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# Population and Environment Connections

The Role of U.S. Family Planning Assistance in  
U.S. Foreign Policy

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## Introduction

Current global population growth rates are not environmentally sustainable and the increasing demands of a growing global population are increasingly straining supplies of food, energy, and water. The expected consequences of climate change will stress resources further. Population growth dynamics compound challenges presented by increased resource consumption from a rising global middle class, making the world's population, and the quality and quantity of natural resources, top priorities for governments and the public alike.

Governments and multilateral organizations must recognize the relationship between resource demand, resource supply, and resource degradation across disparate economic and environmental sectors. Formulating appropriate and effective responses to growth-induced resource complications requires both a nuanced understanding of the problem and the use of innovative approaches to decrease finite resource consumption.

Family planning and integrated population, health, and environment (PHE) approaches offer opportunities to address such concerns. These efforts recognize the importance of population-environment linkages at the macro-level. They also operate at the household, community, and state levels, empowering individuals and decreasing community vulnerability by building resilience in a wider sustainable development context. PHE approaches embrace the complex interactions of population, consumption, and resource use patterns. To paraphrase Brian O'Neill, a leading scholar on population-climate connections, PHE approaches offer a way forward that is neither a silver bullet nor a red herring.<sup>1</sup> Addressing population-environment links is an essential step to tackling global sustainability crises.

## What Are the Connections Between Population and the Environment?

With Africa and Asia expected to account for the bulk of global population growth during the coming decades, the international community has become concerned over the looming scarcity (and/or degradation) of the natural resources needed to support people in these continents, particularly in sub-Saharan Africa, South Asia, and East Asia. The future availability of resources—whether soil, woodlands, or water—are expressed in per capita terms. The projected future scarcity of a given resource is also frequently analyzed in isolation from other resources. While as an analytical tool this approach has some shortcomings, viewing resource scarcity through a per capita lens can provide some significant insights into the population-environment nexus.

Figure 1. Projected Global Water Scarcity, 2025<sup>2</sup>

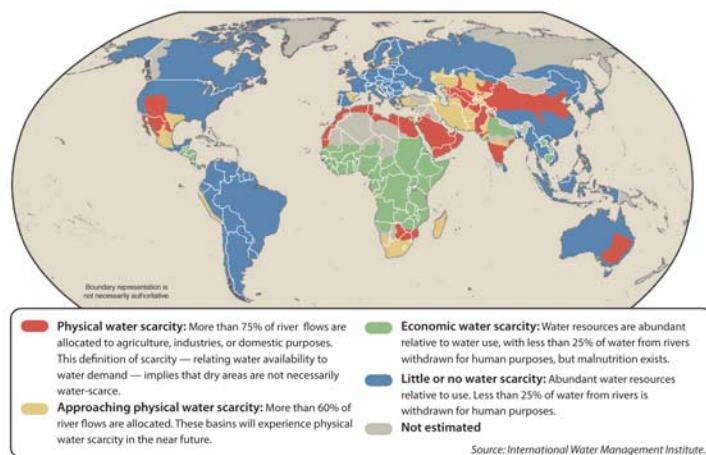
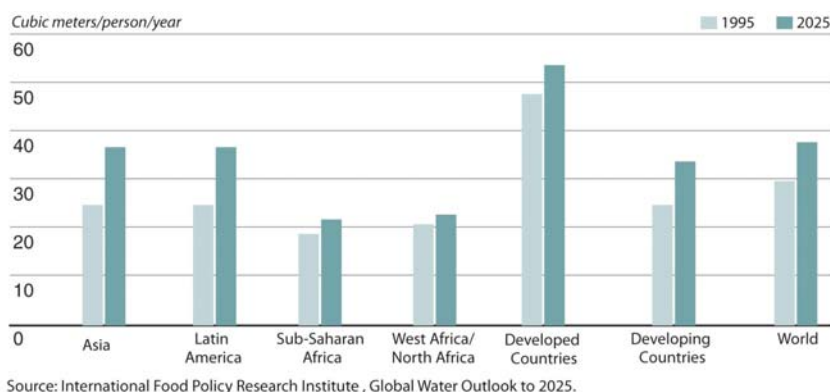


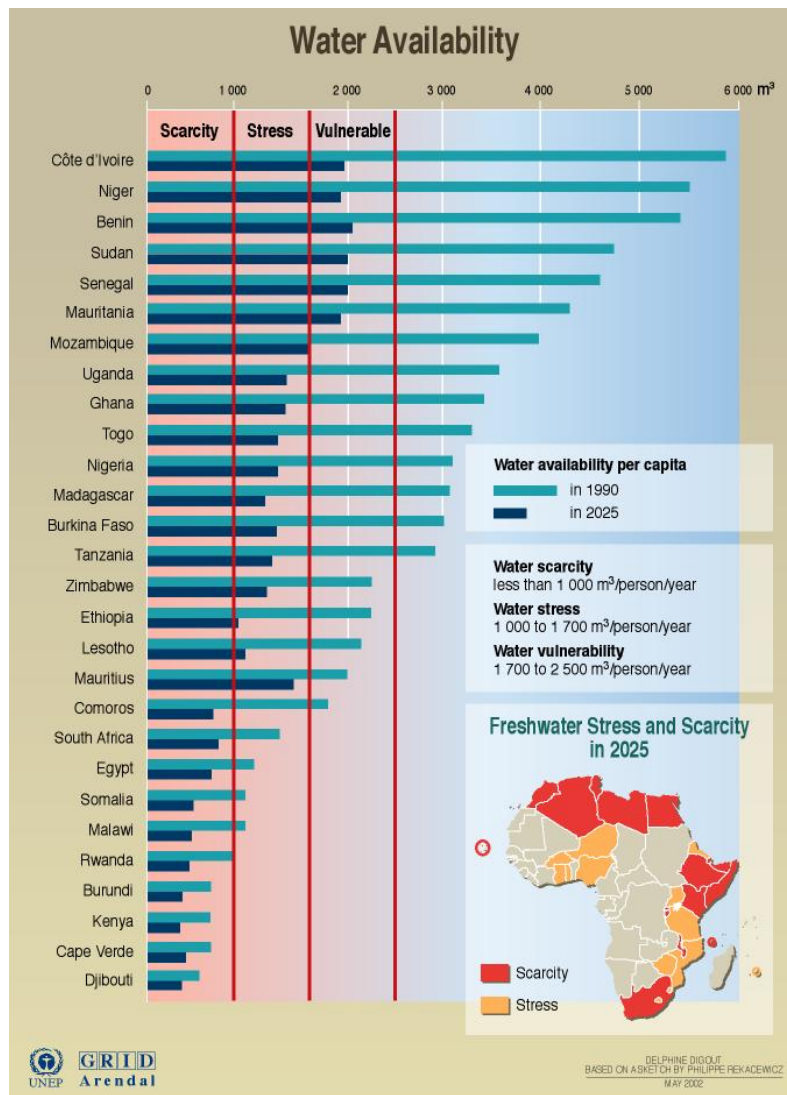
Figure 2. Per Capita Water Consumption (1995–2025)<sup>3</sup>



According to Figure 1, the Middle East, northern Africa, and wide swaths of Asia will have to cope with physical water scarcity—meaning that more than 75 percent of river flows will be allocated to agriculture, industries, or domestic purposes—within the next fifteen years. Economic water scarcity—where only 25 percent of water from rivers is withdrawn for human purposes, yet malnourishment still exists—will prove increasingly problematic across sub-Saharan Africa and densely populated northern India.<sup>4</sup> Meanwhile, both the developed and developing worlds will see a rise in per capita water consumption in the coming years, as shown in Figure 2.<sup>5</sup> Per capita use in developed nations will continue to greatly exceed that of developing countries through 2025, but Latin America and Asia will account for the highest jumps in per capita water usage during that time period.

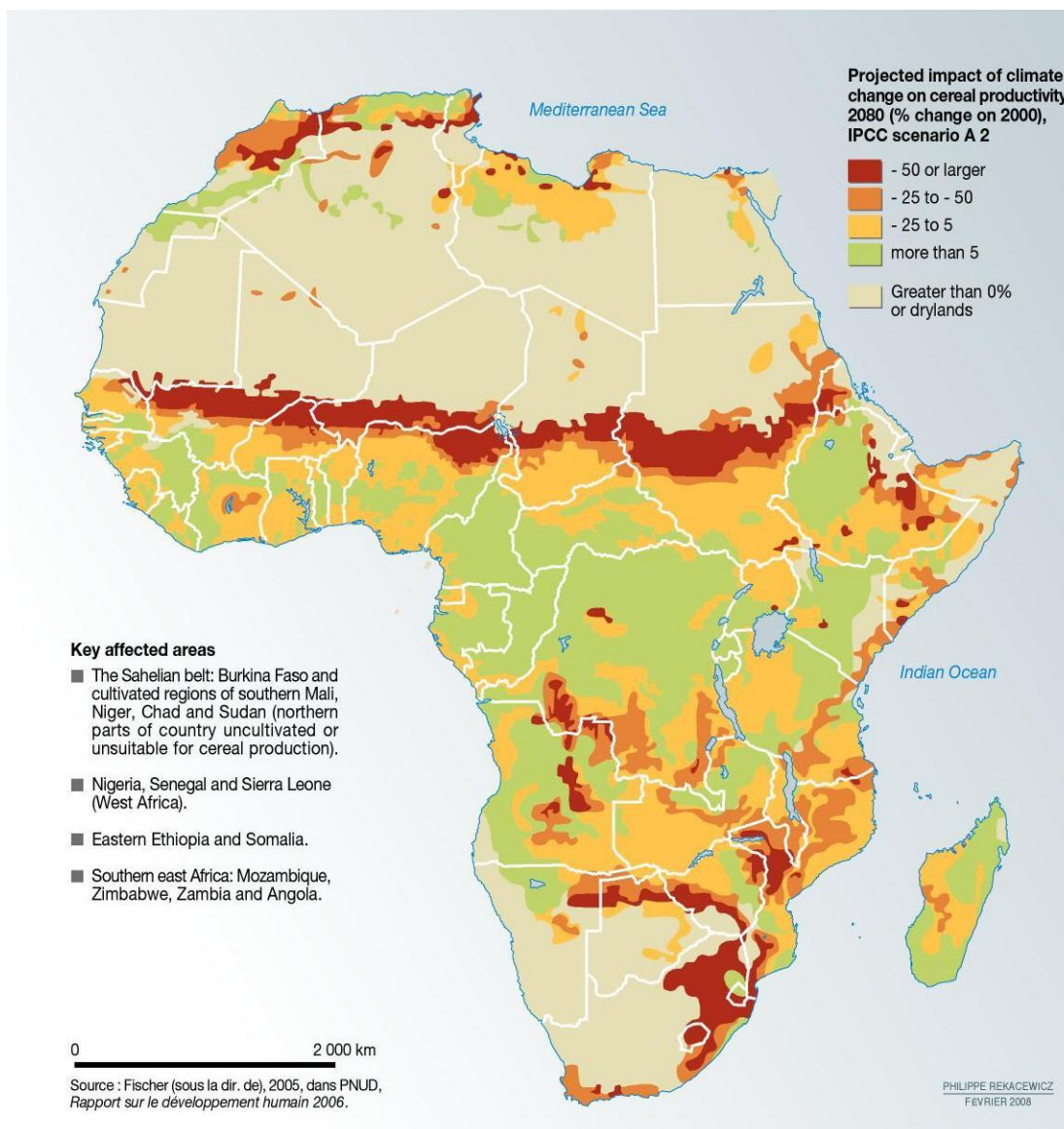
In Africa, per capita water consumption will not increase significantly, but per capita water availability will decline as populations grow. As Figure 3 shows, many African nations are projected to see a drastic decline in water access in 2025, as compared to 1990 levels. Much of the continent will find itself in a position of “water stress” by 2025, meaning that there will be less than 1,700 cubic meters of water per person per year—1,000 cubic meters less than what is considered to be an adequate availability of water per person, per year.<sup>6</sup> Several other countries, especially in northern Africa, will likely face outright water scarcity with less than 1,000 cubic meters per person per year available. Africa’s economic powerhouse, South Africa, is one of the several countries progressing from per capita water stress to water scarcity.

Figure 3. Water Availability per Capita (1990 and 2025)<sup>7</sup>



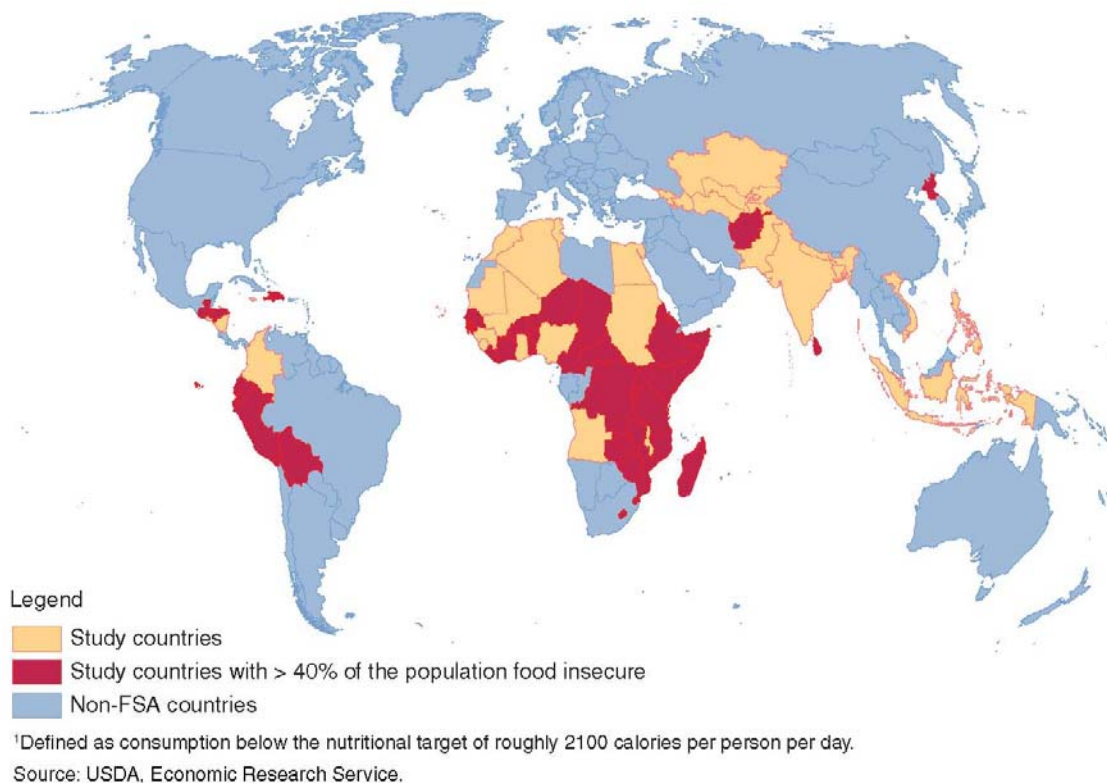
Agricultural productivity is inextricably linked to water availability, as declining per capita water availability often weakens national food security. With an estimated 80 percent of worldwide agricultural land watered primarily by rainfall, greater variability in precipitation levels caused by climate change could lead to severe declines in agricultural output in the coming decades. The Intergovernmental Panel on Climate Change (IPCC) has even suggested that yields from rain-dependent agriculture could decrease by 50 percent by 2020.<sup>8</sup> As shown in Figure 4, Africa may be greatly affected in the coming decades by both declining per capita water availability and the effects of climate change. In areas on the southern fringe of the Sahara desert, as well as in parts of South Africa, projected drops in cereal productivity could be significant at more than 50 percent in 2080, as compared to declines in 2000.

Figure 4. Cereal Productivity in Sub-Saharan Africa<sup>9</sup>



Even without taking into account the effects of climate change, population growth across the broader developing world will raise food output requirements and pose significant challenges to food security at the global level. Presently, 40 percent of the population in more than thirty-five countries suffers from food insecurity, with the largest concentrations located in central and eastern sub-Saharan Africa.<sup>10</sup>

Figure 5. Lower-Income Countries Where 40 Percent of the Population Is Food Insecure (2010)<sup>11</sup>



Many countries whose per capita food consumption falls short of basic nutritional requirements will continue to experience significant population growth in the coming decade, thereby increasing the number of people without access to sufficient food. This will pose a distinct challenge to food security campaigns such as the U.S. Feed the Future initiative. As Table 1 shows, the number of starving people will likely decrease in Asia, while sub-Saharan Africa will see the greatest regional increase in starvation.<sup>12</sup> Between 2010 and 2020, the U.S. Department of Agriculture estimates that the number of starving people across sub-Saharan Africa will swell from 390 million to 513 million people, while the number of starving people at the global level will remain essentially the same, declining slightly from 882 million to 874 million.<sup>13</sup>



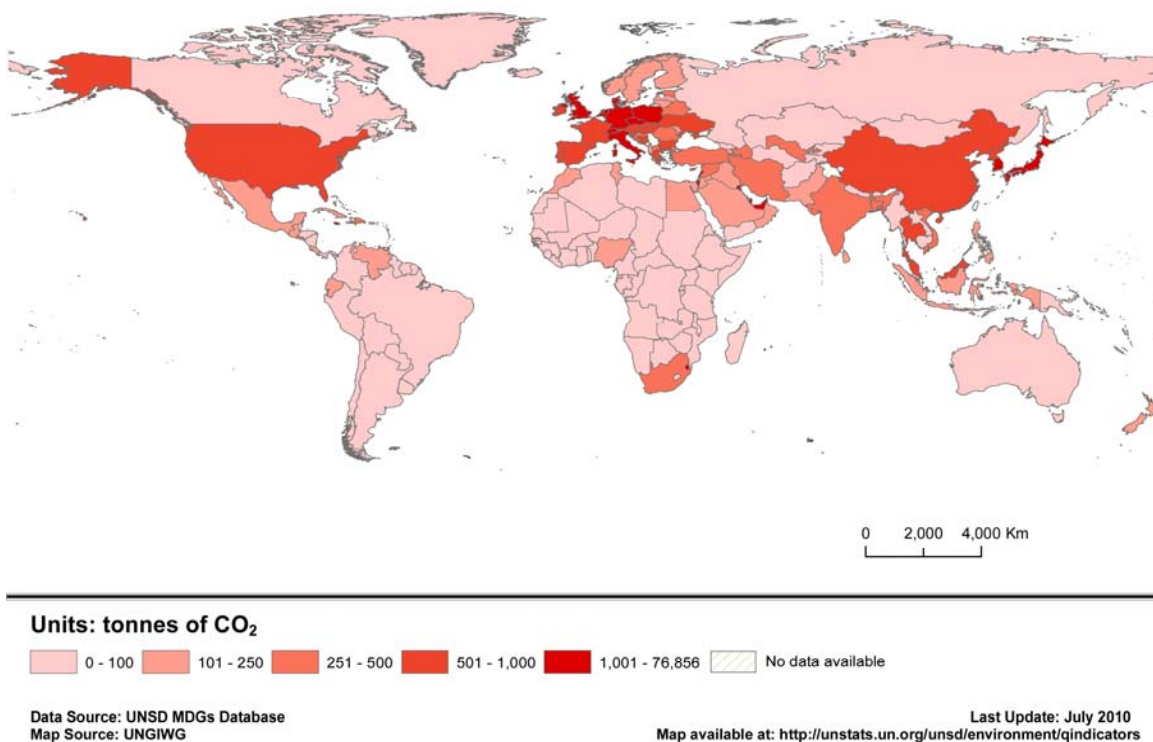
Table 1. Number of People Without Sufficient Access to Food (2010 and 2020)<sup>14</sup>

	2010	2020		2010	2020
<i>Million people</i>					
<b>Asia</b>	433	320	<b>SSA</b>	390	513
Afghanistan	17	32	Cameroon	8	10
Bangladesh	33	37	CAR	4	4
India	243	137	Zaire	68	88
Indonesia	47	25	Burundi	9	10
Korea	24	25	Eritrea	5	7
Nepal	6	7	Ethiopia	68	65
Pakistan	18	23	Kenya	33	42
Philippines	19	11	Rwanda	8	11
Sri Lanka	8	4	Somalia	9	12
Viet Nam	18	20	Sudan	0	0
			Tanzania	18	36
<b>LAC</b>	58	39	Uganda	14	28
Bolivia	6	5	Angola	4	10
Colombia	9	5	Lesotho	1	1
Dominican R.	6	2	Madagascar	16	21
El Salvador	1	1	Malawi	2	4
Guatemala	6	7	Mozambique	19	23
Haiti	8	9	Swaziland	1	1
Honduras	3	2	Zambia	5	7
Jamaica	0	0	Zimbabwe	8	9
Nicaragua	1	1	Benin*	6	10
Ecuador	6	3	Burkina Faso	7	13
Peru	12	3	Cape Verde	0	0
			Chad	7	9
<b>North Africa</b>	0	0	Cote d'Ivoire	9	5
Algeria	0	0	Gambia	1	1
Egypt	0	0	Ghana	5	3
Morocco	0	0	Guinea	0	0
Tunisia	0	0	Guinea-Bissau	1	1
			Liberia	2	1
<b>CIS</b>	2	2	Mali	0	2
Armenia	0	0	Mauritania	0	0
Azerbaijan	0	0	Niger	13	23
Georgia	0	0	Nigeria	32	39
Kazakhstan	0	0	Senegal	8	13
Kyrgyzstan	0	0	Sierra Leone	1	1
Tajikistan	1	2	Togo	3	5
Turkmenistan	0	0			
Uzbekistan	0	0			
			<b>Total</b>	<b>882</b>	<b>874</b>

Source: USDA, Economic Research Service.

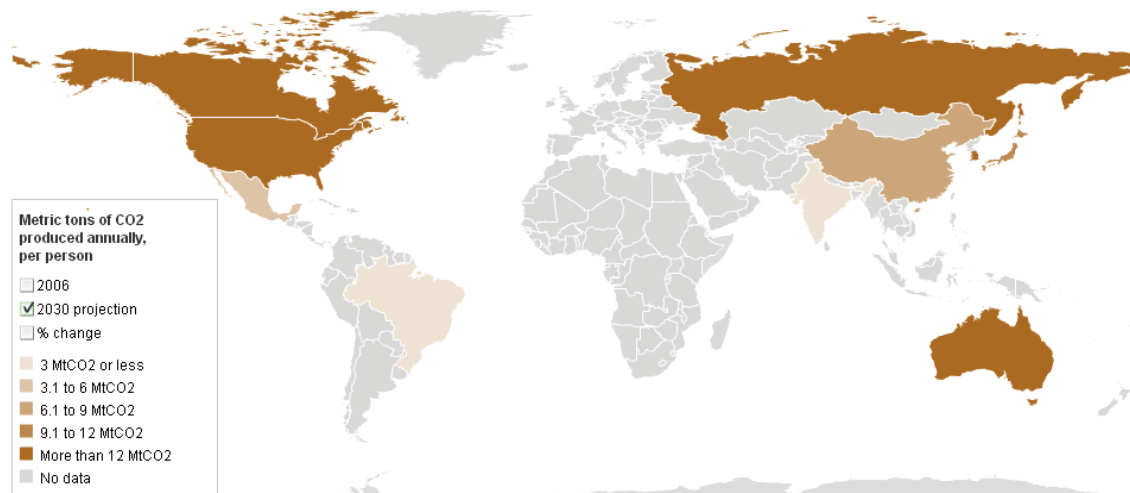
As populations grow across the developing world, so too will carbon emissions assuming other factors do not change. However, emissions levels in most developing nations pale in comparison to emissions levels in industrialized countries. A snapshot of current emissions levels by country (Figure 6) reveals a huge disparity between the developed and developing worlds.<sup>15</sup>

Figure 6. CO<sub>2</sub> Emissions per Capita in 2007<sup>16</sup>



Between 2010 until 2030, sustained high per capita carbon output levels are projected in Canada, the United States, Russia, South Korea, and Australia. In those countries, per capita emissions will exceed twelve metric tons annually. Japan and China will follow with an estimated 2030 per capita emissions levels of eight to ten metric tons. Meanwhile, India, Brazil, and Mexico have projected 2030 emissions levels of two to five metric tons. By comparison, sub-Saharan Africa, despite its rapid demographic change over the coming decades, will contribute far fewer carbon emissions per capita than countries in the developed world or rapidly modernizing economic powers, such as China and India.<sup>17</sup>

Figure 7. Climate Change Trends: Carbon Emissions per Person (2030)<sup>18</sup>



**Notes**

Emissions percent change is calculated by the EIA and based on regional changes between 2008 and 2030.

Source: U.S. Energy Information Administration; Climate Analysis Indicators Tool (CAIT) Version 6.0. (Washington, DC: World Resources Institute, 2009)

While per capita approaches provide insight into the connections between population growth and environmental security, they present an incomplete picture of the ways demographic change affects both local ecosystems and global environmental trends. Focusing on per capita data often obscures variable consumption levels associated with wealth and fails to distinguish between relevant demographic characteristics, such as different resource use patterns between urban and rural populations. To gain a more nuanced understanding of the connection between resource depletion and population growth, it is necessary to recognize environmental resources as fundamentally interlinked.<sup>19</sup> Viewing environmental conditions through a holistic lens is the only way to develop an accurate picture of the situation on the ground, either globally or in a particular region.

As populations increase, so does food demand, which imposes pressure on soil, water, and woodland resources. For instance, the need for heightened agricultural productivity burdens surface and groundwater resources because of irrigation needs. Then, the drive for increased crop yield often results in intensive and unsustainable use of farmland, inflicting long-term damage to soil quality. Also, rising food demand regularly necessitates clearing new land for agriculture, which commonly means felling forests, thus accelerating soil erosion and interrupting the hydrological cycle that spurs rainfall.

Deforestation caused by increased resource consumption hinders woodland areas' ability to serve as "carbon sinks" that pull carbon from, and release oxygen into, the atmosphere. This hinders forests' ability to act as natural mitigators against greenhouse gas emissions. Because of this, decline in global forest cover both accelerates and deepens the ramifications of climate change.

Viewing the interconnectedness of resource degradation through a food-security lens is instructive, but it does not account for all factors. Economic modernization, rising living standards, and changing consumer preferences across the developing world also place a substantial burden on natural resources. With the U.S. Environmental Protection Agency projecting that developing countries' total greenhouse gas emissions will overtake those of developed nations within the next decade, it is clear that rapid population growth and economic development across Africa and Asia will contribute substantially to climate change.

## A Brief History of an Idea: Population-Environment in U.S. Discourse

If the connections between population growth, natural resources, and environmental problems are evident, why is comparatively little attention focused on these issues?

First, this has not always been the case. Eighteenth-century British political economist and demographer Thomas Malthus famously predicted that population growth would outstrip agricultural food production, and without preventive measures to reduce birthrates, technological innovation, or some kind of widespread mortality event, humanity faced famine-induced collapse.<sup>20</sup> Echoing Malthus, Paul Ehrlich predicted that without limiting growth, overpopulation would eventually lead to famine and starvation in the 1970s and 1980s.<sup>21</sup> Similarly, the authors of *The Limits of Growth* claimed that population growth, expressed exponentially, will at some point surpass the planet's ability to support more people, because of the linear growth of technological innovation and the Earth's finite resources.<sup>22</sup>

But by the end of the twentieth century, the worst of the neo-Malthusian visions had not come to pass. In fact, declining fertility rates led some policymakers to declare the problem “solved.” In the 2000s, immigration opponents in the United States used the population-environment nexus to support their arguments against increasing the number of immigrants in the country—an issue that almost tore apart the Sierra Club in 1998.<sup>23</sup> Additionally, during the Reagan and both Bush administrations, political foes of contraception and abortion targeted funding for international family planning programs and added restrictions such as the Mexico City policy (the “global gag rule”), which prevented nongovernmental organizations (NGOs) that received federal funding from administering or promoting abortion services.<sup>24</sup>

Following the election of Democratic presidents Bill Clinton and Barack Obama, some of the most restrictive policies, including Mexico City, were removed. In 2010, the Office of Population and Reproductive Health at the United States Agency for International Development (USAID) received its largest budget to date.<sup>25</sup> In addition, top Obama administration priorities, including Feed the Future and the Global Health Initiative, adopted the view that population, food, and health issues are interconnected. Secretary of State Hillary Rodham Clinton and USAID administrator Rajiv Shah have called for coordinated approaches to these problems, yet it is not clear at this time how such linkages will be addressed in practice.<sup>26</sup>

As for NGOs, some environmental organizations remain reticent to become involved in an arena that is fraught with policy sensitivities. Most environmental organizations decline to specialize in family planning or population dynamics because the development field is “controversial enough” without adding another fiercely disputed issue.<sup>27</sup> Family planning has also consciously been ignored by most mainstream media because of its connections to immigration and contraception/abortion debates. Only recently has media coverage of population-environment issues seen an uptick. Widely discussed books by prominent writers and journalists have been published (or are in the works), and well-known bloggers such as Andrew Revkin of the *New York Times* have frequently commented on population-environment concerns. *National Geographic*, *PBS NewsHour*, and the Pulitzer Center on Crisis Reporting launched a collaborative series on population issues in early 2011.<sup>28</sup>

## In Focus: Population's Links to Climate Change

Understanding future scenarios regarding greenhouse gas emissions is complicated because there are multiple moving parts within the nexus of climate change and shifting global demographics. Worldwide population growth—especially over the past fifty years—has been a highly dynamic process, unfolding at varying rates at both global and regional levels. These divergent rates of growth are poised to continue in the decades to come, as some developed nations (particularly across Europe) face long-term demographic declines, while the populations of many developing nations (such as Pakistan and Ethiopia) are expected to double by 2050.<sup>29</sup>

From a distance, worldwide demographic change appears to have had substantial implications for climate change. After all, rises in greenhouse gas emission levels have nearly mirrored global population growth during the past half-century.<sup>30</sup> But how much of that parallel growth may be attributed to a direct cause-and-effect relationship? Today, as large portions of the developing world—particularly in Asia and sub-Saharan Africa—grow in population and modernize economically, global energy demand will further increase, raising greenhouse gas emissions in the process. While the mounting demand for (and use of) fossil fuels needed to power developing nations is a substantial contributor to global climate change, there are a host of other, more nuanced cause-and-effect relationships that also must be considered to fully understand the complexity of the population-climate nexus.

Several demographic dynamics, from urbanization and aging to consumption levels and dietary preferences, complicate the connection between population growth and greenhouse gas emissions. Brian O'Neill of the National Center for Atmospheric Research (NCAR) explains that “Slower population growth would not solve the climate problem, but it could make a contribution. It is neither a silver bullet nor a red herring.”<sup>31</sup> In a recent paper O'Neill writes that by “using an energy-economic growth model that accounts for a range of demographic dynamics, we show that slowing population growth could provide 16 to 29 percent of the emissions reductions suggested to be necessary by 2050 to avoid dangerous climate change.”<sup>32</sup>

Urbanization can also lead to higher emissions levels because urban centers, with their greater economic activity, are more energy-intensive than rural areas.<sup>33</sup> According to the UN's Population Division (UNDP), since 1950 the global urban population has grown from 736 million to almost 3.5 billion as of 2010, meaning about half of humanity now lives in urban centers. By midcentury, UNDP projects that the global urban population will rise to 6,398,000,000; however, this urban growth will not be experienced evenly.<sup>34</sup>

“Our surveys and projections indicate that all urban growth over the next twenty-five years will be in developing countries,” Hania Zlotnik, director of the UNDP, told the BBC.<sup>35</sup> She explained that “in developed countries, urbanization will remain the same or decline.”<sup>36</sup> In addition to driving global greenhouse gas emissions, high rates of urbanization in the developing world also drive climate change. Increased urban growth reduces forest cover in surrounding rural areas as cities expand outward and increase demand for agricultural and forest products.<sup>37</sup>

Consumption levels and shifting consumer preferences are also important facets of population growth and economic modernization. For example, according to the U.S. Energy Information Administration, the United States, home to less than 5 percent of the world's population, contributed more than 20 percent of global greenhouse gas emissions in 2007. Owing largely to high per capita consumption levels of food and material goods, the United States—and much of the rest of the developed world—imposes a carbon footprint wildly disproportionate to its population size.

As economic modernization takes hold across the developing world and consumer preferences begin to change, the per capita carbon footprint in those countries will likely grow as well. For example, changes in eating patterns—away from vegetable-based diets and toward meat-based diets—place significant strain on the environment. Meat requires far more water and energy to produce. In short, affluence can, and usually does, carry a hefty environmental price tag.

Aging populations and household structure can also change emissions levels. According to the IPCC's *Special Report on Emissions Scenarios*, smaller households in the United States typically have greater per capita carbon-intensive usage than larger households, especially when it comes to energy and utilities.<sup>38</sup> The trend is particularly relevant in China.<sup>39</sup> Younger households typically have greater carbon footprints. However, if these patterns hold true and the U.S. domestic population continues to age, the study suggests that by 2100 the United States could reduce its greenhouse gas emission levels by one-third.

How might these trends play out in other parts of the world? As developing countries modernize and potentially experience slower population growth rates, resulting from wider access to education and improved dissemination of family planning technology, a similar trend toward smaller households could result. This development may bring population expansion to more sustainable levels, but it may also increase households' per capita emissions output.

It is important to remember that these aforementioned demographic trends do not exist in a vacuum. They are often interrelated in a complex web of cause and effect. For example, shifts to more nutrient-rich diets in many societies could lead to longer average life spans, intensifying population-linked pressures on natural resources and the environment. At the same time, urbanization and rising living standards may fuel changes over time in dietary preferences and material consumption patterns, resulting in greater energy consumption. For example, while China's population is aging—a trend that favors lower emissions—their population is also rapidly urbanizing, which leads to substantial increases in carbon intensive economic output.<sup>40</sup> Consequently, the country's aging population structure, coupled with ongoing urban migration, is slated to increase emission levels.

As the case of China illustrates, there is no one-size-fits-all approach to understanding the global linkages between trends such as urbanization, resource consumption patterns, and an aging population. Instead, these aspects of population growth often vary at regional, subnational, and even local levels, and must be viewed and analyzed in the appropriate context when formulating policy options.

## From Mitigation to Adaptation: Moving to Empowerment in Population-Climate Linkages

Precious little research has systematically addressed population links to either mitigation or adaptation to climate change.<sup>41</sup> This shortfall is increasingly recognized, but such empirical or policy investigations are still viewed by many as falling outside the realm of focus in either area.<sup>42</sup>

Optimistic views suggest that even if current rates of global population growth continue, emissions will slowly decrease. In this scenario, technological solutions, specifically carbon-capture infrastructure or low-pollution green energy infrastructure, will be used to wean the planet off fossil fuels. A more pessimistic perspective suggests that even if global population growth does drop in the coming decades, greenhouse gas emissions could still increase substantially, if Western-style per capita consumption levels are adopted by the developing world and developed countries do not lower their high consumption levels. Offsetting this trend would require implementing fundamental changes to worldwide patterns of consumption, natural resource use, and agricultural production—a daunting, multifaceted task that would likely span generations.

Given the scale and requirements of these fundamental changes, all possible steps to reduce emissions should be under consideration. In this context, meeting unmet demand for family planning services can be considered a relatively low-cost dimension of larger, long-term mitigation efforts.

Unmet demand is not just an issue for developing countries. Approximately half of all pregnancies in the United States are unintended, and the national population is expected to grow from its current 309 million to upward of 420 million by mid-century.<sup>43</sup> High per-capita emissions suggest an additional (if secondary) rationale for addressing unmet need for family planning services.

Much of the research and policy efforts addressing climate change have focused on mitigation, and considerably less attention has focused on adaptation to climate change effects. In the population-climate field, where the fastest-growing populations are in poor developing countries, a focus on mitigation could be perceived as blaming the victims. Poor African women are the least responsible for carbon emissions but some of the most vulnerable to climate change's anticipated effects. When advocates push developing countries to reduce population growth to help solve the climate problem, the reception—from both rights and equity perspectives as well as an emissions perspective—is understandably negative.<sup>44</sup>

Increasing the focus on adaptation can alter the perception of blame. Lack of access to reproductive health services and attendant population growth can be viewed as a source of vulnerability to the consequences of climate change. This perspective can lay the foundation for providing greater access to family planning as a way to improve the capacity to adapt. In Ethiopia's National Adaptation Program of Action (NAPA), rapid rural population growth rates and unmet need for family planning are explicitly recognized as additional sources of vulnerability to climate change.<sup>45</sup> In thirty-seven of the forty-one "Least Developed Countries" with NAPAs, rapid population growth has been linked to climate change.<sup>46</sup> However, a 2009 report reveals that the

relationship between population growth and vulnerability to climate change “is not matched with a proportional identification of adaptation interventions; indeed only six NAPAs clearly state that slowing population growth or investments in RH/FP should be considered among the country’s priority adaptation actions. . . . Most NAPAs focus priority attention on projects to promote food security and water resources.”<sup>47</sup>

Framed in the context of lowering vulnerability and empowering women and families, family planning becomes part of an integrated package of interventions to help protect some of the most vulnerable from the effects of climate change.



## Development Programs Can Address Population-Environment Linkages

Prominent environmental NGOs primarily concerned with biodiversity are adopting a more “people-centered” development approach to conservation.<sup>48</sup> No longer is a “parks only” lens, where people are essentially absent from conservation efforts, seen as sufficient or effective in achieving long-term ecosystem protection and biodiversity goals. While major conservation actors continue to climb the learning curve, the linked nature of population growth, health services, and natural resource management efforts is already being addressed within the field in a variety of ways.

Programs in the Philippines, Nepal, Uganda, and Ethiopia provide examples of how integrated development initiatives can decrease vulnerability and empower underserved and poor populations. These diverse efforts aim to simultaneously meet the health (including family planning) and development needs of remote rural communities while sustaining the natural resources and biodiversity upon which they depend. These inclusive, cost-effective, and multidimensional approaches have matched, and in some instances surpassed, the effectiveness of single-sector environmental and health interventions in comparable areas.<sup>49</sup> Maintaining these small-scale programs is a challenge, so scaling them up to serve larger areas is a critical priority.

These integrated programs have a number of potential advantages.<sup>50</sup> Synergies in service delivery have garnered some cost benefits. Combining family planning and environment programs has led to higher levels of female participation in natural resource management and higher levels of male participation in family health decisions. In addition, these integrated programs are providing entry points that respond to community demands for livelihood approaches and increased opportunities to generate income.<sup>51</sup>

The USAID Office of Population and Reproductive Health (PRH) and the David and Lucile Packard Foundation have funded integrated programs that address family planning and environmental conservation. In the case of USAID, Congress has consistently directed that some PRH funding be devoted to serve populations in hotspots of biological diversity. More recently, special reference to population and climate change was included in the conference report of the FY2010 funding bill.

### *CASE STUDIES: INTEGRATED ACTION ON POPULATION-ENVIRONMENT LINKS*

#### **Philippines**

In the Philippines, the PATH Foundation Philippines’ Integrated Population and Coastal Resource Management (IPOPORM) program embraces a holistic approach to addressing pressing needs for both family planning services and sustainable environmental stewardship.<sup>52</sup> The IPOPORM

program has enhanced food security by promoting the pursuit of alternative economic livelihoods. It operates in densely populated coastal communities, where local fisheries have been depleted because of increased demand for food due to rapid population growth. The IPOPCORM program has enhanced food security by promoting the pursuit of alternative economic livelihoods, which has allowed critical local fish stocks to recover. At the same time, the initiative has also mitigated human-induced pressures on the environment by disseminating family planning tools and services, particularly to young and/or low-income populations. Their efforts in rural, underserved coastal areas have empowered these groups to make more informed choices about their reproductive health.<sup>53</sup>

The IPOPCORM program's approach has yielded measurable benefits since the initiative was launched in 2001. By partnering with local organizations at the governmental and community levels, the PATH Foundation Philippines has helped create protected marine sanctuaries and has promoted economic aquaculture development in areas outside the fishing industry—such as seaweed harvesting—that have allowed endangered fisheries to rebound. Meanwhile, in order to further integrate the dual goals of sustainable population growth and environmental recovery, the IPOPCORM program has also enlisted target communities in its family planning outreach efforts. This cross-sectoral approach has reduced program costs and simultaneously improved health and environmental outcomes, out-performing compartmentalized, side-by-side sector interventions.<sup>54</sup>

## Nepal

In the agriculture-dominated and impoverished southern Terai region of Nepal, family planning outreach efforts have been incorporated into community forest management programs. This integration has highlighted the connections between population growth and woodland degradation.<sup>55</sup>

Firewood is the cheapest and most widely available energy source—wood-burning accounts for 87 percent of domestic energy production, according to World Wildlife Fund Nepal—and woodland resources have been decimated. Only 30 percent of the country's original forest cover remains.<sup>56</sup> Integrated PHE initiatives in the rapidly growing Terai region have sought to mitigate woodland destruction by promoting alternative energy sources, particularly biofuels and fuel-efficient cookstoves.<sup>57</sup> These efforts have gradually lowered rates of respiratory illnesses in certain target communities and have saved women time and physical labor typically involved in firewood collection.

Simultaneously, these initiatives have disseminated family planning tools and services, which have reduced the population's effect on the local environment to sustainable levels. Between 2006 and 2008, contraceptive use among couples in Khata grew by 43 percent.<sup>58</sup> Women have been encouraged and empowered to play an active role in both their reproductive health and the management of their local environments.

As in the PATH Foundation Philippines' IPOPCORM initiative, local leaders in the Terai region have embraced frontline environmental conservation efforts. Fuel-efficient cookstoves have helped reduce pressure on vulnerable forests, saving more than 1,500 metric tons of firewood per year in the Khata region. Meanwhile, other forms of green technology, such as solar lamps, have reduced household reliance on kerosene, lowering the incidence of respiratory infection, particularly among children.

## Uganda

In Uganda—a country with one of the world’s highest total fertility rates at 6.5 children per woman—rising demographic pressures over recent decades have affected the health of rural populations. Population growth has also led to environmental degradation and heightened the vulnerability of local wildlife populations.<sup>59</sup> Given the strong linkages between these problems, the nation’s rural southwest has been an ideal testing ground for integrated PHE efforts that principally focus on family planning.

Conservation Through Public Health (CTPH), a community-development program active in the region surrounding Bwindi Impenetrable National Park, has spearheaded efforts to promote contraceptive use as a means to enhance public health and sustainability.<sup>60</sup> CTPH has trained volunteers in the region to deliver family planning information, monitor the prevalence of illnesses like tuberculosis (which can be transmitted to livestock and wildlife, including gorillas), and highlight the need for environmental preservation to protect the region’s lucrative ecotourism industry, which is largely based around Bwindi’s endangered mountain gorilla population.

Educational efforts by CTPH and its partners have emphasized that families with fewer children not only place less strain on local soil and woodland resources; they also enjoy higher living standards. It is a message that has started to gain some traction in target communities. However, promoting family planning in Uganda has been challenging, particularly since in many rural areas cultural and religious norms opposing contraception remain deeply entrenched. Additionally, rural Uganda for the most part lacks reliable health care infrastructure, so that even when family planning tools and services are offered, significant (and challenging) travel may be required to access them. One of the ways CTPH hopes to overcome this hurdle is by training volunteers in local communities to provide family planning services during house calls.

Despite the Ugandan government’s support of family planning outreach efforts, more partnerships need to be made in the country’s rural areas—and more reliable funding secured—before integrated family planning and environmental protection efforts can have a real and measurable effect. With Uganda’s population slated to jump from 33.8 million to 53.4 million by 2025, it will be critical that integrated PHE efforts gain visibility and traction in the country.

## Ethiopia

Like Uganda, Ethiopia also faces the dual challenges of rapid population growth and environmental degradation.<sup>61</sup> For years, single-sector interventions have been prioritized in the realms of public health, sustainable population growth, and responsible environmental stewardship. Far fewer initiatives, however, have sought to address relationships between these challenges using a cross-sectoral approach.

One of the leaders in this regard has been the Environment and Development Society of Ethiopia (LEM Ethiopia).<sup>62</sup> This citizens’ group has been active since the early 1990s, advocating a holistic approach to providing adequate family planning services and adapting to climate change and resource scarcity. Other leading organizations using similar approaches include the Relief Society of Tigray (REST), located in the northern region of Tigray, and the Ethio Wetlands and Natural Resource Association (EWNRA), located in Ethiopia’s Wichi watershed.<sup>63</sup>

Increasing the availability of family planning tools and services has been identified as a vital component of all integrated PHE interventions because of Ethiopia’s particularly rapid population

growth, which is projected to rise from its current 85 million to upward of 173 million by 2050.<sup>64</sup> If handled improperly, such growth could generate significant social, political, economic, and environmental instability.

LEM Ethiopia, REST, and EWNRA have sought to increase awareness about the country's rapid population growth. They educate communities about the pressing need for sustainable use of soil and forestry resources and the availability and use of family planning to meet their desired family size. Other aspects of these organizations' cross-sectoral programming have included the promotion of energy-efficient cooking fuels, agroforestry, watershed management, composting, and solar electricity. Collectively, these outreach initiatives have enhanced the quality of life in Ethiopia's densely populated regions and reduced communities' physical effects on the local environment.

## Next Steps for Population-Environment Programs

Leaders of family planning, environment, and climate change initiatives are often uncomfortable working outside narrow constructions of their respective problems and proposed solutions. Bringing population into environmental efforts (or vice versa) is met with a variety of objections. Others recognize connections, particularly in the analytical realm, but when it comes to advocacy campaigns, messaging, and field-based programs that require clear measurements of success on established timelines, organizations and policymakers become more circumspect about integrated efforts.<sup>65</sup> Narrow bureaucratic funding structures also perpetuate this limited perspective.

Beyond the practical challenges of integrated approaches, a number of policy land mines are related to wider critiques of family planning and population programs. However, the environmental component raises some additional challenges for framing responses. A careful consideration of these critiques will help prioritize the ways to utilize these population-environment links to support U.S. assistance in international family planning initiatives.

Loaded language can undercut the effectiveness of the population-environment arguments. “Overpopulation,” for example, explicitly implies limits to growth based on straight per capita resource calculations that do not account for consumption. The overpopulation frame often produces backlash from the rights-based organizations and from those opposed to contraception and government involvement in family size.<sup>66</sup>

Yet, despite these challenges, there are significant opportunities for addressing population-environment links in proactive ways that highlight empowering women and families. Making voluntary family planning services part of an integrated package of development interventions helps vulnerable populations make tangible progress in addressing their multiple challenges.

At the same time, providing family planning services within an empowerment—rather than penalty—context helps avoid a range of analytical and political criticisms. Empowerment within a human rights-based and women-centered approach avoids making overreaching claims when addressing complex, multicausal problems, such as climate change. Positioning family planning within adaptation and vulnerability approaches helps meet developing-country goals and avoids the perception of imposing developed-country conservation or mitigation agendas. Through community-based, integrated approaches to population-environment links, policy and program interventions can avoid these pitfalls and move forward at household, community, and state levels.

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