be developed by COMARNA.<sup>48</sup> However, because COMARNA's goals are deemed inconsistent with competing goals of industrialization and development, other Cuban ministries have actually worked to slow the implementation of new environmental policies. Thus, inter-agency conflicts frustrate goal-setting and environmental infrastructure planning.

For example, on the local level, regional Commissions for the Environment fall under the authority of the Ministry of Agriculture (MINAGRI), which is designed to promote development of resources, rather than protection of the environment.<sup>49</sup> Other supposedly environmental authorities, such as the National Enterprise for the Protection for Flora and Fauna, a subministry of MINAGRI, have the overriding mission to exploit natural resources by exporting indigenous species.<sup>50</sup> Likewise, the Ministry of the Fishing Industry (MIP) and the Institute for Ecology and Systems (IES), adopt official central policy objectives and actually promote intensification of sugar agriculture, building of pedraplenes, damming of rivers, and hotel plans.<sup>51</sup> In sum, COMARNA is subject to the jurisdiction of other government entities with competing agendas.

As a result of the shifting of these responsibilities, there has been no institutional or political continuity in environmental protection, making environmental policy itself both transitory and inconsistent. In the absence of consistent policy, the setting of priorities with respect to infrastructure development in particular, is precluded.

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44. Oro, *The Poisoning of Paradise*, p. 8.

45. *Id.*, pp. 9-10.

46. *Id.*, p.10.

47. *Id.*, p. 10.

48. Wotzkow, *Natumaleza Cubana*, p. 41.

49. *Id.*, p. 42.

50. *Id.*

51. *Id.*, p. 43.

### Practical and Legal Reasons for Lack of Enforcement in Present-Day Cuba

As seen above, the legal structure and institutions of the Castro regime have inherent flaws that prevent serious enforcement of environmental law. First and foremost, as a totalitarian dictatorship, centered on the whims of a caudillo, the concept of a rule of law in Cuba is non-existent. The Cuban Communist Party is the sole controlling political entity and as such has exclusive control over all branches of power. Despite an extensive code of laws and regulations, all are applied selectively and arbitrarily by government functionaries, who place party objectives above the law.

In addition, the law itself includes broad language and suffers from vagueness, to allow government authorities the maximum flexibility in pursuing the Party's directives. For this reason, laws in present-day Cuba are often broad statements of policy, bereft of any detail, transparency, or consistency.

Other factors inhibiting environmental protection in Cuba include:<sup>52</sup> (1) economic inefficiency of the communist economic model; (2) loss of subsidies following the economic and political collapse of the Soviet Union; (3) official policy favors economic development over environmental protection; (4) lack of environmental considerations in Cuba's nuclear energy and research program; (5) over-centralized decision-making process; (6) lack of access by COMARNA specialists to adequate scientific instruments and materials; (7) subservience of COMARNA to other more powerful ministries; and (8) top-down decision-making, with COMARNA at the end of the decision-making pipeline.

Another reason for the lack of enforcement is the absence within the existing totalitarian regime for any

true form of public role or pressure in promoting enforcement. Although a few small civic environmental organizations exist, there have been no major non-governmental organizations to protest against government projects with a negative environmental impact.<sup>53</sup> Such groups, if they oppose an official policy decision, are often deemed political dissidents.<sup>54</sup>

In sum, for the reasons outlined above, Cuban environmental laws are not enforced and the Cuban environmental regulatory entities are neither adequately funded nor staffed, resulting in the present environmental crisis.

In the coming years, any transition<sup>55</sup> government will face this crisis in the midst of potential chaos and uncertainty, as Cuba shifts its political system, values, culture, economy, and institution from totalitarianism to a free-market democratic republic. The remaining portion of this paper will address the economic, practical and legal factors that will affect the promotion and financing of an environmental infrastructure in a transition-era Cuba.

### POTENTIAL FUNDING SOURCES FOR ENVIRONMENTAL INFRASTRUCTURE IN A POST-CASTRO CUBA

In addition to the many legal and practical issues that will be at play, economics will have the most important role in developing Cuba's environmental infrastructure. Under the Castro regime, the state, as the sole controller and manager of the Cuban economy, has been the primary funding source for infrastructure development. In a post-Castro, free-market Cuba, public financing would undoubtedly be transformed and would be comparable to that in other newly-developing countries, such as direct government expenditure of funds, general-obligation bonds, subsidization, and concessions to state-owned enter-

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52. Oro, *The Poisoning of Paradise*, p. 11-13.

53. Wotzkow, *Naturaleza Cubana*, p. 15.

54. *Id.*, p. 45.

55. Note: For the purposes of this discussion, transition government will refer to any government seeking to establish a democratic republic in Cuba, following the death or removal from power of Fidel Castro and the present ruling elite of Cuba.

prises.<sup>56</sup> However, relying on public financing has significant limitations, such as required generation of public approval to issue bonds, revenue and debt limits, economic deficiencies, and poor financial management.<sup>57</sup> For these reasons, Cuba, like many developing countries, will probably opt for foreign capital as a source for funding infrastructure development.<sup>58</sup>

### Domestic Sources of Funding in a Post-Castro Cuba

**Public Funding:** A post-Castro Cuba will have several options in funding environmental infrastructure projects, such as disbursing funds obtained from international organizations, foreign governments, or those held by the Cuban government itself. As in Mexico, these funds may be loaned to private commercial banks that would in turn make loans to the private or public sector.<sup>59</sup>

However, several factors may inhibit the creation of such loans during or after a transition to a free Cuba. In a newly developing Cuban economy, with the probability of high interest rates, commercial banks and businesses may be discouraged from approaching such entities for loans. Further, unless the Cuban government guarantees its loans, intermediate lenders may be held responsible in the event a borrower defaults.

The Cuban government may also administer World Bank funds to support environmental infrastructure development.<sup>60</sup> Such funds may be re-lent to local municipalities to address environmental needs. A drawback to this option is that poor communities will probably not be able to afford to borrow funds from either the government or from commercial banks with lower interest rates.

Another potential funding source is the use of bonds. Of course, this will depend on the creation of laws authorizing provinces/municipalities to issue tax-exempt bonds in domestic capital markets to fund public improvements. Cuban law may also permit provinces/municipalities to borrow directly from foreign creditors, encouraging foreign investors to enter into such loan agreements. In sum, provinces and municipalities may be able to develop their own funding sources for infrastructure development, thereby reducing or eliminating financial dependence on a central national government. Independence from a central government may also allow provinces and local communities to gain much-needed experience in planning, developing, and managing public works projects.

**Private Sources:** Cuban banks may provide another source of financing. Unfortunately, in light of the foreseeable problems and uncertainties in a newly-emergent Cuban economy, the role of Cuban banks as a funding source remains questionable. First, newly-established Cuban banks will lack experience in financing environmental infrastructure development. Second, assuming that the banks will charge high interest rates, all but the largest corporations will be precluded from financing infrastructure projects. Considering these conditions, it is unlikely, at least initially, that Cuban banks will be able to provide the massive amounts of capital necessary for the development of an environmental infrastructure.

### International Public Programs

**The World Bank:** The World Bank assists in the development of its member-state's territories, promoting and supplementing private foreign investment, and facilitating international trade.<sup>61</sup> To accomplish these goals, the bank lends directly to member-states,

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56. Christopher J. Sozzi, "Project finance and facilitating telecommunications infrastructure development in newly-industrializing countries," 12 *Santa Clara Computer & High Technology Law Journal*, 435, 438 (1996).

57. Id.

58. Id.

59. National Law Center for Inter-American Free Trade, *Disparities between law and practice in the management of hazardous waste in North America* (1995), p. 93.

60. "The U.S.-Mexican Border Region: Binational solutions to environmental problems," *Government Finance Review* 13:1 (1997).

61. Sozzi, "Project finance and facilitating telecommunications infrastructure development," 435, 438.

and guarantees loans.<sup>62</sup> In order for countries to qualify for such loan assistance their economic policies must conform with World Bank standards, such as privatization, elimination of domestic subsidies, and balanced budgets.<sup>63</sup>

Although the World Bank has traditionally focused on stabilizing economies rather than addressing environmental issues,<sup>64</sup> a new trend appears to have arisen in recent years, with the creation of National Environment Action Plans in Latin America, and an increased funding of environmental projects.<sup>65</sup>

In order to apply for such funds, Cuba will have to become a member of the World Bank, an important step which will help secure funding for other purposes as well. However, in light of its overwhelming international debt, a new Cuban government may have an aversion to taking out such loans, especially with the recent experience of the 1980's debt crisis in Latin America.<sup>66</sup>

**Inter-American Development Bank (IADB):** Like other regional multilateral financial institutions, the IADB lends funds to the public sector of developing countries for infrastructure development.<sup>67</sup> Although such programs have been effective, inefficient planning and disorganization have led to duplication in funding and unreliability.<sup>68</sup> Like the World Bank, the lending terms of IADB are also not highly con-

cessional, and may thus fuel the search for funds from alternative sources.<sup>69</sup>

### U.S. Programs

The U.S. Agency for International Development (USAID), along with other development assistance programs, may be a source of funding, but this is uncertain. USAID's purpose is to address "basic human needs" and, considering that it has refused to issue loans for basic infrastructure projects such as roads and telecommunications,<sup>70</sup> it is uncertain whether environmental infrastructure would be considered a "basic human need."

Another possible funding source is the U.S. Export-Import Bank, which provides financing for exports of U.S. goods and services through export credit insurance, loan guarantees, and loans.<sup>71</sup> The Bank also supports U.S. exports of environmental goods and services through a special environmental exports program.<sup>72</sup> The ability of Cuba to rely on the Ex-Im Bank will largely be determined by agreements between both governments, as well as the status of the Cuban economy at the time.

Lastly, the Overseas Private Investment Corporation (OPIC) provides financing and political risk insurance to U.S. companies investing in developing countries.<sup>73</sup> The agency offers financing in the form of loans or loan guarantees, provides investment

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62. Id., 435, 438-439.

63. Id., 35, 439.

64. National Law Center for Inter-American Free Trade, *Disparities between law and practice*, p. 94.

65. William Partridge, "Latin America and the Caribbean Regional Enforcement Division," World Bank, Latin America and the Caribbean Region, internet article.

66. Stephen Zamora, "The Americanization of Mexican Law: Non-trade issues in the North American Free Trade Agreement," *Law and Policy in International Business* 4:2 (1993).

67. Sozzi, "Project finance and facilitating telecommunications infrastructure development," 435, 439-440.

68. Id., 435, 440.

69. Zamora, "The Americanization of Mexican Law."

70. Sozzi, "Project finance and facilitating telecommunications infrastructure development," 435, 440.

71. Jill A. Kotvis, "Environmental issues in international project finance, 745 *PLI/Comm* 243, 281 (1996).

72. Id.

73. Id., 243, 290.

guaranties against a wide variety of political risks, and also issues grants to fund feasibility studies.<sup>74</sup>

### Multilateral Trade Institutions

If a hemispheric trade agreement indeed comes to pass in the Americas, and Cuba chooses to become a party to the agreement, Cuba may receive further assistance, depending on the degree to which the environment will be taken into account in any such agreement. If a hemispheric Environmental Side Agreement is created, Cuba could collaborate with other parties to address environmental needs.

### Private Sources of Funding from Abroad (Foreign Investment)

Another alternative funding source which developing countries have been approaching with increasing frequency is private funding, in the form of foreign investment.<sup>75</sup> However, relying on this form of financing necessitates not only that the nation seeking funding “approve” of the investor, but also that the foreign investor find suitable conditions for investment. With respect to a post-Castro Cuba, foreign investment on the island will be radically altered from its present form, especially with the entry of the United States into the Cuban market. Cuba’s new leadership will have to measure the practical need for foreign investment and the conditions under which it occurs against domestic political consideration and a need to create Cuban national industries. This is especially true in light of current foreign investment practices on the island whereby Cuban citizens are exploited through unsafe working conditions and payment in the form of the almost-worthless peso.

Most foreign investors seeking to enter the foreign markets prefer transparency, which refers to a clear,

open and fair set of investment policies.<sup>76</sup> In other words, transparent policies clearly establish and publish all relevant rules applying to foreign investors,<sup>77</sup> thereby providing them with the necessary information with which to make informed investment decisions. For this reason, it is absolutely essential that Cuba’s new legal and investment structure have transparency.

**Possibilities for Foreign Investment in a Post-Castro Cuba:** As a funding source for the Cuban environmental infrastructure, direct foreign investment provides several benefits to both Cuba and the investor. First, by its very nature, direct investment creates a long-term commitment to the domestic business. Also, because it is more difficult to pull out the investment, such investors are more likely to stay and weather difficult times. Lastly, direct investors can directly manage the business and thus better protect their interests. Thus, direct investment in Cuban infrastructure will provide Cuba with the dual advantages of capital and technological support, while allowing foreign investors to retain greater management control over operations.<sup>78</sup>

In addition to the theoretical advantages of foreign investment in the Cuban environmental infrastructure, various incentives and disincentives will impact foreign investment in a free Cuba. In the U.S., several sectors of the environmental technology industry, particularly the hazardous waste industry, are struggling.<sup>79</sup> In fact, the only areas for growth in the industry are in foreign markets,<sup>80</sup> including a free market Cuba. The sale of environmental goods and services in Latin America grew to \$7 billion in 1995, and is predicted to grow to twice that level in the

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74. *Id.*, 243, 281.

75. Sozzi, “Project finance and facilitating telecommunications infrastructure development,” 435.

76. National Law Center for Inter-American Free Trade, *Disparities between law and practice*, PP. 111-112.

77. *Id.*, p. 112.

78. Sozzi, “Project finance and facilitating telecommunications infrastructure development,” 435, 443.

79. “U.S. experiences net loss in 1995 of hazwaste treatment facilities,” *Air/Water Pollution Report’s Environment Week*, 34:13 (March 22, 1996).

80. *Id.*

next five years.<sup>81</sup> Due to these expected demands, the U.S. Department of Commerce has initiated the Latin American Environmental Initiative to promote environmental technology exports to Latin America.<sup>82</sup>

Such a program may play an important role in an emergent Cuba, where many of the largest potential Cuban customers may include public sector agencies, such as environmental and energy authorities. Potential opportunities may also be found in the private sector, especially among major multinational corporations which follow corporate environmental standards.<sup>83</sup> The largest part of the market may involve the provision of environmental equipment and services to petroleum, chemical, and petrochemical industries, including the processing, collection, transportation, and recycling of waste.<sup>84</sup>

Business opportunities based on Cuba's many unmet environmental needs will also include: (1) treatment of solvents, oils, and paints; (2) treatment of heavy metals, acids, resins, adhesives, silicon and plastics; (3) waste confinement technology; (4) recycling hazardous and non-hazardous waste; and (5) waste collection/transportation. Other options could include the recycling of hazardous wastes in nascent Cuban industries, assuming that the proper technical, marketing, economic, environmental, and regulatory factors would be in place.

In sum, an enhanced environmental infrastructure may actually be aggressively pursued by foreign corporations and governments, because Cuba, and Latin America in general, present a potentially lucrative market for environmental products and services.<sup>85</sup>

Despite the potential incentives for foreign investors to pursue business in the Cuban environmental market, however, the previously-described uncertainties inherent during or after a transition period may be problematic. Because foreign investment will be entering a Cuban free market for the first time since the 1950s, there will be few indicators to predict how foreign investors will fare in a new, potentially volatile, Cuban market. As previously stated, a key factor affecting such investment will be transparency.

Other potential economic disincentives impeding foreign investment may include: (1) limited public sector financing in a post-transition period; (2) insufficiently developed capital markets; (3) potential lack of long term financing in the local and international markets; (4) potential lack of adequate mechanisms to cover political, financial and legal risks of investment in Cuba, at least initially; (5) reliability of demand and revenue forecasts; and (6) inadequate funding for feasibility studies and preliminary design and engineering.<sup>86</sup>

Additional disincentives may also exist within Cuba, such as the problematic history of foreign investment in Cuba, contributing to a potential mistrust of foreign investors, as evidence by the public perception in Cuba that some foreign investors have degraded the Cuban environment by taking advantage of Cuba's lax enforcement of environmental laws.<sup>87</sup>

The quality of environmental technology being introduced into Cuba may also be at issue. In other nations, such imports have been criticized by experts as technology that is "end of pipe" technology, designed to deal with already-generated waste.<sup>88</sup> The United

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81. Id.

82. "Latin American market momentum opens region to ET," *Business America*, 117:4 (April 1, 1996).

83. Id.

84. Id.

85. "Pressures to protect environment and promote sustainable development policies in Latin America grow," *NotiSur-Latin American Political Affairs* (October 18, 1996).

86. Derived from National Law Center for Inter-American Free Trade, *Disparities between law and practice*, p. 92, citing Jerry M. Keys, "The Impact of NAFTA on Border Environmental Issues," p. 38.

87. Díaz-Briquets and Pérez-López, "The Special Period and the Environment."

88. National Law Center for Inter-American Free Trade, *Disparities between law and practice*, p. 83 (1995).

States in particular has exported older and outdated technologies, no longer appropriate for the U.S. market, to foreign countries.<sup>89</sup> While such technology aids in the treatment of existing waste, it does nothing to reduce generation of such wastes. For this reason, critics point out that imported environmental technology should instead be centered on waste minimization technology, which is better suited to a country in the process of industrialization.<sup>90</sup> All combined, these factors may inhibit sourcing funds from foreign investors.

### RECOMMENDATIONS TOWARD FACILITATING THE DEVELOPMENT OF A CUBAN ENVIRONMENTAL INFRASTRUCTURE

As described above, the factors determining development of a Cuban environmental infrastructure will be legal, practical, and economic. Having identified these obstacles, there are a number of measures which may be adopted to either minimize or perhaps eliminate such obstacles.

#### Legal Factors

Because all of the legal factors inhibiting development of environmental infrastructure are a product of Cuban law, the key actor in this area will be a new post-transition Cuban government. However, because new Cuban environmental laws will be developed in a foreseeably nationalistic period by a newly-created democratic body, the issue will ultimately involve the reality of Cuban sovereignty. In fact, attempts by the U.S. to take a direct approach in forcing a certain environmental/legal framework upon Cuba will likely face substantial resistance in Cuba, especially in the face of a new Constitutional Convention. Thus, the forms and degrees to which any legal recommendations are made must, at their center, acknowledge and respect sovereignty concerns of a new Cuban democratic republic.

In the area of environmental law, however, it is clear that Cuba requires the creation of a comprehensive

environmental legal framework, with clear standards, transparency, and elimination of official corruption. In the spirit of assisting transition and post-transition-era Cuba, the following recommendations are offered for consideration.

First, Cuba should establish a clear jurisdictional framework for environmental law, such as clearly specifying the degree to which local action is precluded by a national government. Such a step will assure both Cuban business entities and future investors of transparency, and greater ease in complying with the law.

Another aid in clarifying the law would be to avoid broad and ambiguous language, as seen in the present version of Cuban environmental law. Such definitions will be required to help promote a market for confinement/treatment sites and treatment infrastructure. Such regulations may include a list of hazardous waste substances and approved treatment/disposal methods and container requirements. Cuban officials may also develop comprehensive standards for thermal treatment of wastes, also intended to promote investment.

In addition to more detail, however, Cuban officials should consider filling in the gaps in the law, such as the aforementioned lack of specific requirements and treatment modalities. Another major gap which also needs to be filled is the absence of a statute like the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) to provide for existing hazardous waste sites in Cuba, many of which have been polluted by foreign joint ventures that currently operate in the island. Also, high technology standards and waste minimization requirements for Cuban industry should be adopted. Of course, generating new laws in these areas will require additional enforcement, which, as discussed below, will create additional resource allocation problems for officials. Nonetheless, such legislation may create new incentives for industry and investors.

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89. Id.

90. Id.

Perhaps a more practical approach is to re-analyze existing law to create such incentives. For example, one such possibility may be to allow for hazardous waste exports to other nations for proper treatment, at least until Cuba develops such facilities. Also, mobile treatment systems based in the U.S., and already used in Mexico, may be shipped to Cuba for on-site treatment. Such a proposal is feasible, however, only after satisfactory demonstration of existing infrastructure. To address this problem, the Cuban government may use tax incentives or perhaps direct assistance, as well as set a specific date for lifting of the export requirement, thereby guaranteeing investors that a market is forthcoming.

Lastly, in addition to establishment of an environmental legal infrastructure, a new Foreign Investment Law must be established, elaborating on the types of environmental technology imports that will be acceptable in Cuba while providing greater transparency to foreign investors. Considering the many benefits of direct investment in the form of environmental infrastructure development, such measures may benefit Cuba both environmentally and economically.

### Practical Factors

**Cuban Authorities:** Practically speaking, a post-Castro Cuba will need to provide adequate funding for its environmental enforcement efforts. Unfortunately, as discussed elsewhere in this paper, such funding is directly linked to the status of the Cuban economy. Under the foreseeable need for an aggressive economic recovery plan, budget cuts, not increases, may be required for Cuba's conversion into a free market economy.

Stronger enforcement of the law and increased use of sanctions will be the best means of creating incentives for infrastructure development. The environ-

mental technology market is different from other markets in that market demand is driven by such government action as environmental legislation, regulations, standard-setting, and enforcement.<sup>91</sup> In developing countries in particular, limited enforcement will deter increased demand for environmental technologies.<sup>92</sup> Domestic industries in such nations may not comply with environmental laws or may choose to pay fines, rather than invest in environmental technology.<sup>93</sup>

A free Cuba's environmental market, like that of the United States environmental market thirty years ago, will evolve into a sophisticated and competitive market only after environmental regulations are developed and enforced. To reach this goal, Cuba must avoid the mistakes of other developing countries, such as Mexico's decision, due to lack of funds, to take several steps away from a command-and-control approach.<sup>94</sup>

In light of Cuba's foreseeable lack of funds to aggressively enforce its laws, Cuban authorities should begin to consider alternative means of enforcement. For example, Cuba may study a successful Indonesian program which has cut pollution in that nation by half.<sup>95</sup> In the Indonesian system, pollution data are collected and then ranked and published, which generates public pressure, with the worst polluters rapidly taking corrective action.

**Cuban Industry:** Cuba's future private industrial sector should also take steps to promote environmental infrastructure development. First, it may voluntarily establish well-defined compliance policies, as has been done among large multinational corporations. Such policies will demonstrate a commitment to obeying the law and adopting ecologically-responsible management practices. Self-policing would also

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91. Richard Sousane, "Overview of environmental technologies," *Business America*, 117:4 (April 1, 1996).

92. Id.

93. Id.

94. John Nagel, "Mexican official describes 'Environmental regulation revolution,'" *BNA International Environment Daily* (August 19, 1995).

95. "Indonesia public information system may help poor countries cut pollution," *Hazardous Waste News*, (September 16, 1996).

create an alternative to more frequent government inspections.

Second, larger entities should establish services for smaller entities, such as collecting wastes from small generators of waste and in turn recycling them for use or for sale to third parties. For example, in a future Cuban cement industry, large companies may collect waste oils from small companies for sale as fuel to cement kilns. Such practices would address pollution among smaller entities while generating additional income for collectors of such waste.

### Economic Factors

**Cuban Authorities:** Ideally, Cuba should demonstrate its commitment to protecting its environment by increasing funding for enforcement. However, as stated previously, Cuba's ability to generate adequate such funds may be problematic due to its economic troubles. In addition, the question of how such limited resources should be allocated is troublesome, especially since Cuba will face a wide variety of environmental issues and will need to prioritize them in an effective manner. For example, gastrointestinal disease is a leading Cuban public health problem, a result of a lack of clean drinking water and inadequate sewage treatment facilities. In the face of such basic public health issues, more-abstract issues, such as cancer-causing industrial wastes, may not be considered a top priority.<sup>96</sup>

Nonetheless, Cuba should adopt measures to promote the generation of such funds. Some of these have been described above as suggested legal reforms. Ultimately, the question is one of political will; if the environmental protection is to be adequately funded, the Cuban people, and their elected representatives, will have to commit to reach such goals.

In addition to adequate funding, the Cuban government should adopt incentives, both positive and negative, to promote the development of a Cuban environmental infrastructure. Among the negative incentives are increased enforcement, imposition of

finances, penalties, and administrative arrests. Such command and control modalities have been effective in the U.S. and, as previously discussed, should create a demand for environmental services.

Positive incentives should also be adopted. For example, a Cuban government agency may create a list of environmental products that may be given tariff-free import status to boost both trade and environmental cleanup. Domestic consumers of such technologies should also be offered incentives, such as tax incentives or subsidies, to establish consistent and monitorable environmental management techniques.

A new Cuban government should also consider setting a liberal bond policy at the local level, allowing local officials to raise funds independent of the national government, and applying them where they are most needed. Thus, a heavily industrialized province or municipality would have an alternative source of funding for infrastructure development.

Further, despite the foreseeable difficulties in a new Cuban economy, any national financing entity should keep its interest rates low. Lowering of such rates may have the dual benefit of increasing financing options for local investors as well as triggering the lowering of rates among Cuban commercial banks.

Lastly, as stated above, creation of a new foreign investment law and resolution of jurisdictional issues are among the legal reforms which may be adopted to further encourage funding from foreign investors.

**International, U.S.-Based, and Bilateral Institutions:** Foreign public lending sources should re-examine lending policies and interest rates, since such factors inhibit the use of such funds by developing countries for infrastructure needs.<sup>97</sup> Re-evaluating such policies will not only provide Cuba with more viable funding options, but will ultimately serve the goals of promoting international trade, in that Cuba will be able to purchase environmental goods and services from other nations.

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96. Zamora, "The Americanization of Mexican Law."

97. Id.

International, U.S.-based, and bilateral public funding sources should adopt development policies to further encourage environmental infrastructure development in Cuba. Such policies will be consistent with international goals of facilitating free trade, since facilitating foreign investment in the Cuban environmental infrastructure will undoubtedly benefit the economies of environmental products exporters.

USAID may also consider clarifying whether environmental infrastructure falls within the scope of “basic human needs,” since these are the needs that USAID programs are intended to fund.<sup>98</sup> Such basic human needs as health and adequate living conditions are undoubtedly linked with the need for adequate management and treatment of pollutants.

As Cuba’s largest trading partner and neighbor, the U.S. in general will need to promote and facilitate investment in Cuban environmental infrastructure. As evidenced by the Department of Commerce’s efforts in this area,<sup>99</sup> such development ultimately benefits both nations. Such efforts should serve as a blueprint for similar policies by different U.S. agencies.

**Foreign Investors:** As discussed in previous sections, Cuba may be wary of some forms of foreign investment. Coupled with immoral and abusive practices by other investors during the Castro regime, foreign investors will have to prove to the Cuban people that such investment will benefit Cuba, rather than drain its resources. Based on this history, foreign investors seeking to participate in Cuba’s nascent environmental industry should also develop several policies to further promote investment.

First, investors seeking to establish operations in populated areas should encourage extensive participation by Cuban communities in any permitting processes. A key part of any investor’s entry into the Cuban market should be public education and participation. Essentially, the investor must involve the local community and demonstrate the benefits, both economic and health-wise, of the proposed operation. In this

way, local concerns can be addressed in the early stages, before a substantial investment is made, thereby hopefully avoiding a loss to both parties.

With respect to hazardous waste cleanup, foreign investors should establish operations at pre-existing sites, volunteering to clean up the polluted site in exchange for permit guarantees. Considering the history of rampant illegal and indiscriminate dumping in Cuba, many illicit landfills sites exist in Cuba. Future investors should therefore establish treatment sites at pre-existing dumps, but only those which satisfy landfill requirements (i.e. safety from floods, runoff, etc.) Coupled with an effective public information program, such investors will demonstrate a specific benefit of commencing operations at the once-illegal site. With the establishment of enough such facilities, cleanup operations of illegal sites which fail to meet landfill requirements may commence.

Foreign investors in hazardous waste treatment and disposal should also promote waste recycling. For example, some types of hazardous wastes may be used as fuel for cement kilns, and kiln operators often may be willing to pay for such fuels. Thus, in addition to treating and disposing waste, investors may invest directly into such recycling services, thereby cleaning up the environment and returning a profit. Recycling will also cut down on the amount of space required to dispose of waste, allowing landfills to operate for longer periods of time.

Lastly, another step foreign investors can take is to rely on higher technology standards and on the best available treatment modalities. Resorting to outdated technology to address Cuba’s environmental technology needs is counterproductive for several reasons. First, such measures have been established to be ineffective or inefficient in treating toxic wastes in more developed countries, suggesting that such technologies will ultimately provide a lower standard of protection for the Cuban environment and Cuban citizens. Second, use of such technologies may also give rise to community opposition and challenges from

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98. Sozzi, “Project finance and facilitating telecommunications infrastructure development,” 435, 440.

99. “Latin American market momentum opens region to ET.”

environmental activists. Lastly, it will also result in the high costs of retrofitting aging equipment. In sum, technology used in Cuba should be as modern and effective as that used in other Western nations.

### CONCLUSION

Clearly, Cuba faces a huge challenge in adequately addressing its environmental crisis. Legal, practical, and, most significantly, economic factors will determine the success of efforts to solve this problem. Ultimately, political will and capital are the transforming factors that will solve the problem; admittedly, however, in light of a transition-era Cuba's other pressing needs, such will and capital may be in short supply.

Nonetheless, several actors will be committed to changing this reality. On the one hand, Cuban officials of the New Republic, who, aware that economic development does not mandate environmental deg-

radation, will develop new policies and laws that actually seek to promote both environmental protection and economic growth. These two societal goals need not compete with each other and, as seen in the U.S., may be attained concurrently. Cuban private industry must also adopt this view and seek to invest in environmental infrastructure development for this purpose. Outside Cuba, international funding bodies should modify their lending practices to promote such development. Lastly, foreign investors, as evidenced by their efforts in other Latin American countries, will be interested in developing an environmental technology/treatment market in Cuba. These actors should consult each other, since they ultimately share similar goals in this area. The recommendations listed above are but a beginning step in expanding this dialogue and in recognizing the valuable contributions that each can make in solving Cuba's environmental crisis.