Chapter 1 : Content : COMMENTARY: Stabilising population is a climate 'must'

Figure Population Density and Forest Cover: Central American Countries (and Data) Source: Updated (with data from Food and Agriculture Organization, The Global Forest Assessment) from Frederick A.B. Meyerson, "Population, Biodiversity and Changing Climate," Advances in Applied Biodiversity Science 4 ().

Contact Population Growth and Deforestation: A Critical and Complex Relationship During the last two decades, agricultural expansion, logging, development, and other human activities caused the deforestation of more than , square kilometers each year. In contrast, an area only one-tenth that size was regained due to reforestation efforts and natural re-growth. While population growth and density are unquestionably related to forest cover trends, there is no simple way to describe or predict that association. Not surprisingly, the relationship is as complex as the regional and cultural variations in human societies and the changes in those societies over time. Nonetheless, important patterns are beginning to develop from the many studies that have been undertaken and the evolving debate around them. An overview of studies conducted in the s and s reveals a strong relationship between population growth and deforestation in Central America, East and West Africa, and South Asia, but a much less clear association in Amazonia South America and Central Africa. At extremely low population densities less than one to two persons per square kilometer , it is possible to maintain large amounts of forest intact in areas where the population can be sustained primarily through the harvesting of non-timber forest products rather than by agriculture. This has been the case in parts of the Brazilian Amazon. In Central America, population density and loss of forest cover are closely related at many scales: Figure Population Density and Forest Cover: Central American Countries and Data Source: Reforestation in Key Developed and Developing Nations In the case of more-developed countries, the relationship becomes much more complex. The population begins to shift away from dependence on agriculture as a livelihood and agriculture uses more capital and technology and less labor. In addition, food, fuel, and timber needs may be met through imports from other areas of the country and world. Thus, the northeastern part of the United States, almost entirely deforested by the middle of the 19th century, is now largely reforested because people abandoned agricultural uses of the land and now import most of their food and fuel and some of their timber. Both population and per capita consumption may continue to increase but are no longer associated with local forests and land use. This pattern is also occurring in parts of Europe and some countries in the former Soviet Union. In a few large Asian countries, aggressive forest policy in the recent past has more than offset losses of forest cover from agricultural expansion and development. In spite of significant human population increases during the s, India added , hectares net through tree plantation programs. The general principle from the experience of countries as different as the United States, China, and India may be that after going through an initial deforestation phase, the combination of the scarcity of forest products and rising economic fortunes can lead societies to value, replant, and manage forests. Ecosystem and Biodiversity Challenges It is important to note that planted forests are very different from original forest cover in terms of species composition planted forests are often monocultures , ecosystem functions, and their ability to support a wide range of plant and animal species and withstand stress such as drought and disease. More than half of remaining forested land is found in less-developed countries, and many tropical forests are in areas with high population growth rates, high poverty, low access to reproductive health services, and rapid migration. For instance, in sub-Saharan Africa, human population density is greatest in area with the highest number of species of birds, mammals, snakes, and amphibians. Some of these species are threatened with extinction. Climate Change Uncertainty A critical wild card in the population-forests equation is global, regional, and local climate change, which can alter temperature and precipitation patterns sufficiently so that the existing forest cover type can no longer be supported. This is particularly true in areas with significant dry seasons, where even a slight decrease in rainfall can produce more frequent and more destructive forest fires, preventing the regrowth of certain species and favoring others, or even changing the ecosystem permanently

from forest to grasslands. The demographic characteristics of an area may facilitate this change by producing a more flammable mixture of fields and forests or by providing fire sources. In the long run, climate change is also likely to change the nature of human demands on forests, particularly in agricultural communities. Food and Agriculture Organization, Committee on Forestry, Wood and David L. National Academies Press, Suzi Kerr, Alexander S. Evidence From Costa Rica unpublished paper, Foster and Mark R.

Chapter 2 : Population: References and Readings | Worldwatch Institute

Frederick A.B. Meyerson, Ph.D., relationships between population and climate change. Indeed, I would argue that if one where he is writing a book on American.

References and readings compiled by the authors of the feature articles in World Watch magazine. Human Sciences Press, Lessons for Foreign Aid and U. Immigration Policy," Ecological Economics 8, , pp. Gordon and Breach Science Publishers, , pp. Abernethy, Virginia Deane, "Population and Environment: Reflections on the Human Future London: Royal Botanic Gardens, Abernethy, Virginia Deane, "Population Dynamics: Multi-Science Publishing Company, Ltd. Conrad, Cristoph; Lechner, M. The American University in Cairo Press, New Society Publishers, The Global Population Challenge: Critical Masses New York: Tolan, Sandy, "Beyond Regime Change: The Revision New York: National Book Company, Youngquist, Walter, and Richard C. Duncan, "North American Natural Gas: The following suggestions, by the editors, will give readers a flavor Dr. The Economics of Sustainable Development Boston: For the Common Good: Steady-State Economics, 2nd edition Washington, D. Day Day, Alice T. Population Reference Bureau, Urban Institute Press, Day, Too Many Americans Boston: Kahn, Successful Aging New York: Population, Health, and the Environment," Population Bulletin 58, no. Creel, Liz, Ripple Effects: Population and Coastal Regions Washington, D. Curran, Sara, et al. A Journal of the Human Environment 31, no. Population, Health, Environment Washington, D. Ohlsson, Leif, "Livelihood Conflicts: Environmental Policy Unit, Sida, , at http: Geographic Perspectives Washington, D. Central Intelligence Agency, , pp. University of California Press, Yale University Press, Human Population and the Future of Biological Diversity, Population and Environmental Change. International Edition Atlanta, Georgia: World Bank, World Development Indicators database, www. Responding to a Development Crisis Washington, D. The following list includes several papers of my own which develop in considerably greater detail the argument and ideas contained within my World Watch essay. I have also included a dozen or so books and articles that have been particularly helpful in shaping my thinking over the past decade and more. University of Illinois Press, Princeton University Press, Simon and Schuster, Seven Locks Press, Oxford University Press, Norton Critical Edition, edited by P. Multi-Science Publishing Company Ltd. Rees, Our Ecological Footprint:

Chapter 3 : WHO | Climate change and family planning: least-developed countries define the agenda

Where possible, global warming policy should include strong but equitable incentives for sustainable development and population stabilization, important goals in themselves regardless of the extent of future climate change.

Fred Meyerson Human population continues to grow by more than 75 million people annually. Since the first Earth Day in , global population and annual carbon dioxide emissions have both increased by about 70 per cent. As a result, per capita emission rates remain steady at about 1. Unfortunately, the Kyoto Protocol has had little measurable effect on per capita emissions, even in the countries that have agreed to national targets. Emissions in Western Europe reached 2 mt per person back in and have fluctuated just above that level ever since. Fred Meyerson Fred Meyerson. From to , US population and emissions both rose by 43 per cent. More than any another factor, population growth drives rising carbon emissions, and the US Census Bureau and United Nations both project that global population, currently 6. Per capita emissions It is, of course, possible that per capita emissions could decrease in the future, but a number of factors make this difficult. First, emission patterns are "sticky" due to slow turnover in our energy-intensive infrastructure, including power plants, housing, and vehicle fleets. Established consumption behavior is hard to change, by either individuals or nations. Second, while global per capita emissions have been relatively flat for decades, there is now more risk that they will rise, not fall, in the near future. Coal which releases the most carbon per unit of energy when burned is more abundant and less constrained than petroleum and gas. As oil becomes scarce and expensive, and population growth and development drive up energy demand, coal use has grown dramatically in recent years, particularly in China, but also in the United States and India. Finally, many developing countries that are experiencing explosive economic growth have not yet reached per capita emissions plateaus and also have rapidly rising populations. All these factors more than wipe out the minor savings associated with my family and others switching to compact fluorescent bulbs and efficient front-loading washers. The implication is that one of the best strategies for reducing future greenhouse gas emissions is population stabilization, as quickly as can be achieved by non-coercive means. Peak numbers But is stabilization likely or possible? The United Nations projects that global population will eventually peak well above 9 billion, based on the assumption that fertility rates in every country on the planet will converge at 1. This critical assumption, adopted relatively recently by demographers, is based only on a mathematical formula, and perhaps some wishful thinking. It is quite possible that global population could surge well beyond even current projections. Unfortunately, given our current trajectory, the disruptions, hardship, and conflict caused by climate change and variability may well increase death rates and decrease life expectancy before declining fertility stabilizes population. So, I believe the best course of action for both human well-being and climate policy is to quickly devote as many resources as possible to reducing unwanted pregnancy, so that we reach stabilization. Almost half of all pregnancies in the United States, and one-third globally, are unintended. We can do better than that, and several countries already have. This will require rehabilitation of the population policy and family planning fields, which have been attacked, shunned, and splintered in recent decades. Tragic stalemate Conservatives are often against sex education, contraception, and abortion, and they like growth--both in population and the economy. Liberals usually support individual human rights above all else and fear the "coercion" label, and therefore avoid discussion of population policy and stabilization. The combination is a tragic stalemate that leads to more population growth. We need to get over it. And certainly population policy should be front and centre at the UN. Framework Convention on Climate Change meeting, now taking place in Bali. This article first appeared on the website of the Bulletin of the Atomic Scientists. It kicks off a debate to be held online over the next three months on how population growth relates to our spiraling energy needs and whether addressing it can help provide a solution to the climate problem. To give your own feedback e-mail to:

Chapter 4 : How Overpopulation Leads to Habitat Loss and Mass Extinction

Frederick A.B. Meyersonis an ecologist and demographer who specializes in population policy and the interactions between population and the environment, particularly climate change and biodiversity.

Reducing unintended fertility should be a top international climate priority February 15, In a special addition of the Bulletin of the Atomic Scientists on Population and Climate change, Frederick A. Meyerson argues that the are many reasons why increasing access to voluntary family planning should be a top international priority. One difference is that several of us, myself included, feel that stopping emissions growth and climate change will be unattainable without universal, effective family planning programs and population stabilization. The international community should restore the goal of universal access to family planning as a top-tier priority, to protect both the climate and human wellbeing. How can we satisfy current unmet need for contraception and reproductive health services? It is a matter of both political will and money. Reaching and helping these women and their partners is critical for climate and human development policy. See " Family Planning and Reproductive Health: The United States continues to be the largest donor globally to international family planning efforts. As a result, the population growth rate could be reduced by about 30 percent, with a similar decrease in the growth of greenhouse gas emissions. Much of the technical knowledge about family planning resides in U. The United States could work closely with the U. Past efforts have shown how effective noncoercive programs can be, even in extremely poor countries such as Bangladesh and Kenya; and these programs have many other social and developmental benefits. Developed countries, beginning with the United States, also need to improve their reproductive health services and education. For instance, the United States should be able to lower its unintended pregnancy rate from nearly 50 percent to around 20 percent, the current rate in several European countries, as discussed in my earlier comments. If the Netherlands can do it, the United States can, too. Decreasing unintended pregnancy rates in America would slow population growth and greenhouse gas emissions. Universal access to family planning is no panacea, nor is it sufficient on its own to achieve population stabilization. We should discuss population education and media programs that affect the demand for services and their effectiveness in subsequent rounds of this debate. But lowering unintended fertility is the necessary first step toward population stability-and the climate mitigation and adaptation benefits that come with it.

Chapter 5 : Climate Change Policy

Frederick A.B. Meyerson, "Population, Bio-diversity, and Changing Climate," in Climate Change and Biodiversity; Advances in Applied Biodiversity Science 4, ed. Lee Hannah and Tom E. Lovejoy (Washington, DC: Center for Applied Biodiversity Science,).

Max Katz-Balmes Since the beginning of the Common Era two thousand years ago, the human population has grown exponentially. That number now stands at about 7. While it took humankind 12 years to add its 6 billionth, 13 years were required to add its 7 billionth, the first time in history that the interval between billions has grown Wise. But despite the decreased fertility rates, the population should continue to rise until at least In other words, the global population will likely not decrease anytime soon. What are potential issues with a large, perhaps excessively large, global population? Overpopulation is one of the most pressing problems faced by our society. Around the world, cities are becoming overcrowded, leading to the emergence of dirty slums that lack access to clean water, sanitation, and other basic human needs. Arable land is being replaced by sprawling, suburban developments. Climate change and air pollution are only exacerbated by an increased number of feet on the planet. Habitats are being destroyed. Entire ecosystems are being threatened. In fact, industrialization and overpopulation are helping to facilitate a mass extinction comparable to that of the dinosaurs. Along with fueling massive animal extinction, population growth contributes heavily to habitat loss. Around the world, in low-density regions as well as in high-density ones, population pressures create incentive to clear and develop land, in particular forests. In addition, the expansion of suburbs further and further away from urban areas clears significant amounts of natural land and puts many animals and plants in danger. To avoid the continuation of these patterns, humans must cease clear-cutting forests and promote vertical development rather than outward development. Deforestation heavily contributes to habitat loss and mass extinction, and our forests continue to thin every year. By contrast, only about 12, square miles per year was being reforested. Because of human actions, as well as natural climate shifts, forests today comprise less than half the area they did at their peak Meyerson. Overpopulation affects deforestation on a truly global scale, even in relatively uninhabited regions. From deforestation-overpopulation studies to date, a clear correlation exists between extremely low population density and maintenance of forests. Generalizing from these studies, at population densities less than two people per square kilometer, populations generally tend to be able to sustain themselves without agriculture and timber products Meyerson. However, in many low-density regions, such as in many Amazonian areas, forests are being destroyed despite a lack of people. This would counter the claim that overpopulation leads to deforestation and habitat loss, except for the fact that most of this land clearing results from external factors such as demand for timber or livestock from high population regions of the globe Meyerson. In order to satisfy the needs and desires of the ever-growing number of humans across the globe, forests continue to be destroyed in areas that do not depend on cleared land for survival. The developed world also feels the effects of land clearing and habitat destruction. For instance, in Florida, from , the population rose at a rate of four percent annually. Suburban sprawl also contributes heavily to habitat loss and mass extinction. As the population grows, more land is needed to provide housing and jobs, and development stretches farther and farther away from urban areas. And with increased sprawl likely comes increased habitat loss and degradation. Low-density outward development destroys acres among acres of natural land and destroys the homes of thousands of plant and animal species, putting many in danger of population decline or even extinction. Habitat loss, in particular deforestation, also fragments and alters animal migration patterns. For example, years of illegal clear cut logging in the Monarch Butterfly Biosphere Reserve in Mexico has impacted the migration corridors for the endangered monarch butterfly. Deforestation also makes animals easier targets for poachers, as hiding and camouflage become more difficult. In fact, the Convention on Biological Diversity CBD approximates that human-led deforestation in the past years has reduced the number of species living in forests by more than 30 percent Forest Animals Threatened. In many countries around the

world, overpopulation fuels habitat loss and places many plant and animal species in peril. As the author of the Audubon publication, Population and Habitat: Population pressures require forests to be cut down for agriculture, cleared for development, or harvested unsustainably for human consumption. In addition, rapid growth in the demand for suburban housing has pushed human development farther and farther away from cities, destroying more habitats and endangering more species. National Aeronautics and Space Administration, 7 Mar. Wildlife and Habitat Destruction. Negative Population Growth, Aug. Ewing, Reid, and John Kostyack. National Wildlife Federation, n. United Nations Environment Programme, Jones, Sam, and Mark Anderson. Guardian News and Media, 29 July A Critical and Complex Relationship. Population Reference Bureau, June Global Ecology in Human Perspective. Population Reference Bureau,

Chapter 6 : Climate change science and policy - JH Libraries

Climate Change Policy addresses that situation by bringing together a wide range of new writings from leading experts that examine the many dimensions of the topics most important in understanding climate change and policies to combat it. Chapters consider.

Climate change and family planning: Population Sustainability Network, London, England. Correspondence to Leo Bryant e-mail: Bulletin of the World Health Organization ; Some notable commentators have proved the exception. This has led to calls for universal access to voluntary family planning services to be included as one component of the range of policy responses to climate change. The relevance of demographic trends to adaptation to climate change has meanwhile remained almost entirely unexplored by the scientific literature. The main finding of this paper is that this deficit is in stark contrast to the concerns of the governments of least-developed countries. Despite the high-profile concern for the reduction of greenhouse gas emissions, least-developed countries have focused more predominantly upon adaptation to climate change and thereby how they may limit the predicted damage of climate change. In addition, this re-emergence is being driven at least as much by a grassroots movement as by leadership from the governments of either low- or high-income countries or global organizations such as The World Bank. This is illustrated by the case study of an Ethiopian project that has integrated family planning into a conservation and land management programme. Importantly, it suggests that voluntary family planning services should be made more available to poor communities in least-developed countries to assist their ability to adapt to the harmful effects of climate change. We stress the distinction between this approach and arguing that population growth should be slowed in these countries to curb increases in greenhouse gas emissions. It is perhaps more conducive to a rights-based approach to implement family planning programmes in response to the welfare needs of people and communities rather than in response to international concern for global overpopulation. The first was to reduce greenhouse gas emissions including carbon dioxide. This is currently being implemented through the Kyoto Protocol and is by far the most recognized component of the Framework Convention. Second, member states of the Organisation for Economic Co-operation and Development OECD have also committed to provide financial support â€” over and above existing aid flows â€” to developing countries that require assistance to adapt to the impact of climate change. This financial support is delivered through the Global Environmental Facility. Many common themes emerge regarding specific climate change effects. Almost all 38 of 40 countries identify the risk of increased flooding, while 36 identify longer or more frequent periods of drought. Thirty three identify reduced crop yield, 35 fresh water scarcity and 37 discuss threats to biodiversity. For the purpose of this paper however, we highlight the fact that 37 reports identify rapid population growth as a problem that either exacerbates the effects of climate change or impedes the ability to adapt. Six of these identified rapid population growth as a priority issue to be addressed by the NAPA strategy while only three of the 40 reports did not mention population growth at all. For example, in Bangladesh, increased flooding due to storms and rises in sea level are of concern, while in large parts of sub-Saharan Africa there are more concerns about a decline in agricultural production. For example, the populations of Rwanda and Uganda are, respectively, projected to roughly double and triple by the year Food insecurity is a major and recurring theme. Coastal and small island states often highlight the impact of climate change and rapid population growth upon deteriorating fishing stocks, while other nations are more concerned by the combined impact of climate change and rapid population growth upon crop yields, illustrated here by Vanuatu: Climate variability and extreme events such as droughts and floods will exacerbate the impact on the land, and in turn on the agricultural productivity. While some point to the loss of such resources consequent to environmental change and extreme weather events, others outline population growth as an additional stressor. The consequences of these combined stressors are often defined both in economic terms and as increased human vulnerability to the impact of climate change, as is the case in Uganda regarding its natural forest depletion: This high rate of

deforestation and forest degradation suggests that if nothing is done, Uganda may lose her natural forests by the end of this century. This will be very expensive because the consequences of deforestation are many; and include: Erosion and landslide processes are advanced. This situation explains the present migratory dynamic of people from the most densely populated provinces in the North Ruhengeri, Gisenyi, Byumba and the South Butare, Gitarama towards the least populated provinces especially in the East Umutara, Kibungo and South East Kigali Ngali in search of a new land for agriculture and livestock. These migrating populations are already economically vulnerable and this vulnerability is increased by the high risk of drought and desertification of the zone that receives them. Fresh water shortage is clearly a critical concern of many countries and is often linked in the reports to rapid population growth. Here the issue is usually one of diminishing supply due to climate change in the face of increasing demand due to population growth although some reports also point to the effects of rising pollution levels upon fresh water. Bangladesh highlights the twin effects of rising sea levels and population growth on the relative availability of fresh water: Pressure of the growing population and rising demand due to economic development will further reduce relative availability of fresh water supply in future. The adverse effects of saline water intrusion will be significant on coastal agriculture and the availability of fresh water for public and industrial water supply will fall. An integrated approach While many 37 of the NAPA reports identify rapid population growth as important to our understanding of the impact of climate change, few 6 propose to address population growth directly through the adaptation strategies they outline. Government response notwithstanding, some civil society organizations concerned with the impact of climatic trends upon human welfare have taken the lead in implementing the integration of sexual and reproductive health into environmental adaptation efforts. An example of such a multisector approach is offered by the Watershed Management Project of the Ethio Wetlands and Natural Resources Association and the Consortium for the Integration of Population, Health and Environment Network in Ethiopia, the aims of which support specific objectives identified in the Ethiopian NAPA, which is explicit on the need to mainstream family planning into the agricultural sector. The region had been severely affected by increasingly dry weather conditions, forcing inhabitants to cut back natural forest for agricultural purposes, in turn responsible for extreme soil erosion. The project had three implementation strands: This inclusion was based both upon the analysis that rapid population growth was in part responsible for local deforestation, and also to further the overriding project goal of improving health and welfare. Four years from project inception, the Wichi province Watershed Management Project has achieved results that are immediately apparent to visitors to the area. Improved irrigation, compost and tree-planting methods have reversed soil degradation trends and improved local nutritional levels, hence reducing the need for cutting back the forest. The Kiribati report puts it succinctly: In this respect, population policy is an important consideration of adaptation strategies.