

Population and Security: How Demographic Change Can Lead to Violent Conflict

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“While the marked decrease in population growth in many countries and regions is good news for those concerned about global population, it offers no clear relief for concerns about the security implications of population change.”

As we cross into the new century, the world seems finally to have turned the corner on population growth. A combination of increased education for women, national and international support for policies of population planning and the spread of economic development and accompanying movement along the demographic transition frontier have led to falling population growth rates around the world. Whether among the behemoths—China and India—or among the smaller but rapidly growing nations—such as Saudi Arabia, Kenya and Malawi—population growth rates have dropped dramatically in the last decade.¹

Yet while population growth rates have dropped around the world, they remain high in some areas. In particular, many nations in the Middle East, southeast Asia and central and northern Africa still are growing at nearly 3 percent per year, a growth rate that leads to a doubling of population in approximately 25 years. Moreover, although in most countries the *rate* of population growth has slowed, the absolute number of people being added to the world's population has not; the

large number of women of childbearing age in the developing world, carrying the momentum of past population growth, ensure that even while growth rates fall as a percentage of the existing population, the number of new births each year continues to rise. For example, although China's growth rate has fallen to 1.0 percent per year, China will still grow by 10 to 11 million people per year for the next 15 years. The world as a whole will add roughly 80 million people per year, or another 960 million (that is, another India) in the next dozen years.ⁱⁱ

DEMOGRAPHY AND SECURITY: KEY FINDINGS

After nearly three decades of debate and analysis, stemming from Myron Weiner's (1971) path-breaking study, scholars are beginning to develop much clearer answers to the complex questions regarding how population changes affect security concerns. Those answers can be summarized briefly in the following propositions, each of which we shall treat in greater detail below:

1) While population growth often brings degradation of forests, water resources, arable land and other local resources, such environmental degradation is not a major or pervasive cause of international wars, ethnic wars or revolutionary conflicts. Such degradation often brings misery, yet such misery does not generally trigger the elite alienation and opposition to the government necessary for large-scale violence to occur.

2) Population growth can give rise to conflicts over increasingly scarce resources, such as farmland, *if* those conflicts involve elites seeking to take resources from popular groups, *or* competition between elite factions for control of those resources. However, what determines whether violent conflict arises are the relationships among popular groups, elites and the state, and particularly whether the state has the capacity to channel and moderate elite conflicts. Only where elite conflicts or popular resistance to elite actions overwhelm weak states do major conflicts arise.

3) While overall population growth and population density do not generally predict political risks, a number of distinct

kinds of demographic changes—rapid growth in the labor force in slow-growing economies, a rapid increase in educated youth aspiring to elite positions when such positions are scarce, unequal population growth rates between different ethnic groups, urbanization that exceeds employment growth and migrations that change the local balance among major ethnic groups—*do* appear to increase the risks of violent internal political and ethnic conflicts. In addition, there is some evidence that countries with larger populations have greater risks of both armed conflict and state repression.

4) Most population changes do not directly increase the risks of international wars between domestically stable states; however, because many international wars have their origins in domestic conflicts (e.g., the Iran/Iraq war growing out of Iran's revolution; international wars in West and Central Africa growing out of the collapses of Liberia, Sierra Leone and Congo/Zaire), in those contexts where population changes produce domestic political crises, the risk of international war is also increased. There is also some evidence that the intensity of war, in terms of casualties, increases in countries with exceptionally large youth cohorts.

5) Certain demographic changes, such as a rise in infant mortality—aside from whatever role they may have as causes—can be powerful indicators of coming political violence.

6) Rapid and large-scale demographic changes, such as a rise in mortality or a sharp rise in migration, can arise as an *outcome* of violent conflicts.

THE ENVIRONMENT AS A CAUSE OF VIOLENT CONFLICTS

Thomas Homer-Dixon provoked a great deal of controversy and concern with his claim that we are “on the threshold” of an era in which armed conflicts will arise with increasing frequency as a result of environmental change.ⁱⁱⁱ However, in the years since his warning, the search for evidence behind this claim has provided little support. As Paul Diehl has remarked, the “many publications from the [Toronto] project have produced largely abstract conceptions of the environment-conflict nexus, with

actual cases presented only as anecdotal evidence or as illustrative examples.”^{iv} After nearly a decade of research, it now seems clear that long-term environmental degradation of the kind that often accompanies development (e.g., soil erosion, deforestation and air and water pollution) has little or no significant role in generating civil or international wars.^v Detailed cross-national studies have found only very weak relations between environmental degradation and either international or domestic armed conflict.^{vi} In most studies that make an effort to measure the relative impact of environmental and other causes, “environmental factors emerge as less important in determining the incidence of civil conflict than economic and political factors.”^{vii}

For example, Wenche Hauge and Tanja Ellingsen, in the most comprehensive global test of the environmental-scarcity-leads-to-violence hypothesis with recent data (1980–92), found that while deforestation, land degradation and low freshwater availability were positively correlated with the incidence of civil war and armed conflict, the *magnitude* of their effects was tiny. By themselves, these factors raised the probability of civil war by 0.5 to under 1.5 percent.^{viii} These factors did have a slightly higher impact on the probability of lesser kinds of armed conflict (causing increases in the chances of such conflict by from 4 percent to 8 percent); but their influence paled compared to the impact of such traditional risk factors as poverty, regime type and current and prior political instability.

In addition, Günther Baechler’s extensive study of the relationships between environmental change and violent conflict found that while environmental degradation could be a background or triggering factor in ethnic or political conflicts, most such conflicts were local and peacefully resolved by government regulation or negotiations. Whether or not such conflicts “pass[ed] the threshold of violence definitely depends on *sociopolitical* factors and not on the degree of environmental degradation as such.”^{ix}

A third study, undertaken by an academic Task Force on State Failure sponsored by the US government,^x deliberately

sought environmental causes for a wide range of violent conflict events, including authoritarian coups, revolutionary wars, ethnic wars and genocides. However, after adjusting for the impact of living standards, regime type and involvement in international trade, *no* direct impact of environmental variables could be found.

It must be admitted that the range and quality of data on environmental change leaves much to be desired, and the poverty of such data may be one reason for these negative findings. Still, if environmental change were truly a major and pervasive cause of violent conflicts, it seems likely that some large cross-national studies of recent political violence would show more positive findings.

Should we therefore dismiss the environment as a cause of conflict? No, although I believe we can be free of the fear that environmental decay will unleash wars and revolutions across the globe. Rather, what research has shown is that although environmental issues do cause international and domestic conflicts, they are of the kind that are *generally settled by negotiation and compromise* and do not lead to taking up arms.

The reason for that is straightforward. Where the problem faced by two groups, or two nations, is over the degradation or depletion of an environmental resource, war neither solves the problem (it cannot make more of the resource) nor is it an economically efficient way to redistribute the resource (the costs of war almost invariably far outweigh the cost of gaining alternative resources or paying more for a share of the resource). For example, if two nations have a conflict over sharing river water—such as India and Bangladesh over the Ganges,^{xi} Israel and Jordan over the river Jordan^{xii} or Hungary and Slovakia over the Danube^{xiii}—they may threaten violence but in fact are most likely to produce non-violent resolution through negotiation or arbitration rather than war (and indeed all of these conflicts led to treaties or international arbitration^{xiv}). The reason is that for one party to insist on *all* the water would in fact be a *casus belli*; and to risk a war to simply increase one's access to water is economically foolhardy. Throughout the world, the main use of

freshwater (over three-quarters) is for irrigation to produce food. A reduction in water can be compensated either by adopting more efficient means of irrigation (drip rather than ditch); by switching to less water-intensive crops (dry grains rather than rice; tree crops rather than grains); or by importing food rather than producing it. All of these steps, though costly, are far, far, less costly than armed conflict. Thus for both the country with the ability to take more water and the country dependent on downstream flows, the issue will be how to use and negotiate use of the resource most efficiently; resort to war would inevitably be more costly than any gains that could be made from increased access to the resource. No nations have ever gone to war strictly over access to water; nor are any likely to do so in the future.^{xv}

ELITES AND VIOLENT CONFLICTS

Much of the literature on environmental scarcity and violent conflict has erred in predicting violence because of a fundamental misunderstanding regarding the causes of political crises. It is a profound and repeated finding that the mere facts of poverty and inequality or even increases in these conditions, do *not* lead to political or ethnic violence.^{xvi} In order for popular discontent or distress to create large-scale conflicts, there must be some elite leadership to mobilize popular groups and to create linkages between them. There must also be some vulnerability of the state, in the form of internal divisions and economic or political reverses. Otherwise, popular discontent is unvoiced, and popular opposition is simply suppressed.

Political analysts of violent conflict now recognize that the essence of political stability or instability lies in a set of reciprocal relationships: among states in the international system, between states and their society's elites, among elite factions and between both states and elites and popular groups. When states are fiscally sound, free of severe international threats and supported by their elites, they are enormously resistant to popular discontent. It is only when states become financially strapped or subject to international pressure, and are

deserted by their elites, that popular distress furnishes raw material for mobilizing forces for conflict.^{xvii}

Where land scarcity or other resource shortages appear to play a role in violent conflicts—in South Africa or Kenya, for example^{xviii}—the essence of the conflict has generally been the struggle among elite factions for control of political power, with control of land simply representing one of the prizes that go to the winning faction. Without political struggles that turn elites against the state, or that turn elite factions against each other, large-scale political conflicts are simply unlikely to arise. While the control of land—like the control of mineral or other resources—may figure in such struggles, the degradation of environmental resources is generally is not a significant enough factor to be a major cause of violent conflicts.

POPULATION CHANGES AND VIOLENT CONFLICTS

It is true that overall population growth, or increases in overall population density, do *not* generally lead to violent conflict. But research has shown a variety of instances in which *particular kinds of population changes* are strongly associated with political instability.^{xix}

Alex de Sherbinin's comment points out that viewing the impact of population change on conflict only in terms of overall population growth is too simple to capture the complex relationships involved. Rather, it is particular kinds of demographic changes, occurring in particular political and economic contexts, that cause instability.

For example, if an agrarian population that needs more land to provide for a growing population finds that adjacent land is owned, and even being expanded, for exclusive use by large landowners, conflict is likely and indeed nearly inevitable. Throughout history, confrontations over land between growing populations of peasants and large landholders have prompted rural rebellions in China, Latin America and Europe. In most such cases, there is no environmental degradation—peasants and landowners alike are often improving the land. However,

population growth leads to the cultivation of more marginal lands and incursions by land-hungry peasants into areas also sought by profit-hungry landlords. The result is a combination of pressure on peasant incomes and heightened conflicts with local elites. Conflict of this sort has arisen most recently in Chiapas in Mexico^{xx} but is typical of peasant/landlord relations throughout history, appearing in the French Revolution of 1789, the German Revolution of 1848, the Mexican Revolution of 1910, the Russian Revolution of 1917 and the Chinese Revolution of 1949.^{xxi}

Such rural conflict can be avoided if the urban and industrial economy provides sufficient jobs to absorb an expanding population. However, studies have shown that where urban growth is *not* matched by an increase in economic growth, risks of political turbulence increase.^{xxii} A recent study of political crises in sub-Saharan Africa from 1955 to 1995 by the State Failure Task Force found that, other things equal, the risk of political crisis nearly *doubled* in countries with above-average levels of urbanization but below-average levels of GDP/capita.^{xxiii}

The problem of over-urbanization relative to incomes is just one aspect of a more general principle relating population changes to political instability, namely that problems arise when there is a persistent mismatch between employment prospects and the size and nature of the labor force. Thus not only over-urbanization, but also over-education relative to the caliber of available jobs can create political discontent. In revolutionary situations ranging from Tudor England to Enlightenment France, from late Tokugawa Japan to modern Iran and the Soviet Union, political upheaval has been preceded by a surge in the production of youth with advanced education in the context of a relatively limited, semi-closed structure of elite positions.^{xxiv} The central authorities, who guarded the gates of social and economic advancement, drew elite discontent for a situation in which social mobility was increasingly sought but the paths of mobility were increasingly clogged.

Even without increases in higher education, the rapid growth of youth can undermine existing political coalitions, creating

instability. Large youth cohorts are often drawn to new ideas and heterodox religions, challenging older forms of authority.^{xxv} In addition, because most young people have fewer responsibilities for families and careers, they are relatively easily mobilized for social or political conflicts.^{xxvi} Youth have played a prominent role in political violence throughout recorded history, and the existence of a “youth bulge” (an unusually high proportion of youths 15 to 24 relative to the total adult population) has historically been associated with times of political crisis. Most major revolutions—the English Revolution of the seventeenth century, the French revolution of the eighteenth century and most twentieth-century revolutions in developing countries—have occurred where exceptionally large youth bulges were present.^{xxvii}

Christian Mesquida and Neil Wiener have presented data showing that the severity of conflicts, as measured by the number of deaths in armed conflict, is much higher for countries that have a large youth bulge, even when controlling for the effects of income and inequality.^{xxviii} Henrik Urdal has analyzed the effects of youth bulges on a wide variety of conflicts. Although he finds that youth bulges are not significantly associated with civil wars, they do appear to be associated with the onset of smaller violent conflicts, involving less than 1,000 deaths. Moreover, they seem to have an increasingly large effect as the youth bulge grows more extreme, and particularly in transitional regimes with neither a fully democratic nor fully autocratic character.^{xxix}

A number of researchers have also produced results showing that the size of population itself influences both the incidence of conflict, and the degree of state repression.^{xxx} Their argument is that larger populations both require more intense state action to suppress dissent and offer more opportunities for opposition groups to recruit and mobilize supporters. There are also generally more opportunities for clashes between different regional or ethnic groups, other things being equal, in larger populations. Some research has also found that state repression is higher in more rapidly growing populations.^{xxxi} However, other

scholars have found different results. The State Failure Task Force, for example, has so far found no significant effects for population size, population density, population growth or even youth bulges as a cause of violent conflicts.

These various results suggest a cautious approach to determining the precise effect of population variables on conflict. Part of the reason for the varying results may be that different researchers have relied on different methods to analyze their data. In fact, there is considerable controversy over how to analyze data sets made up of large numbers of 0/1 (peace/war) observations from many counties across many years, especially when the observations of war (1s) are relatively few compared to observed years of peace (0s). Conventional approaches to correct for auto-correlation run into difficulty compensating for simultaneous problems of spatial auto-correlation, temporal auto-correlation and rare-events bias; scholars have not yet determined which method will give the best estimates of the effects of population and other variables in such data.^{xxxii} Different approaches give different estimates of the significance of particular variables.

However, a more important reason for disagreements is that demographic factors are only a part of the complex causal forces behind violent conflicts. It is generally agreed that economic development (as measured by GNP/capita or infant mortality) and regime type (autocracy, democracy or transitional/intermediate) are critical elements influencing the risks of conflict. A host of other factors—leadership, colonial experience, terrain, trade and state discrimination—have also been suggested as playing a role. Population factors may interact and overlap with other such causal forces in varying degrees

For example, the State Failure Task Force has found that a country's involvement in international trade seems to have a moderating effect on conflict--risks of political crises are lower, other things being equal, for countries whose imports and exports are large compared to its gross domestic product.^{xxxiii} It appears that extensive involvement in international trade is either an indicator or cause of fairly stable economic

relationships among elites or perhaps a source of income for the regime that restrains conflict. However, countries with larger populations also generally provide more of their own food and manufactures, while smaller countries depend more on exports and imports to meet the full range of their investment and consumption needs. Thus, larger populations correlate with lower trade involvement. The task force finds that both larger population size and lower trade involvement are associated with higher risks of conflict and that when both variables are included in models of conflict processes, the impact of trade involvement generally remains statistically significant, while that of population size does not. It may be that population size affects conflict mainly through its relation to trade openness; but most of the other researchers who have found that larger populations have higher incidence of violent conflict have not included trade variables in their models.

It is thus too early to treat the preceding results on the impact of demographic factors on violence as definitive. Problems of method and of testing complex and varied models to explore various constellations of demographic and other causes, still remain.^{xxxiv} We might find that the relationships of demographic factors to conflict do not even fit the traditional notion of necessary and sufficient conditions as the basis for causal relationships.^{xxxv} The historical case data makes it appear that youth bulges might well be necessary, even if they are not sufficient, for the occurrence of large-scale violent conflicts.

Population movements across, or even within, political borders can also lead to violence. The US Indian Wars of the eighteenth and nineteenth centuries were caused by the expansion of the United States into already-settled Native American territories. The state-assisted migration of Han Chinese into the mainly Uighur-settled region of Xinjiang and into Tibet has led to violent episodes of rebellion in both regions, as their inhabitants struggled to maintain their distinctive identities and control over their territories. The Bantu migrations into southern Africa led to wars throughout the continent, while the movement of peoples, both forced and

by choice, across ethnic borders within the former Soviet Union has led to a legacy of ethnic and separatist conflicts.^{xxxvi}

The crucial element here is not migration per se; economic migration often leads to substantial benefits for both migrants and the destination country. What appears to matter for conflict are those cases wherein migration leads to clashes of national identity.^{xxxvii} That is, when one distinct ethnic group migrates into an area that is considered homeland by another ethnic group and challenges the dominance of the latter, then conflicts are likely to arise. If these conflicts escalate into contests for political control of the region, then ethnic war and even genocide often results.

To sum up, the still incomplete but growing body of evidence and analysis that we have argues that a number of specific population changes are strongly associated with increased risks of political violence:

1) An expanding agrarian population running up against land that is controlled or being expanded for exclusive use of large landlords;

2) An expanding urban population in an economy that is not providing commensurate economic growth;

3) An expanding population of higher-educated youth facing limited opportunities to obtain elite political and economic positions;

4) A large youth bulge; that is, an expansion of the 15 to 25 age cohort relative to the overall adult population of a society, especially where political institutions are weak;

5) The migration of populations into regions already settled by a population with a distinct ethnic or political identity.

Clearly, none of these conditions arises from population growth or even from specific population changes by themselves. The conditions that lead to violent conflicts involve population changes in specific contexts where there are blockages to the desires or needs of an expanding population. Thus, if we wish to know in what regions of the globe we are most likely to see population-induced political conflicts, we need to examine both

expected population changes and the contexts in which they will occur.

FUTURE POPULATION CHANGES AND RISKS OF VIOLENT CONFLICT

Even countries with relatively low growth rates may encounter situations in which population changes contribute to political violence: It is not the absolute rate of population growth but the imbalance between growth in specific sectors of the population and growth of the economy that is crucial to the creation of conflicts. For example, from 1970 to 1991 in the USSR, when economic growth slowed almost to zero, population growth was also minimal. However, the Soviet Union still encountered four of the five demographic risk conditions noted above, namely 2)—an urban population that continued to grow despite minimal economic growth; 3)—an over-expansion of young men with a technical higher education, most of whom were relegated to blue-collar jobs due to party restrictions on entry to the managerial and political elites and a stagnant economy; 4)—a large youth bulge in the Central Asian republics; and 5)—large-scale migration of Russians into many non-Russian ethnic soviet republics. All of these factors became important in mobilizing the urban and nationalist oppositions whose combination produced the collapse of the Communist regime.^{xxxviii}

It is precisely because of the importance of such imbalances that countries such as Saudi Arabia and China bear watching for political unrest, despite their success in dramatically reducing their rate of population growth. Although Saudi Arabia has dramatically decreased its population growth rate, from 5.2 percent per year in the 1980s to 3.2 percent per year in the 1990s,^{xxxix} such a rate of population growth leads to a doubling of population in less than 25 years. This rate of growth has produced a large youth cohort, combined with rapid expansion of the labor force and rapid urbanization (urban growth of 7 percent per year in the 1980s and 4 percent per year in the 1990s^{xl}). The slow-down of the Saudi economy with the decline

in world oil prices portends poorly for absorbing this large number of urban youth into the economy.

China has succeeded in cutting its overall population growth and labor force growth to less than 1 percent per year. But because of its enormous size, this still means finding new jobs for roughly 13 million people per year. Far more important, however, is the shift in China's population from the countryside to the city. Because of the saturation of the agricultural sector, population has been shifting to cities; virtually all of these new job-seekers, plus many older agricultural workers, have been pursuing urban employment. In an odd anomaly, despite very low overall population growth, China has one of the world's fastest rates of urbanization, at nearly 5 percent per year in the 1980s and 4 percent per year in the 1990s. These rates, combined with China's size, mean that in each decade, approximately 150 million people have been added to the population of China's cities and are dependent on urban jobs. Until recently, China's enormous rate of economic growth, averaging nearly 10 percent per annum, has allowed China to absorb these job-seekers. Yet in the last year, China's economic growth rate has dropped as the economy has tipped toward deflation. A sustained collision between diminished economic growth and the tens of millions moving to cities in search of work every year bodes ill for social and political stability.

Therefore, while the marked decrease in population growth in many countries and regions is good news for those concerned about global population, it offers no clear relief for concerns about the security implications of population change. Despite slow-downs in overall growth, many countries may well experience collisions between their agrarian populations and access to land; between the expansion of their labor force, educated aspiring elites, urban population and youth cohorts and the absorption rate of their economies; and between migrants and resident populations that inflame ethnic and regional tensions.

DEMOGRAPHIC CHANGES AS INDICATORS AND OUTCOMES OF VIOLENT POLITICAL CONFLICTS

Demographic factors have also proven highly useful in models for forecasting political risks. In the work of the State Failure Task Force, several demographic variables (including urbanization to development ratio, life expectancy, adult and infant mortality levels) were found to be useful predictors of political violence, even after allowing for the impact of regime type and such economic factors as international trade relations.^{xlii} In particular, the rate of infant mortality was found to be an important predictor of risk in almost all models, a result confirmed by Urdal.^{xliii} This is not because infant mortality itself directly affects political processes. Instead, it appears that infant mortality is the best single tool for assessing the wide variety of factors (average income, income distribution, provision of health care, nutrition) that affect the overall quality of life for individuals in a society. High levels of infant mortality, relative to world averages, indicate higher risks of political crises.

Nicholas Eberstadt has further argued that in communist countries in particular, a *rise* in infant mortality—something hardly ever seen, even in the Third World—is a powerful portent of coming upheaval.^{xliiii} Such a rise occurred in the Soviet Union prior to its collapse and now appears to be occurring in North Korea. These demographic changes may serve as a useful early alert of coming security problems.

Finally, it should also be remembered that the relationship between population changes and violent conflicts is not unidirectional. Violent conflicts can also have large and long-lasting impacts on demography. Revolutions frequently bring marked shifts in marriage and birth rates (depending on whether the post-revolutionary period is one of rampant optimism or pessimism), in urbanization (if the new regime sponsors urban development), in education (if the new regime dramatically expands enrollments) and in migration (as the new regime and the violence associated with it may either attract migrants from abroad or send them across borders seeking escape from violence or persecution). Violent conflicts rarely end conclusively; a more

common pattern is that cycles of violence succeed one another. Part of the reason for this is that violent conflicts often produce population changes that, in the next generation if not earlier, feed back into the creation of renewed political risks.

For example, in Palestine the preservation of stateless Arabs in refugee camps following the 1967 Israeli-Arab war led, twenty years later, to the growth of a vast, aggrieved youth cohort with limited economic prospects in the occupied territories. It was this cohort that played a crucial role in the *intifada* uprisings in Gaza and the West Bank. In Central Africa, the movement of Tutsi and Hutu groups across borders as a result of internal conflicts in Rwanda and Burundi led to destabilizing ethnic conflicts in Congo-Zaire and to renewed and intensified conflicts when new cohorts of formerly exiled Hutus and Tutsis returned to their countries. Unless measures are taken to provide both economic and political hope to the populations of present-day Kosovo, Bosnia and Palestine, it is likely that the population displacements that have occurred in those conflicts, combined with the weak economic conditions and political institutions facing the next cohort of young men growing up in those regions, will produce not a lasting peace but a renewal of ethnic conflicts. It thus appears that a focus on demographic changes can be helpful both in alerting us to coming security problems and in helping us foresee how these might fuel further problems in the future. 🇺🇸

Notes

ⁱ United States Bureau of the Census, *World Population Profile 1998*. Report WP/98 (Washington, DC: US Government Printing Office, 1999) p. 11.

ⁱⁱ *Ibid.*, p. 12

ⁱⁱⁱ Thomas Homer-Dixon, "On the Threshold: Environmental Changes as Causes of Acute Conflict," *International Security* 16 (1991) pp. 76–116.

^{iv} Paul Diehl, "Environmental Conflict: An Introduction," *Journal of Peace Research* 35 (1998) pp. 275–276.

^v Daniel Deudney, "The Case Against Linking Environmental Degradation and National Security," *Millennium* 19 (1990) pp. 461–476. Marc A. Levy, "Is the

Environment a National Security Issue?" *International Security* 20, no. 2 (1995) pp. 35–62.

^{vi} Nils Petter Gleditsch, "Armed Conflict and the Environment," *Journal of Peace Research* 35 (1998) pp. 381–400.

^{vii} Wenche Hauge and Tanja Ellingsen, "Causal Pathways to Conflict," *Journal of Peace Research* 35 (1998) p. 314.

^{viii} *Ibid.*, p. 311, Table II.

^{ix} Günther Baechler, "Why Environmental Transformation Causes Violence: A Synthesis," *Environmental Change and Security Project Report of the Woodrow Wilson Center* 4 (1998) p. 32; emphasis in original.

^x Daniel Esty, Jack A. Goldstone, Ted Robert Gurr, Barbara Harff, Pamela Surko and Alan N. Unger, *Working Papers: State Failure Task Force Report* and Daniel Esty, Jack A. Goldstone, Ted Robert Gurr, Barbara Harff, Marc Levy, Geoffrey D. Dabelko, Pamela Surko and Alan N. Unger, *State Failure Task Force Report: Phase II Findings* (McLean, VA: Science Applications International Corporation, 1995 and 1998).

^{xi} Richard Hill, Swarupa Ganguli and Dede Naylor, "Environmental Flashpoints in South Asia," in Robert S. Chen, W. Christopher Lenhardt and Kara F. Alkire, eds., *Consequences of Environmental Change—Political, Economic, Social*; Proceedings of the Environmental Flash Points Workshop, Reston, Virginia, 12–14 Nov. 1997 (University Center, MI: Consortium for International Earth Science Information Network, 1998) pp. 127–176.

^{xii} Miriam R. Lowi, *Water and Power: The Politics of a Scarce Resource in the Jordan River Basin* (Cambridge: Cambridge University Press, 1993).

^{xiii} Ronnie D. Lipschutz, "Damming Troubled Waters: Conflict over the Danube, 1950–2000." Paper presented at Environment and Security Conference, Institute of War and Peace Studies, Columbia University, New York, NY, 24 October 1997.

^{xiv} Peter H. Gleick, *The World's Water: The Biennial Report on Fresh Water Resources*. (Washington, DC and Covelo, CA: Island. 1998).

^{xv} A recent article providing an excellent survey of water and security issues notes that more than 3,600 treaties have been signed over different aspects of international waters, with remarkable elegance and creativity in dealing with water issues; moreover, in the last 3,000 years, "there has *never* been a war fought over water" (Aaron T. Wolf, "Water and Human Security," *Aviso: An Information Bulletin on Global Environmental Change and Human Security* 3 [1999] p. 2). Miriam Lowi ("Water and Conflict in the Middle East and South Asia: Are Environmental Issues and Security Issues Linked?" *Journal of Environment and Development* 8 [1999] p. 389) similarly states that "we have not found, to date, cases in which interstate war derives primarily and predominantly from the depletion, degradation, or inequitable distribution of environmental resources such as freshwater." See also Aaron T. Wolf, "'Water Wars' and Water Reality," in Steve Lonergan, ed., *Environmental Change, Adaptation, and Human Security*. Dordrecht: Kluwer (1999).

- ^{xvi} Ted Robert Gurr, *Handbook of Political Conflict* (New York: Free Press, 1980). Jack A. Goldstone, ed., *The Encyclopedia of Political Revolutions* (Washington, DC: Congressional Quarterly, 1998) and *Revolutions: Theoretical, Comparative, Historical, and Historical Studies*, 3rd ed. (Ft. Worth: Wadsworth, 2002).
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- ^{xviii} Valerie Percival and Thomas Homer-Dixon, "The Case of South Africa," *Journal of Peace Research* 35 (1998) pp. 279–298; and Colin Kahl, "Population Growth, Environmental Degradation, and State-Sponsored Violence: The Case of Kenya, 1991–1993," *International Security* 23 (1998) pp. 80–119.
- ^{xix} Alex de Sherbinin, "World Population Growth and US National Security," Environmental Change and Security Project Report of the Woodrow Wilson Center 1 (1995) pp. 24–29.
- ^{xx} Joseph Whitmeyer and Rosemary L. Hopcroft, "Community, Capitalism, and Rebellion in Chiapas," *Sociological Perspectives* 39, no. 4 (1996) pp. 517–539.
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- ^{xxii} Ellen Brennan, *Population, Urbanization, Environment, and Security: A Summary of the Issues*, Comparative Urban Studies Occasional Paper Series no. 22 (Washington, DC: Woodrow Wilson International Center for Scholars, 1999).
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- ^{xxiv} William Doyle, "The Price of Offices in Pre-Revolutionary France," *Historical Journal* 27 (1984) pp. 831–860. Lenore O'Boyle, "The Problem of an Excess of Educated Men in Western Europe, 1800–1850," *Journal of Modern History* 42 (1970) pp. 471–495. Goldstone (1991) and "The Soviet Union: Revolution and Transformation," in Mattei Dogan and John Higley, eds., *Elites, Crises, and the Origins of Regimes* (Lanham, MD: Rowman and Littlefield, 1998) pp. 95–124.
- ^{xxv} Samuel P. Huntington, *The Clash of Civilizations, and the Remaking of World Order* (New York: Simon and Schuster, 1996).
- ^{xxvi} Paul Collier, "Doing Well Out of War: An Economic Perspective," in Mats Berdal and David M. Malone, eds., *Greed and Grievance* (Boulder, CO: Lynne Rienner, 2000) pp. 91–111.
- ^{xxvii} Herbert Moller, "Youth as a Force in the Modern World," *Comparative Studies in Society and History* 10 (1968) pp. 238–260; Goldstone (1991).
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