
Latin America and the Debate over Environmental Protection and National Security

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Abstract

In this paper, we examine the national security issues resulting from environmental transformation and demographic change in Latin America. We note a lack of consensus in the literature as to what constitutes environmental change, security, and its corresponding impact on national security. If environmental degradation and the national security of Latin American countries are linked, then policy makers must take these linkages into account when formulating economic and social policy. Omitting these factors from national security strategy discussions may overstate the risks associated with other threats and lead to a biased allocation of public resources. On the other hand, if these threats are overstated (or non-existent), then incorporating them into national security discussions may divert attention and resources from issues of importance. Given the relatively fragile nature of many of the Latin American economies, accurately addressing these threats is imperative for economic and social stability and security.

Introduction

In 1993 the United Nations High Commissioner for Refugees (UNHCR) argued that political instability, economic tensions, ethnic conflict and environmental degradation directly correlated to mass movements of refugees throughout the developing world.¹ While some researchers assert that individuals displaced by environmental degradation are the largest single class of refugees, these individuals lack official standing and protection accorded to others avoiding political persecution and violent conflict.² Environmental degradation and its corresponding flows of displaced persons may pose a significant threat to national security in developing countries. Yet, the impact of these individuals on internal and external security is unclear as persons fleeing environmental change are unaccounted for in official refugee statistics.

In this paper we argue that there is a paucity of theoretical and empirical evidence supporting the hypothesized linkage between environmental degradation and national security. Researchers and policy makers alike have been unable to reach consensus on what constitutes environmental, human, and national security as well as what, if any, relationships exist between these variables. Understanding this debate is important for policy makers attempting to cope with environmental change (degradation, natural disasters, and climate change) and demographic change (population growth, migration, and urbanization). In order to develop a comprehensive national security strategy, developing nations may need to build their capacities to address these environmental and demographic factors both individually, as well as the ways in which they relate to existing, conventional threats to national security.

1. United Nations High Commissioner for Refugees. *The State of the World's Refugees: The Challenge of Protection*. Geneva, Switzerland: United Nations High Commissioner for Refugees, 1993.

2. Jacobson, Jodi L. *Environmental Refugees: a Yardstick of Habitability*. Washington, D.C.: Worldwatch Institute, 1988.; Homer-Dixon, Thomas, "On the Threshold: Environmental Changes as Causes of Acute Conflict." *International Security* 16, No. 2 (1991): pp. 76-116; Sadik, Nafis. "Population Growth and Global Stability," in *Population and Global Security*. Nicholas Polunin, ed., pp 1-2, 12. Cambridge, U.K.; New York, NY: Cambridge University Press, 1998, among others.

We examine the national security issues resulting from environmental transformation and demographic change in Latin America. If environmental degradation and the national security of Latin American countries are linked, then policy makers must take these linkages into account when formulating economic and social policy. Omitting these factors from national security strategy discussions may overstate the risks associated with other threats and lead to a biased allocation of public resources. On the other hand, if these threats are overstated (or non-existent), then incorporating them into national security discussions may divert attention and resources from issues of importance. Given the relatively fragile nature of many Latin American economies, accurately addressing these threats is imperative for economic and social stability and security.

The remainder of the paper is structured as follows. We first discuss the lack of consensus in the literature on the meaning of the term environmental security. Second, we consider the demographic composition and trends in Latin America. Third, we review demographic change and its relation to environmental security. We then examine environmental transformations as they relate to population and security. The last section concludes and offers suggestions for future research.

Environmental Change and National Security

While environmental degradation emerged in the second half of the 20th century as a focal point of political contention, its influence on official United States (U.S.) national security policy is much more recent. Environmental degradation has been the focus of significant and regulatory efforts in the U.S., but the concept of environmental security has only recently entered public discourse and security documents. In 1991, the U.S. National Security Strategy (NSS) included environmental security as a concern for the first time.³ Environmental security's importance increased during the Clinton administration with the explicit incorporation of environmental objectives in the NSS. In 1996, for example, Secretary of State Warren Christopher asserted that, "environmental initiatives can be important, low-cost, high-impact tools in promoting our national security interests."⁴ The 2002 National Security Strategy noted the need to address environmental concerns in trade negotiations and the impact of environmental threats on the welfare of citizens.⁵ Curiously, environmental security has become part of the national security discourse despite a lack of consensus among academics and policy makers regarding the existence of a significant linkage between environmental security and national security.

The inclusion of environmental security threats may be a reflection of the purported declining relevance of traditional symmetric threats to national security and the emergence of asymmetric and non-conventional threats. While much of the early literature on environmental security is general and anecdotal in nature, it posits a discernable linkage between environmental degradation and, in turn, national security.⁶ Whether such a linkage exists, the direction of the linkage (uni or bi-directional),

3. In the August 1991 *National Security Strategy of the United States*, in the section entitled "Our Interests and Objectives in the 1990s" states "favorable to the United States, its interests and its allies" is to "achieve cooperative international solutions to key environmental challenges, assuring the sustainability and environmental security of the planet as well as growth and opportunity for all."

4. Richard, Matthew A. "Integrating Environmental Factors into Conventional Security," in *Environment and Security: Discourses and Practices*. Miriam R. Lowi and Brian Robert Shaw, 33-34. New York: St. Martin's Press, 2000.

5. Office of the President of the United States of America. *The National Security Strategy of the United States of America*. September 2002. <http://www.whitehouse.gov/nsc/nss.html> [date accessed: 08/09/04.]

6. Brown, Lester R. "Worldwatch Paper #14 Redefining National Security." Washington, D.C.: Worldwatch Institute, 1977. Myers, Norman. "Environment and Security," *Foreign Policy*, p. 74. (Spring 1989): 23-42; Mathews, Jessica T. "Redefining Security," *Foreign Affairs*, p. 68. No. 2 (1989). and Renner, Michael. "Environment and Security." in Chapter 8, "Enhancing Global Security" in *State of the World 1989*. Washington, D.C.: Worldwatch Institute, 1989.

and the magnitude of the relationship remains a matter of debate.⁷ There is also a paucity of advice on how to translate this purported relationship into policy guidance on the environment and non-conventional threats.⁸

What is meant by ‘environmental degradation’? Environmental degradation is “any change or disturbance to the environment that is perceived to be deleterious or undesirable.”⁹ While many academics accept this seemingly simple and succinct definition:

“The logical combination of the current definitions of environment and degradation...is open to a variety of legitimate interpretations”, and the application of the term (or lack thereof) is a matter of debate.¹⁰

The problem of environmental degradation refers to the totality of a wide range of interdependent processes occurring at a range of scales, in different places, with differing degrees of impact. These processes include, among others, atmospheric pollution and climate change, biodiversity loss, soil loss, salinization and acidification of soils and water, fisheries depletion and contamination of plants and animals by synthetic and radioactive substances.¹¹ Environmental degradation may increase the probability and intensity of conflict as resource scarcities increase, economic opportunities dwindle, and state institutions decline in effectiveness.

We would be remiss, however, if we did not note that environmental quality might initially decline with economic development, only to improve after the population reaches a certain threshold of income. Market forces may induce improvements in public institutional quality, a strengthening of property rights, and other factors that improve environmental quality successfully avoiding the tragedy of the commons. While obviously controversial, empirical evidence appears to support the assertions, casting doubt on the environmental degradation-conflict relationship. Whether an emerging region such as Latin America can achieve this income threshold before degradation harms development remains unknown.¹²

Comprising nearly thirty percent of the world’s total territory, Latin America and the Caribbean region has the world’s largest reserves of arable land and sixteen percent of the world’s degraded

7. See Homer-Dixon, Thomas. “On the Threshold: Environmental Changes as Causes of Acute Conflict.” *International Security* 16 (1991). pp. 76-116. Homer-Dixon, Thomas. “Environmental Scarcities and Violent Conflict: Evidence from Cases.” *International Security* 19, No. 1 (1994). pp. 5-40.; Libiszewski, Stephan. “What is Environmental Conflict?” *Occasional Paper of the Environment and Conflicts Project (ENCOP)*. Zurich: Center for Security Studies and Conflict Research, No. 1, 1992; and Baechler, Gunther. “Dessertification and Conflict: The Marginalization of Poverty and of Environmental Conflict” *Occasional Paper of the Environment and Conflicts Project (ENCOP)*, Zurich: Center for Security Studies and Conflict Research, No. 10, 1994.

8. Lonegran, Steve. “Human Security, Environmental Security and Sustainable Development,” *Environment and Security: Discourses and Practices*. Miriam R. Lowi and Brian Robert Shaw, pp. 66-67. New York: St. Martin’s Press, 2000.

9. Johnson, D.L., S.H. Ambrose, T.J. Bassett, M.L. Bowen, D.E. Crummey, J.S. Isaacson, D.N. Johnson, P. Lamb, M. Saul, and A.E. Winter-Nelson. “Meanings of Environmental Terms.” *Journal of Environmental Quality* 26, No. 3 (1997), pp. 581-589.

10. Brün, M. and G.F. McIsaac. “Natural Environment and Human Culture: Defining Terms and Understanding World Views.” *Journal of Environmental Quality*, 28 (Jan/Feb 1999). pp. 1-10.

11. Barnett, Jon. *The Meaning of Environmental Security: Environmental Politics and Policy in the New Security Era*. New York, New York: Zed Books, 2001.

12. Grossman, Gene M., and Alan B. Kruenger. “Environmental Impacts of a North American Free Trade Agreement.” National Bureau of Economic Research Working Paper No. 3914. Cambridge, MA: National Bureau of Economic Research in “Environmental Turning Points, Institutions, and the Race to the Top.” Bruce Yandle. *The Independent Review: A Journal of Political Economy* 9, No. 2., Fall 2004). pp. 211-226.

lands (1900 million hectares), ranking it third behind Asia and the Pacific and Africa.¹³ The pace of human-induced forms of environmental degradation and resource depletion appears to have increased throughout Latin America due to a combination of increasing demand for agricultural products, improving means of exploitation and the lagging pace of conservation and control.¹⁴ Coupled with natural changes in the environment, the last half of the twentieth century witnessed a gradual increase in the pace of deforestation, land degradation, erosion, salinity and desertification in Latin America.¹⁵ Erosion, a main cause of land degradation, now affects 14.3 percent of the territory in Latin America and 26 percent in Central America.¹⁶ Human-induced land degradation and water shortages directly affect economic sufficiency in many rural areas.

While human-induced environmental degradation appears to directly impact the well-being of individuals, there again is a paucity of empirical evidence with respect to this hypothesis. First, there is a problem of measurement in that environmental degradation may appear to be accelerating when, in fact, improved measurement methods are merely refining our estimates of degradation. Second, environmental degradation's influence may be more subtle and indirect than previously thought. Degradation may indirectly impact economic growth, for example, through its potential influence on income inequality, economic efficiency, and other, as yet unexplored, variables. Development projects, mainly dams and irrigation projects, provide a more salient example of the purported linkages between environmental degradation and human development. The World Bank estimates that development projects uproot more than 10 million people in the developing world each year.¹⁷ Many large-scale development projects often involve forced resettlement, which directly influences the distribution and income of a subset of the population.¹⁸ Improvements in the utilization of natural resources (e.g. power generation and irrigation) may either cause or potentially offset environmental degradation. In turn, the simultaneous input of environmental degradation and economic development may also influence national security in an unknown fashion. Before proceeding to a discussion of the relationship between environmental transformation, demographic change and national security, we must first, however, attempt to define national and environmental security.

What is national security?

We believe that the contentious (and somewhat vague) nature of the debate in the literature can be, in part, attributed to the various interpretations of the terms 'national security' and 'environmental security.' The interdisciplinary nature of the potential linkages between environmental degradation, human security, and national security has further complicated discussion of the terms. Academics and policy makers not only disagree as to whether environmental concerns should be defined as a

13. United Nations Environment Programme. "State of the Environment and Policy Retrospective: 1972-2002", in *Global Environmental Outlook 3: Past, Present and Future Perspectives*. United Nations Environment Programme, pp. 29-300. London: Earthscan Publications Ltd., 2002.

14. Hillstrom, Kevin, and Laurie Collier Hillstrom. *Latin America and the Caribbean: a Continental Overview of Environmental Issues*. Santa Barbara, CA : ABC-CLIO, 2004.

15. Lonegran, Dr. Steve. *The Role of Environmental Degradation in Population Displacement*. Global Environmental Change and Human Security Project: Research Report 1 (2nd Edition). Victoria, B.C.: University of Victoria. (July 1998).

16. United Nations Environment Programme. "State of Environment and Policy Retrospective: 1972-2002." *Global Environmental Outlook 3: Past, Present and Future Perspectives*. United Nations Environment Programme, pp. 29-300. London: Earthscan Publications Ltd., 2002.

17. World Bank. Social Policy and Resettlement Division. *Resettlement and Development: The Bankwide Review of Projects Involving Involuntary Resettlement, 1986-1993*. Washington, D.C., World Bank, Environment Dept., 1996. According to the World Bank's FAQ, this is the most thorough and current review of the Bank resettlement experience. <http://Inweb18.worldbank.org/ESSD/sdvext.nsf/65ByDocName/FAQs> [accessed 9/20/04.]

18. Myers, Norman. *Environmental Exodus: An Emergent Crisis in the Gloval Arena*. Washington, D.C.: Climate Institute, 1995.

national security issue, but also, more importantly, they debate the meaning of the terms human and environmental security.

Academics and national security specialists continue to discuss, sometimes contentiously, the definition of national security as well as what constitutes a national security threat. While the debate over an explicit definition of national security continues, the literature, apparently has reached consensus over its more general idea and appropriate response to threats. National security is any issue that may dramatically impact the welfare of a sovereign state and any response to the threat must be centrally coordinated by the state.¹⁹

Central coordination, in this view, is necessary due to the negative spillovers represented by these threats; spillovers that could not be adequately captured by a market response mechanism. Even if the threats were asymmetrically distributed (New York and California, for example, but not the Midwest) a decentralized response would likely fail to adequately protect the state due to negative externalities. An adequate response requires central coordination, even if such a response represents an over-provision of the public good in some jurisdictions. Any economic inefficiency due to the misallocation of resources is viewed as small, relative to the potential cost of a threat to national security.

We argue that the set of issues now classified as threats to national security has significantly expanded from an almost singular focus on military readiness to one encompassing regional and global military threats, economic and political concerns, and most recently, environmental degradation and resource scarcities.²⁰ Whether such an expansion is prudent, remains a point of contention. The inclusion of environmental concern and objectives starting with the 1991 National Security Strategy (NSS) typifies this debate. Critics have argued that the inclusion of environmental concerns in the national security strategy is counter-productive, and promotes neither environmental nor security concerns.²¹ Proponents of environmental concerns appear to support this line of reasoning by arguing that the national security specialists develop national security strategy documents from a military, rather than an environmental, perspective. Military responses to environmental concerns are not only inappropriate, but they also bias the state's response if the environmental issues are classified as a national security concern. In essence, this argument suggests the environmental issues are of national importance but the NSS is the wrong vehicle to align these issues with national strategic objectives. We thus observe arguments not only where environmental issues are national security issues, but also whether classifying these issues as a national security concern biases the response.

Including environmental concerns in national security documents also explicitly promotes the primacy of central government institutions, even if a centrally coordinated response is allocatively and technically inefficient. Environmental threats are likely to have asymmetric impacts and a uniform response may be economically inefficient relative to differentiated provision by sub national governments. The NSS may not only be the improper vehicle for environmental concerns, but a uniform response may also create inefficiencies that outweigh the costs of addressing the environmental concerns. These questions, examined in the fiscal decentralization literature on the assignment of revenue and expenditure authority to sub national governments, have not been examined to the best of our knowledge in the national security literature.

19. Porter, Gareth. "Environmental Security as a National Security Issue." *Current History* (May 1995): pp. 219-222.

20. Redclift, Michael. "Environmental Security and the Recombinant Human: Sustainability in the Twenty-first Century." *Environmental Values*, 10. (2001): pp. 289-299. and "Whither Environmental Security in the Post-September 11th Era? Assessing the Legal, Organizational, and Policy Challenges for the National Security State." *Public Administration Review*, 62 (September 2002 Special).

21. Haas, Peter M. "Constructing Environmental Conflicts from Resource Scarcity." *Global Environmental Politics* 2, No. 1 (February 2002): 1-11.

What is meant by ‘human security’?

If there is a lack of consensus in the literature as to the definition and application of national security, it should come as no surprise that a similar, even more contentious debate exists with respect to human security. Initially, human security pertained to physical threats to an individual.²² The concept of human security has, much like national security, evolved to encompass economic, health and environmental concerns. As the definition of human security evolved, its precise definition lost meaning and the debate as to its application increased in volume. The United Nations Development Program (UNDP), for example, argues that human security is an ‘integrative’ rather than merely a ‘defensive’ concept, encompassing a broad range of economic, political, and social concerns.²³ If actually applied, the UNDP’s definition could classify almost every activity as a component of human security. Furthermore, the UNDP argues that existing challenges to human security are global and require international response.²⁴ Implicit in this argument is that governments are, to some extent, responsible for ensuring human security, however broadly defined.

The UNDP, however, also notes that human security should not be equated with human development. Following this logic, the Global Environmental Change and Human Security (GECHS) program suggests that a nation achieves human security when individuals and communities have the options necessary to end, mitigate or adapt to threats to their human, environmental and social rights; have the capacity and freedom to exercise these options; and actively participate in attaining these options. Moreover, human security can be achieved through challenging the structures and processes that contribute to insecurities.²⁵ While optimistic from a national security perspective in a global environment with asymmetric threats, and again, overly broad from an application perspective, the GECHS argument sets a standard (albeit, some might argue, unachievable) against which we can measure human security. Whether such a standard is acceptable to all stakeholders is doubtful, given the relatively broad definition of human security and its suggested measure. The GECHS definition of human security is arguably not useful from a national security perspective as it suggests that almost every form of human security should be considered a national security objective.

What is meant by the term ‘environmental security’?

Given ambiguity and contention surrounding the discourses of national and human security, it should not be surprising that a similar debate is ongoing with respect to environmental security’s definition and application. Academics and security specialists alike contest the cornerstone of the environmental security discourse: resource scarcity contributes to inter and intra-state conflict. Some in the literature argue that inter-state conflict resulting from resource scarcity is unlikely. Not only is resource-driven interstate conflict unlikely, some in the literature hold that interstate spillovers associated with internal resource conflicts are even more unlikely to occur. Academics

22. *The Universal Declaration of Human Rights*, adopted by the United Nations in 1948, states that “everyone has the right to life, liberty, and the security of person.”

23. Lonegran, et al. *Global Environmental Change and Human Security (GECHS) Science Plan*. International Human Dimensions Program, Report No. 11: Bonn, Germany. (June 1999): 25. The United Nations Development Program’s definition of human security includes seven categories of threats: economic, security (assured basic income); food security (physical and economic access to food); health security; environmental security (in terms of access to potable water, clean air and non-degraded land); personal security (security from physical violence and threats); community security (security from ethnic cleansing); political security (protection of basic human rights and freedoms).

24. The United Nations Development Program considers the following global human security threats: unchecked population growth, excessive migration, environmental degradation, disparities in economic opportunities, drug protection and trafficking, terrorism.

25. Lonegran, et al. *Global Environmental Change and Human Security (GECHS) Science Plan*. International Human Dimensions Program, Report No. 11: Bonn, Germany. (June 1999): pp. 25-26. United Nations Development Program holds that “human development is a broader concept, defined as a process widening the range of people’s choices. Human security means that people can exercise these choices safely and freely.”

view discussions attempting to link resource scarcities with interstate security issues, at best, as unproductive and harmful to policy development.²⁶ Likewise, these same people view attempts to integrate security discussions within the dialogue of sustainable development as unrealistic given its holistic approach. Finally, academics tend to dismiss evidence on the environment's potential degradation. One can posit, of course, that resource scarcity is playing a role in Darfur's ongoing conflict and the potential exists for substantial negative spillovers into Sudan's neighbors.

While some argue that a link exists between environmental factors and violent conflict, they feel that environmental issues are unlikely to cause significant conflict between sovereign states.²⁷ From this perspective, resource scarcity, although not the catalyst for conflict, exacerbates its likelihood in areas that are prone to it for non-environmental reasons. The emerging line of research on the economics of conflict suggests that low rates of economic growth, a rapidly increasing population, and monoculture export dependence positively influences the likelihood of intra-state conflict.²⁸ We note that the literature skirts the issue of environmental security due to, in part, its ambiguous nature. Obviously the same factors that the literature suggests will influence the likelihood of conflict will also likely influence the state and evolution of the environment. The state of the environment, in turn, will likely influence these causal variables, suggesting that an endogenous relationship exists between the environment, economic conditions, and the likelihood of conflict. The literature largely leaves unaddressed the potential endogeneity between these variables, casting doubt on the efficacy of the empirical estimates and the conclusion that environmental degradation causes violent conflict.

Another area of ambiguity in the literature is the differentiation between environmental factors that generate violent and nonviolent conflict. Traditionally, security issues are associated with violent conflict. Nonviolent environmental and demographic security issues potentially can spill over international borders, impinging on the traditional security realm, regardless of their likelihood to cause violent conflict. We cannot begin to adequately discern the linkages between environmental security and conflict until we are able to separate and analyze the impact of the environment on nonviolent and violent conflict. Obviously, pooling violent and nonviolent conflicts in the empirical analysis can introduce bias as to the relationship between environmental security, conflict, and, in turn national security.

Even if disagreement exists as to the definition and application of the term 'environmental security,' one might believe that the term 'environmental refugee' is sufficiently precise to be devoid of contention. As with national, human, and environmental security, there is substantial disagreement over the need for the term 'environmental refugee' and its subsequent definition. The UNHCR's definition of a refugee primarily concerns itself with persecution due to race, religion, nationality, social standing, or political opinion and does not address emigration due to environmental insecurity.²⁹

The absence of environmental conditions in the UNHCR refugee definition makes legally permissible a signatory state's refusal to acknowledge, shelter or offer asylum to individuals fleeing environmental degradation. Even if such a condition existed in international protocol, internal migration

26. Haas, Peter M. "Constructing Environmental Conflicts from Resource Scarcity." *Global Environmental Politics* 2, No. 1 (February 2002): pp. 1-11.

27. Dalby, Simon. "Conflict, Ecology and the Politics of Environmental Security." *Global Environmental Politics* 2, No. 4 (November 2002): pp 25-130.

28. Goldstone, Jack A. "Demography, Environment, and Security." *Environmental Conflict*. Diehl, Paul and Nils Petter Gleditsch, eds. Boulder, CO: Westview Press, 2001. **Also cite Collier, too.**

29. The United Nations' High Council on Refugees Convention and Protocol Relating to the Status of Refugees, Article 1 A(2), 1951. Any person with a "well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it.

would not be covered by such a protocol. Individuals displaced by environmental degradation will likely lack the standing of individuals displaced by more conventional forms of persecution.

El-Hinnawi argued that an environmental refugee is an individual who has been forced to leave their traditional habitat because of a marked environmental disruption that would seriously affect their quality of life or existence.³⁰ Following this definition, one would classify an individual as an environmental refugee if they were internally or externally displaced in response to substantial changes in the environment, which, according to El-Hinnawi's research, is unable to support human life. The literature leaves open for interpretation, of course, the personal threshold for response to evolving environmental conditions and substantial ecosystem changes. Utilizing this definition, an environmental refugee could be any number of people forced to leave their home either as a result of environmental degradation, be it natural, such as a hurricane or other natural disaster, human-induced, such as deforestation, soil degradation and desertification, or accidental, such as an oil spill.

Given the overly broad nature of El-Hinnawi's definition, it is not surprising that disagreement persists in the literature on its efficacy. Castles argues that the term 'environmental refugee' is misleading and possibly harmful given ongoing attempts to restrict the UNHCR's protocol.³¹ The legal status for those claiming to flee environmental degradation provides recipient states with the means to deny shelter, protection, and asylum. Furthermore, given the potential interactions of environmental degradation with the socio-economic environment, whether environmental degradation provides sufficient justification for an individual to claim refugee status remains a point of contention. If environmental refugees were to acquire the equal status of other currently recognized refugees, this would, obviously, have a significant impact on national security, especially in the U.S.

Left unaddressed in the literature are concise, metric oriented definitions of environmental and human security and environmental refugees. The lack of consensus has undoubtedly biased estimates of the number of individuals affected by environmental conditions in an uncertain direction. Solely focusing on environmental conditions as a rationale for emigration is likely to overstate the impact of environmental degradation; non-environmental conditions, however, clearly influence emigration decisions. Ignoring environmental degradation, likewise, most likely introduces downward bias.

Demographic Change and Environmental Security in Latin America

Given the lack of consensus in the literature, we now turn to the question of environmental security in Latin America. We highlight potential linkages between the environment and national security and areas of ambiguity requiring further research. We find that, as with the literature, *a priori* bias plays a significant role in determining whether demographic changes, environmental and national security are linked in Latin America. We first discuss population trends in Latin America before focusing on the issues of migration and urbanization. We argue that the demographic trends discussed in this section are more pronounced in other developing regions, thus our arguments are as applicable in other countries. We conclude with an application of the concepts of this paper to El Salvador.

The combined population of the Latin American region (including Central America, South America, Mexico and the Caribbean states) in mid-2003 was approximately 540 million, an increase

30. El-Hinnawi, Essam E., and the United Nations Environment Programme. *Environmental Refugees*. Nairobi, Kenya: United Nations Environment Programme, 1985. El-Hinnawi defined an environmental refugee as "as those people who have been forced to leave their traditional habitat, temporarily or permanently, because of a marked environmental disruption (natural and/or triggered by people) that jeopardized their existence and/or seriously affected the quality of their life. By 'environmental disruption' is meant any physical, chemical and/or biological changes in the ecosystem (or the resource base) that render it temporarily or permanently, unsuitable to support human life."

31. Castles, Stephen. "Environmental Change and Forced Migration: Making Sense of the Debate." *New Issues in Refugee Research*, Working Paper No. 70. Oxford, England: Refugee Studies Centre, University of Oxford, 2002.

of approximately 90 percent from 1970.³² While the Latin American population growth rate of 2.74 percent per annum was the highest among developing regions in the 1960s, its population growth rate has declined significantly since then. In 2000, average population growth of 1.51 percent in Latin America exceeded the global average of 1.21 percent, but lagged behind the population growth averages of Sub-Saharan Africa (2.26 percent), the Middle East and North Africa (1.91 percent), and South Asia (1.73 percent). We can attribute these growth rates, in part, to U.S. immigration patterns, as well as smaller family sizes throughout the region.

Average fertility for Latin America and the Caribbean has declined steadily from 5.82 births per woman between 1960-1969 to 2.51 births per woman in 2000-2003, below the global average of 2.63 births per woman during the same period.³³ Average infant mortality in the Latin American and Caribbean regions has consistently been below developing and global averages.³⁴ On the other hand, average life expectancy at birth (total years) in Latin America and the Caribbean has consistently been the highest of the developing regions, even exceeding world life expectancy averages.³⁵ Although life expectancy has steadily increased in the Latin American and Caribbean regions, the gains have not been homogeneously distributed throughout the region.³⁶

Inter and intra population density varies greatly. El Salvador, the smallest and most densely populated country in Central America, is approximately thirty times denser than the least populated country, Belize.³⁷ Consistently, Latin America is the most urbanized region in the developing world with the urban population increasing from 52.92 percent of the total in the 1960s to 75.94 percent between 2000-2003. Although it only houses 8.4 percent of the world's population, Latin America accounts for some 15 percent of all human beings living in settlements of more than 1 million inhabitants.³⁸ El Salvador has approximately 360 million urban residents and four metropolitan areas of more than 10 million people; nearly 30 percent of the total population resides in cities with more than 1 million inhabitants.³⁹ The institutional framework of El Salvadoran development, a leftover from Spanish colonization, is a legacy of economic inequality, particularly regarding access to productive resources, such as land. These inequalities, in turn, induce out-migration that shifts pressures to urban

32. U.S. Census Bureau, population Division, International program Center, International Data Base. [Accessed 8/2/04.]

33. World Bank. World Development Indicators. Washington, D.C.: The World Bank Group, 2004.

34. During the 1960, average infant mortality rate (per 1,000 live births) in Latin America and the Caribbean was 102.37 deaths compared to a world average of 122.29 deaths; this rate declined further to 29.63 and 55.85 respectfully most likely as a result of the AIDS epidemic in Sub-Saharan Africa (which consistently has had the highest infant mortality rates globally).

35. During the 1960s, average life expectancy at birth was 57.78 years in Latin America and the Caribbean with a world average of 54.63 years; this has leaped to 70.50 years and 66.60 years respectively between 2000-2003.

36. Note: For example, life expectancy in Cuba and Puerto Rico is fully twenty years greater than in Haiti. In South America, meanwhile, residents of Venezuela and Colombia live, on average, a full decade longer than residents of Bolivia. From Hillstrom, Kevin, and Laurie Collier Hillstrom. *Latin America and the Caribbean: a Continental Overview of Environmental Issues*. Santa Barbara, CA: ABC-CLIO, 2004.

37. El Salvador has the highest population density in Central America, with a population density of 288.1 habitants per square kilometer in comparison to a regional average of 65.0 habitants per square kilometer.

38. Bárcena, Alicia, Ricardo Sánchez Sosa, Roberto Guimaraes, United Nations, Economic Commission for Latin America and the Caribbean, and the United Nations Environment Programme. Oficina Regional para América Latina y el Caribe. *The Sustainability of Development in Latin America and the Caribbean: Challenges and Opportunities*. Santiago de Chile: United Nations, Economic Commission for Latin America and the Caribbean: United Nations Environment Programme, Regional Office for Latin America and the Caribbean, 2001.

39. Note: Currently, the urban population of countries in North America and Europe is between 70 and 75 percent, roughly equivalent to that of Latin America. See United Nations Center for Human Settlements, 2001; and United Nations Population Division, 2001.

areas. Whether these migration patterns result in environmental degradation, per se, is a matter of contention.⁴⁰

The rapid growth of urban populations, coupled with the resultant migration of people onto previously undeveloped land, burdens municipalities, which, in turn, are unable to provide basic infrastructure and public services to their rapidly expanding (and denser) jurisdictions.⁴¹ The region's cities currently lack the ability to handle the amount of solid waste generated, which has doubled over the last thirty years. Air and water pollution problems plague Latin America's urban centers as well as their proliferating slums. Severe health and crime issues manifest themselves as a result of the increased population density within urban areas. Latin America's evolving demographic composition illustrates how demographic change may undermine existing institutions and degrade human health and security. Whether these changes influence national security is an unanswered question.

Demographic change, however, may not necessarily induce environmental degradation. The composition and disposition of the populace may be independent of environmental change. If there is no robust empirical linkage between demographic change and environmental degradation, then the argument for environmental degradation as a source of violent conflict may also be weakened. What may not be weakened is the argument that environmental degradation may induce non-violent conflict. The literature has yet to explore these empirical hypotheses.

While environmental degradation may result from demographic shifts, population growth, per se, does not necessarily damage the environment, but it may interact with existing socio-economic structures to influence environmental quality.⁴² A fall in the quality and quantity of renewable resources combined with population growth may encourage powerful groups within a society to shift resource distribution in their favor. Unequal resource access combined with population pressure may induce migrations to regions that are ecologically fragile, such as steep upland slopes, tropical rainforests, and watersheds. High population densities in these areas, combined with a lack of knowledge and capital to protect local resources, often triggers environmental degradation and chronic poverty. Over time, large segments of the society may become ecologically and economically marginalized, increasing social instability and undermining security.

The interaction of resource capture and ecological marginalization forms the standard argument that population growth may overextend the natural resources of a given geographic region, leading to deprivation, conflict and instability.⁴³ The scope of instability resulting from population growth may increase as more people try to sustain themselves in ecologically marginalized environments.⁴⁴ While increases in income, democratic governance and technology may mitigate the influence of population growth on the environment and, in turn, security population's effect is not completely absent. Increases in income and democratic governance may, in the short-run, actually increase resource capture and ecological marginalization, as seen with respect to NAFTA.⁴⁵ Increased resource capture

40. Bilsborrow, Richard and Stupp, Paul. "Demographic Processes, Land, and the Environment in Guatemala." *Demographic Diversity and Change in the Central American Isthmus*. Ann R. Pebley, Luis Rosero Bixby, and Universidad de Costa Rica. Programa Centroamericano de Población, 582. Santa Monica, CA: RAND, 1997.

41. Hillstrom Kevin, and Laurie Collier Hillstrom. *Latin America and the Caribbean: a Continental Overview of Environmental Issues*. Santa Barbara, CA: ABC-CLIO, 2004.

42. Homer-Dixon, Thomas F., *Environment, Scarcity, and Violence*. Princeton, N.J.: Princeton University Press, 1999. Homer-Dixon, Thomas. "Environmental Scarcities and Violent Conflict: Evidence from Cases." *International Security* 19, No. 1 (1994): pp. 5-40.

43. Barnett, Jon. *The Meaning of Environmental Security: Environmental Politics and Policy in the New Security Era*. New York: Zed Books, 2001.

44. Saunders, John. *Population Growth in Latin America and U.S. National Security*. Boston: Allen and Unwin, 1986.

45. Grossman, Gene M., and Alan B. Krueger, *Environmental Impacts of a North American Free Trade Agreement*. National Bureau of Economic Research Working Paper No. 3914. Cambridge, MA: National Bureau of Economic Research in "Environmental Turning Points, Institutions, and the Race to the Top." Bruce Yandle. *The Independent Review: A Journal of Political Economy* 9, No. 2. (Fall 2004): pp. 211-226.

and economic marginalization may result in a decline in resource quality (if not quantity) and per capita income growth. Slow and negative rates of per capita income growth appear to be associated with increased probabilities of conflict, suggesting a linkage between population growth, economic development, and national security. Whether Latin America can increase incomes sufficiently to avoid this conflict remains to be seen.

Migration

Migration refers to the movement of people across jurisdictions (both within and across sovereign states) and can be characterized as a system of interactions.⁴⁶ Migration has been described as “an extremely varied and complex manifestation and component of equally complex economic, social, cultural and political processes operating at the local, regional, national and international levels.”⁴⁷ The linkages between migration and security are complex and may take several different forms. Differentiating the processes, related to migration from the social, economic, political and institutional structures of which they are a part, is problematic.⁴⁸ Subsequently, establishing a linear relationship between migration and security is difficult, but we will attempt to identify certain cases where migration plays an important role as a contributor to insecurity. Distinguishing these linkages is useful by considering the following:

- The determinants of migration, including the role of environmental factors on stimulating or forcing out-migration or on attracting in-migration
- The effects of migration on destination and departure areas, focusing also on their effects on the environment⁴⁹

We have characterized the factors that affect migration as ‘push’ factors (in the place of origin) and ‘pull’ factors (in the place of destination). Environmental variables may be an element in both. Environmental push factors include both natural disasters as well as human-induced environmental degradation. Environmental pull factors may include the attraction of good farmland or a better growing climate. Environmental change that adversely affects land productivity tends to reduce agricultural incomes and stimulate out-migration.⁵⁰ Environmental degradation in such instances may constitute a root cause of out-migration and the decline in crop yields only the proximate cause.⁵¹

We can observe the consequences of migration in terms of human security threats through two forms of traditional instability related to migration: internal migration conflicts, and cross-border migration conflicts and may be triggered by either voluntary migration or forced displacement. Internal migration is often induced by structural environmental changes such as persistent drought, flood and soil erosion. Individuals tend to migrate from depressed areas to more favorable zones such as fertile rural or urban areas. Forced displacement and expulsion may appear in connection with large industrial mining and dam projects or through violent means by groups seeking to capture a region’s resources.

46. Choucri, Nazli. “Migration and Security: Some Key Linkages.” *Journal of International Affairs*, 56, No. 1 (Fall 2002): p. 97.

47. Castles, Stephen, and Mark J. Miller. *The Age of Migration: International Population Movements in the Modern World*. New York: Guilford Press, 1993.

48. Loneegran, Steve, Dr. *The Role of Environmental Degradation in Population Displacement*. Global Environmental Change and Human Security Protection: Research Report 1 (2nd Edition), Victoria, B.C.: University of Victoria. (July 1998): p. 5.

49. Bilsborrow, Richard. “Migration, Population Change, and the Rural Environment.” *Environmental Change and Security Project Report*, Issue 8. The Woodrow Wilson Center. (Summer 2002): pp. 69-94.

50. Ibid.

51. Shaw, R. Paul. “Rapid Population Growth and Environmental Degradation: Ultimate Versus Proximate Factors.” *Environmental Conservation* 16, No. 3 (1989): 199-208.

Intra-regional migration and displacement may trigger tensions, clashes, resource competition, and in some cases violent conflicts between newcomers and settled populations. These conflicts are in part determined by environmental discrimination against actors who are heavily dependent on scarce natural resources. Violent conflicts (skirmishes, clashes and riots) usually occur in disputed rural zones (the San Juan region between Nicaragua and Costa Rica, for example). Some conflicts, however, may spread to urban areas and blend with existing patterns of urban violence. Intra-regional migration can also lead to political struggles for state power if and when groups that had been discriminated against succeed in penetrating the ruling elite or driving it out of power in other ways.⁵²

Environmentally induced migration usually takes the form of slow infiltration over a long period of time. People move into areas that either permit survival or provide more favorable living conditions. In many regions it may be advantageous to cross a national frontier if more favorable foreign destinations are geographically nearer than the remote capital of one's native country. Frustration and despair can create social tensions in host countries or trans-boundary regions populated by hostile identity groups (or earlier migrants from common identity groups) who display hostile attitudes toward the newcomers. Internal and cross-border migration pose serious threats to human security due to their inherent social and political destabilizing effects as well as their negative impacts on the natural environment. Migration processes often prompt local populations to engage in practices of land intensification in order to meet economic needs. The degradation of productive land tends to create shortages of renewable resources (water, cropland, forests, etc.), which in turn generates environmental scarcities.⁵³ These scarcities may produce mass movements of people fleeing major environmental disruptions.

When migrants or refugees cross national borders, resettling in rural border areas or urban areas, they may pose a threat to the national security of the recipient state. Migration and environmental discrimination may be linked, and environmental disruption may result as a consequence of large refugee movements.⁵⁴ At the same time, environmental transformation is itself a reason for migration or flight. Migration channeled by environmental discrimination may also increase the likelihood of conflict, especially in areas with poor macroeconomic performance or political instability. The current debate concerning environmental refugees illustrates migration's potential for destabilization, although evidence to this impact remains weak.

Urbanization

Increases in population and migration may pose an increasing threat to national security. Rapid (and some might argue, excessive) urban migration and the corresponding emergence of mega-cities (population of ten million or more) may pose a significant challenge to existing institutions. High levels of urbanization coupled with low levels of gross domestic product per capita may pose a threat to political stability. Rapid urbanization not only increases the demand for public services and infrastructure, but also may overwhelm the capacity of local governments. Demand for public services is not offset by increases in revenue, as there is often a persistent mismatch between employment opportunities and the size and quality of the labor force. Much of the low-grade employment growth, moreover, is drawn into urban communities, swelling them far beyond their real economic base.⁵⁵

52. Baechler, Gunther. "Why Environmental Transformation Causes Violence: A Synthesis." *Environmental Change and Security Project Report*, Issue 4. The Woodrow Wilson Center. (Spring 1998): pp. 24-44.

53. Ibid.

54. Ogata, Sadako. "Environmental Refugees and Social Conflict." *Statement by the United Nations High Commissioner for Refugees*, in Baechler, Gunther, ed., *Environmental Refugees, A Potential of Future Conflicts*. Muenster: 1994.

55. Myers, Norman. *Environmental Exodus: An Emergent Crisis in the Global Arena*. Washington, D.C.: Climate Institute, 1995.

The resulting urban underclass may turn to violence as public and private institutions fail to meet their basic needs.

Environmental refugees often head for urban areas, although socioeconomic conditions may be worse in the cities. Finding a lack of economic opportunities they often continue to migrate until their resources are exhausted at which point they turn to the state for assistance. In Mexico, for example, impoverished people tend to migrate first to Mexico City and other urban communities. In many cases, they then migrate to the U.S.. The U.S. thus has an express (and financially significant) interest in the flow of environmental refugees seeking improved economic prospects.

Another consequence of this rapid urbanization and migration is an increasing rate of urban instability that disrupts domestic order and threatens political stability. Over the past several decades, massive public protests and riots in cities throughout the developing world have resulted in significant loss of life and widespread destruction of property. Such disturbances have been triggered by economic circumstances (e.g., rising food prices, food scarcity, and currency devaluation) or by political upheavals. In Latin America, powerful narcotics constituencies offer economic opportunities in cities with otherwise over-burdened economic bases, which increasingly threatens the exercise of sovereignty and the rule of law. Beyond the direct economic costs, urban crime erodes the state by corrupting institutions (including the judiciary, the media and even security forces) and co-opting segments of the population.⁵⁶ Urban disturbances not only destroy physical capital but also discourage foreign direct investment, inhibiting economic growth and political stability.

The environmental stresses associated with urban areas contribute to the weakening of state institutions. Urban environmental problems include the spatial concentration of people, industry, commerce, vehicles, energy consumption, water use, and waste generation, among others.⁵⁷ Water contamination issues, for example, burden state institutions that lack the resources to detect chemical contamination or establish water treatment facilities. Sanitation is a major problem affecting water quality in urban areas. As cities become more densely populated, the per-household volumes of wastewater may exceed the infiltration capacity of local soils and require greater drainage capacity and improved sewer systems. Most municipally provided sanitation systems, however, are based on conventional sewer systems.⁵⁸ Coverage is generally inadequate, sewers are in poor condition and sewage treatment plants discharge effluents that are little better than raw sewage. Providing partial service, or service that is intermittent, may impact human health and exacerbate existing environmental problems because sanitation is a service that depends on consistent and reliable coverage.⁵⁹

Urbanization, as expected, has also resulted in widespread urban poverty and chaotic cities. Zoning regulations are largely absent, allowing usage of a single space for a variety of activities. Some of these activities increase both the likelihood of exposing the population to industrial pollution, as well as the probability of an environmental threat developing from contamination and waste proliferation.⁶⁰ This consequent lack of urban planning often leads to the creation of slums or shantytowns on the

56. Brennan-Balvin, Ellen. "Crime and Violence in an Urbanizing World." *Journal of International Affairs*, Vol. 56, No. 1 (Fall 2002): p. 123.

57. Bartone, Carl R. Janis Bernstein, and Josef Leitman. "Managing the Environmental Challenge of Mega-Urban Regions." Paper prepared for the *International Conference on Managing of Mega-Urban Regions of Association of Southeast Asian Nations: Policy Challenges and Responses*. Bangkok: Asian Institute of Technology, 1992.

58. Brennan, Ellen M., "Population, Urbanization, Environment, and Security: A Summary of the Issues." *Environmental Change and Security Project Report*, Issue 5. The Woodrow Wilson Center. (Summer 1999): pp. 4-14.

59. Ibid.

60. Roberts, Bryan R., "Urbanization and the Environment in Developing Countries: Latin America in Comparative Perspective." Chapter 10. *Population and Environment Rethinking the Debate*. Lourdes Arizpe, M. Piscilla Stone, and David C. Major, eds., Boulder, CO.: Westview Press, Inc., 1994. pp. 309-324.

city's outskirts, a phenomenon that we observe in Latin America and other developing countries. We can also now see a similar phenomenon in the U.S. as a result of immigration from Latin America.⁶¹

El Salvador: Environmental Security or Economic Development?

While El Salvador is the most densely populated country in Latin America, its urbanization rate is behind that of the Latin American region, with 62 percent of 6.5 million residents living in urban areas, compared to 76 percent of the Latin American population as a whole.⁶² In the past three decades, we have witnessed a change in the composition of economic activity with a shift from the agricultural sector to the industry and service sectors.⁶³ This shift in economic activity is mirrored in the demographic composition of El Salvador.

According to Programa Salvadereño de Investigación Sobre Desarrollo y Medio Ambiente (PRISMA), the urban population in El Salvador grew 164 percent between 1971 and 2000 while the rural population only grew 24 percent. Population growth has not been homogeneously distributed across urban areas with 67 percent of the growth concentrated in the south surrounding the city of San Salvador. The rapidly growing assembly industry (maquila) accounted for 17 percent of the foreign exchange in 2000, displacing traditional agricultural exports that accounted for 11 percent of foreign exchange in 2000, a significant decrease from the 80 percent generated in 1978. In rural areas, non-agricultural employment has increased rapidly, from 39 percent of the rural workforce in 1980 to 53 percent of the workforce in 2000, supplanting agriculture as the primary employer of the rural population.

While we have observed a marked decline in the relative importance of agriculture in El Salvadoran economic activity, we have not observed a corresponding shift in labor from agriculture. In 1980, 37.5 percent of the workforce was engaged in agricultural activities, only declining to 21.8 percent in 2001, even though agriculture as a percentage of gross domestic product declined from 37.96 percent in 1980 to 9.44 percent in 2001.⁶⁴ This suggests a marginalization of the economic activity of those individuals in the agricultural sectors relative to the industrial and services sectors.

Economic marginalization of the agricultural workforce, further exacerbated by inequitable land distribution patterns in El Salvador, may be a contributor to internal conflict and emigration. The roots of the El Salvadoran Civil War (1980-1992) arguably lie in an established pattern of unequal land distribution that provoked the rise of a guerilla insurgency.⁶⁵ The Peace Accords negotiated following the civil war in 1992 between the El Salvadoran government and Farabundo Marti National Liberation Front (FMLN) rebels established a land transfer program to re-integrate former combatants into civil society, although the success of this program remains a matter of debate. Land redistribution

61. See Richman, Neal and Bill Pinkin. *Urban Slum Reports: the Case of Los Angeles, USA*. Case Studies for the Global Report on Human Settlements 2003. Los Angeles, CA: UCLA Advanced Policy Institute. Neal and Pinkin cite that Latinos are over represented in slum neighborhoods at two-thirds of slum neighborhood residents. According to Neal and Pinkin, most residents of these slum neighborhoods are immigrants, many of whom are illegal, and thus unwilling or unable to complain about their living conditions for fear of deportation. Latino workers are also five-and-a-half times more likely to be poor than white workers in LA according to LA-based research center. <http://www.lane.org>.

62. World Bank. *World Development Indicators*. Washington, D.C.: The World Bank Group, 2003. (2002 population data.)

63. Central Intelligence Agency. *The World Factbook*. [Accessed September 23, 2004.]

64. World Bank. *World Development Indicators*. Washington, D.C.: The World Bank Group, 2003. In comparison, the percentage of the workforce in 1980 in the industrial and service sectors was 21 percent and 42 percent respectively. In 2001, the percentages shifted to 24 percent for the industrial sector and 55 percent for the service industry.

65. Foley, Michael W., George, R. Vickers and Geoff, Thale. Land, Peace, and Participation: *The Development of Post-War Agricultural Policy in El Salvador and the Role of the World Bank*. Washington Office on Latin America Occasional Paper Series #1. June 12, 1997.

efforts, while still not perfect, have facilitated the acquisition of household assets, to include housing and credit. Land redistribution also appears to provide a buffer to external shocks (commodity prices, government prices, etc). The government, in an effort to assist the poor agricultural sector, passed a debt relief law in 1996 that forgave 70 percent of the agrarian debt and gave \$575 to individual parcel holders if they paid the debt off in one year; the government also passed a second law directly aimed at breaking up collectively held lands.⁶⁶

According to the Inventory of Conflict and Environment, El Salvadoran government surveys dating from 1978 to 1982 showed that only 17 percent of El Salvador's land area could be classified as high quality soil suitable for intensive agricultural use although 29 percent varied in quality and acceptability for agricultural use; 35 percent was of a poorer quality, more susceptible to erosion and best suitable either for forest or grazing, while 13 percent was classified as severely degraded.⁶⁷

Despite these classifications, nearly half of the land appropriate for intensive agricultural use was underutilized while three-quarters of the crop cultivation was on marginal, degraded land. The underutilized land generally belongs to that of the wealthy elite while the marginal land belongs to that of the subsistence farmer. As a result, subsistence farming increasingly is not viable as a means to maintain livelihoods of the poor, rural population. Food security, as well as rapid and increased levels of environmental degradation of the land, is a growing concern in El Salvador given the aforementioned inequitable land distribution and use.

Landless rural families are more susceptible to shocks than those with access to land and are more likely to remove their children from school when confronting external shocks than those with land access. If the landless poor, in reaction to shocks, withdraw their children from school and limit their ability to receive an education and instruction, they adversely impact their children's future ability to overcome employment entry barriers. While the importance of agricultural employment is decreasing in rural areas, the poor, without access to other means of employment are, to a greater extent, forced to abandon their lands, thus contributing to the higher rates of urbanization and emigration. As the economic marginalization of agricultural workers increases, their vulnerability to external shocks, including that of environmental degradation, increases accordingly. We argue that the evolution of the El Salvadoran economy has left a relatively large segment of the workforce vulnerable to shocks and thus this evolution indirectly undermines the security of the El Salvadoran state and its neighbors. If this hypothesis holds, we should observe an increase in internally displaced persons (IDPs). Anecdotal evidence suggests that these flows of individuals exist and have increased over time. Unfortunately, neither the El Salvadoran government, other governments in Latin America, nor the UNHCR tracks individuals displaced by environmental degradation or economic marginalization.⁶⁸

Given the absence of credible data on IDPs, we must rely on indirect measures of the impact of environmental degradation and economic marginalization. The development of the El Salvadoran economy has increased relative wages in the manufacturing sector, slowing the pace of emigration of skilled workers. The vulnerability of workers in the agricultural sector, however, has led to a marked increase in the emigration of lower skilled labor over the last ten years. Internal migration

66. Call, Charles T., *Assessing El Salvador's Transition from Civil War to Peace*. Chapter 14 in *Ending Civil Wars: the Implementation of Peace Agreements*. Stephen John Stedman, Donald S. Rothchild, and Elizabeth M. Cousens. Boulder, CO.: Lynn Rienner, 2002.

67. Weinberg, Wendy. "El Salvaddor Civil War." Inventory of Conflict and Enfronment. Case No. 22. The Trade and Environment Database, The Manadala Projects. Washington, D.C.: American University, 1997. Available online at: <http://www.american.edu/ted/ice/elsalv.htm>. [Accessed February 10, 2005].

68. UNHCR data on IDPs primarily focuses on individuals displaced by internal violent conflict and not environmental or economic conditions. Most IDPs, according to the UNHCR are not included in the IDP statistics. See UNHCR Population Data Unit/PGDS Division of Operational Support. (2004). *2003 Global Refugees Trends*. UNHCR Geneva. <http://www.unhcr.ch/statistics>. See also Global IDP Project at <http://www.idpproject.org>.

(24 percent) has given way to direct emigration to the U.S. and Canada (72 percent). This marked increase in individuals displaced in search of economic opportunities appears to be mirrored in many other countries in Latin America. The adjustment lag between economic activity and the composition of the workforce not only poses a security challenge to Latin American countries, but also to that of the U.S..

We argue that the evolution of the Latin American economies affects the national security of the U.S. In support of this argument, one need only look to the flow of individuals from Latin American to the U.S. over the past four decades relative to overall population growth in Latin American and the U.S. Overall, the number of foreign-born nationals from Latin American countries has increased from 908,309 in 1960 (9.3 percent of the U.S. population) to 16,086,974 in 2000 (51.7 percent of the U.S. population). Due to increased immigration, remittances occupy a larger role in rural areas with the number of households in rural areas receiving remittances increasing from 13 percent in 1992 to 20 percent in 2000. By 2000, remittances provided a full two-thirds of the foreign exchange of El Salvador and are a significant source of foreign exchange for many other Latin American countries.

Given the significant expenditures of public resources to mitigate this flow and the commensurate expenditure of public resources to support these individuals once they succeed in reaching the U.S., one may conclude that unchecked immigration can be considered a threat to national security. The dependence of the Latin American economies on remittances suggests that efforts by the U.S. to reduce the flow of immigrants may pose a threat to their economic, and thus, national security. Environmental degradation may thus, indirectly pose a significant concern to the security institutions of Latin America and the U.S.

Conclusions

The issue of potential human and environmental security threats in Latin America is complex. A vast number of variables, both independent and dependent, are at play and their linkages are still not fully understood. Most analysis of security threats falls short when attempting to link the variables, usually attempting to focus too narrowly on the linkages while ignoring key interactions. Given the complexity of the issue, one cannot reduce the analysis to include only the interactions between merely two variables. Variable's interactions may be simplified initially, perhaps, but they cannot overlook relevant associations when asserting final conclusions.

A large problem with analysis of the human and environmental security equation, and its subsequent linkages to environmental and demographic change, is the lack of consensus and sound empirical research. A point probably most evident from this paper is a definite absence of substantial research attempting to relate and explain the relationships and interactions between the variables of human and environmental security, population growth, migration, urbanization, environmental degradation and environmental scarcity. We have attempted to identify the foundational questions in the literature that have yet to be addressed and to note where a lack of credible analysis calls conclusions into question.

Although this paper is directed at the security concerns of Latin America, the problems are assuredly similar to those of other developing nations. Latin American is not alone in its high levels of poverty, rapid urbanization and susceptibility to climate change and other variables thought to impact human and environmental security. Developing countries, however, are not the only ones that should look to Latin America for insight on security threats.

What remains central to this debate is whether individuals are fleeing environmental degradation or searching for improved economic opportunities. We suspect that a combination of factors influences the emigration decision and that studies suggesting that only one factor is involved are, perhaps, biased in their conclusions. The trade offs or synergies are yet to be explicitly quantified between

environmental and economic factors and the resultant impact on the security of the emigrating and immigrating states. We leave these questions for future research.