

VULNERABILITY SCENARIOS

Driver Forecasts #5: Environment & Resources

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Background

Vulnerable populations bear the brunt of environmental health hazards and high energy costs, and will suffer disproportionately from the effects of climate change. Thus, environmental factors, as well as the availability of resources, are an essential component of thinking about the future of vulnerability.

Environmental pollutants exacerbate the onset of asthma and other airborne diseases among vulnerable populations, which often go untreated and lead to chronic health problems. The understanding that outside environmental hazards disproportionately affect vulnerable populations has been widely understood for decades. For example, this issue gained prominence in 1982 when the state of North Carolina selected the predominantly African-American town of Afton as the site of a hazardous waste landfill containing 30,000 cubic yards of PCB-contaminated soil.¹ Although unsuccessful in halting the landfill construction, a movement of town residents, advocacy groups, and members of the Congressional Black Caucus marked the beginning of a broad-based environmental justice movement aimed at reversing the practice of placing a disproportionate burden of toxic waste and pollution on poor and minority communities.

More recently, however, scientists have learned that indoor exposures to toxic substances are actually a greater health threat than outdoor exposures, largely because people today spend about 90 percent of their time indoors. Indoor pollution is estimated to cause thousands of cancer deaths and hundreds of thousands of respiratory health problems each year. In addition, hundreds of thousands of children have experienced elevated blood lead levels resulting from their exposure to indoor pollutants. The most vulnerable populations are minorities and others who live in conditions of poverty.²

Poor populations also suffer disproportionately in the face of high energy costs. Living in less efficient housing, the typical poor household pays up to 25% of its total income on energy, while the median-income family spends less than 4 percent.³ As a result, rising energy prices impose highly disproportionate burdens on the poor, not just in monetary terms but also in their ability to keep their homes at healthy temperatures and have the mobility needed to get to places of employment. Rising prices will exacerbate this inequity as global production levels off and global demand continues to increase.

Over the years ahead, many experts expect oil prices to surpass their pre-recession level of over \$100

¹ K. Geiser and G. Waneck, "PCBs and Warren County," *Science for the People*, July/August, 1983, 13-17.

² U.S. Environmental Protection Agency, *Healthy Buildings, Healthy People: A Vision for the 21st Century*. October 2001. Available online at: <http://www.epa.gov/iaq/hbhp/index.html>.

³ Andrew McAllister, "Energy Costs, Conservation and the Poor" *Race, Poverty, Environment: A Journal for Social and Environmental Justice*, Summer 1991, available online at: <http://www.urbanhabitat.org/node/965>.

per barrel, and by 2030 it is plausible that the price could be twice that figure or more. Growth in China, India, and other fast-developing nations is increasing oil demand on a scale that most experts did not anticipate even a few years ago. At the same time, we may soon reach constraints in the production of oil; the International Energy Agency estimates that global oil production could peak around 2020, one to two decades earlier than most governments have assumed.⁴ A vocal minority of analysts believes that global production will peak within the next few years and immediately begin to plummet. Many analysts believe that when global oil production peaks, it will level off on an “undulating plateau” as enhanced recovery technology, new exploration methods, unconventional oil sources like oil shale and tar sands, and drilling in more remote areas like the deep seabed and the Arctic keep production up for two decades or more.⁵

Over the long term, poor populations will suffer disproportionately from the effects of climate change. A recent report by the Environmental Justice and Climate Change Initiative, a climate justice advocacy group, details various aspects of climate change that will disproportionately affect blacks, minorities and low-income communities in terms of poor health and economic loss. For example, heat-related deaths among blacks already occur at a 150 to 200 percent greater rate than for non-Hispanic whites, and blacks are more than twice as likely as whites to live in cities where the so-called “heat island effect,” where cities are hotter than nearby rural areas, is expected to make temperature increases most severe. The states expected to be affected most severely by flooding and hurricanes are also among the states with the highest percentage of African-Americans.⁶

Some factors may tend to offset these increased threats to vulnerable populations. There is a growing discussion of environmental justice among policy makers and advocacy groups, as seen, for example, in the public statements of EPA Administrator Lisa Jackson.⁷ Also, government efforts to stimulate a “green economy” bode well for both environmental and economic drivers of vulnerability: recent studies show that a clean energy economy would create large numbers of new mid-skill “green collar” jobs well within reach for lower-skilled and low-income workers if they have access to effective training programs.⁸ At the same time, some utilities have developed programs in which they perform an energy audit and make energy-efficiency improvements at no up-front cost to the home owner or landlord, who repays the utility over time by continuing to pay the same energy bill even though the building is now using less energy.⁹

Investments in technology also stand to minimize the risk to vulnerable populations. A January 2009 study by McKinsey & Company estimates that roughly 70 percent of the technologies needed to replace fossil fuels already exist and can be sufficiently improved to make them cost-competitive without

⁴ International Energy Agency, *World Energy Outlook 2008*, International Energy Agency Publications, Paris France.

⁵ The summary of a Cambridge Energy Research Associates (CERA) report to clients on the “undulating plateau” outlook is available online at: <http://www.cera.com/asp/cda/public1/news/pressReleases/pressReleaseDetails.aspx?CID=8444>.

⁶ Lea Radick, “Global Warming More Harmful to Low-Income Minorities,” *Medill Reports*, July 24, 2008, available online at: <http://news.medill.northwestern.edu/washington/news.aspx?id=95563&print=1>.

⁷ See Administrator Jackson’s remarks to the National Environmental Justice Advisory Council at: <http://yosemite.epa.gov/opa/admpress.nsf/dff15a5d01abdfb1852573590040b7f7/313ec9a2bc80d67785257>.

⁸ For numerous examples of green jobs creation, see the Green For All web site at: <http://www.greenforall.org>.

⁹ Peter Barnes, “Cap and Dividend, Not Trade,” *Scientific American*, 2008, available online at: <http://www.scientificamerican.com/article.cfm?id=cap-and-divident-not-trade>.

fundamental breakthroughs in technology. The study estimates that the renewable share of U.S. power could almost triple from 8 percent today to 23 percent by 2030 at reasonable cost.¹⁰ Also, substantial investments are beginning to be made by venture capital firms in an effort to develop “game changing” technologies that could minimize energy price increases by producing clean energy at significantly lower costs than is possible today.¹¹ These positive trends suggest opportunities to reduce the environmental and resource-related factors of vulnerability.

Forecasts

The Alpha forecasts represent expectable or “most likely” futures, the Beta forecasts envision challenging possibilities (e.g., what could go wrong), and the Delta forecasts represent visionary or surprisingly successful futures that would have a positive impact on reducing vulnerability.

Alpha Forecast – Environment and Resources 2030

Unable to navigate trade-offs between environmental regulation and economic competitiveness, policy makers limited their reforms on energy and the environment to a law passed in 2013 to promote conservation and to provide investment to create “green jobs.” Only in 2017, given intensifying pressure from other countries, did Congress pass comprehensive climate change legislation, which was still criticized by environmentalists and European governments for not going far enough. However, throughout this period advocacy for environmental justice proliferated throughout government agencies and among the public, leading to a formal requirement to consider equity as part of an EPA-mandated environmental impact assessment.

Despite these efforts, vulnerable populations continued to suffer negative environmental and energy effects disproportionately throughout the 2020’s. As global oil production leveled off around 2025 and oil prices began a steady rise, the greatest effect fell upon poor communities who had not been able to afford the new technologies supported by government initiatives and venture capital. These people often lived in energy-inefficient homes and often had to travel considerable distances to work along routes that lacked public transit. As hurricanes and floods increased in severity and frequency, poor populations lacked the resources to move away from the areas where they were most common. At the same time, oil spills, mining pollution, and industrial waste more seriously impacted vulnerable populations with less income and mobility.

Beta Forecast – Environment and Resources 2030

Wrestling with the long-lasting effects of the Great Recession, the government and the public became less and less interested in environmental protection and environmental justice given the need for economic growth. Reviving the job market became the number-one national priority, no matter the

¹⁰ McKinsey & Company, “Pathways to a Low-Carbon Economy,” January 2009, available online at: <https://solutions.mckinsey.com/ClimateDesk/default.aspx>.

¹¹ “Venture Capitalists Flock to Green Technology” in *Inc. Magazine*, March 28, 2006, available online at: <http://www.inc.com/news/articles/200603/green.html>.

effect on the environment. Federal, state, and local governments loosened environmental regulations to encourage growth, leading to an increase in air pollution. In 2010, asthma, which correlates strongly with air pollution, affected blacks at a 36 percent higher rate of incidence than whites.¹² By 2025, this disparity had increased to 54 percent. Furthermore, other diseases began to spring up among vulnerable communities, which were later explained by studies revealing health hazards associated with discarded electronics in garbage dumps located in low-income areas.

Budget constraints and partisan political deadlock blocked significant efforts to deal with energy and climate change. When global oil production peaked in 2018 and began a steady decline, oil prices rose sharply. Many American families who had been “getting by” saw a greater share of their incomes go toward energy costs. The ranks of the vulnerability expanded to include these families.

The effects of climate change proved worse than experts had anticipated in 2010. Several Katrina-scale hurricanes decimated communities on the Gulf Coast and along the East Coast as far north as Maryland, making tens of thousands of people homeless. “Disaster fatigue” among wealthier populations reduced the political will for ambitious countermeasures when only the vulnerable were affected. Tropical diseases became a significant health problem in the Southern states as climate change shifted tropical disease vectors into subtropical and temperate zones. By 2030, Americans have come to accept the reality of harsh and unpredictable global climate. However, it is the vulnerable who bear the brunt of the effects.

Delta Forecast – Environment and Resources 2030

Throughout the 2010’s, environmental justice became a major theme in public policy, as policy makers recognized the link between health and environment. This shift affected the design of new environmental legislation, the enforcement of older legislation, and decisions about where to locate infrastructure and facilities without creating significant environmental impacts for the poor. Policies and programs were put in place to weatherize housing nationwide, particularly housing for low-income populations; to improve and subsidize public transit; to speed the commercialization of new materials and construction systems for lower-cost housing; and to develop other “pro-poor” strategies that employ technology advances.

One of these advances was the development of inexpensive, accurate, portable sensors that, combined with GIS technology, empowered local communities to carry out community-based environmental assessments and trace local pollution sources. This new form of citizen science and environmental activism directly addressed many of the health threats to vulnerable populations and provided a robust database of pollution exposures. Similarly, a “clean energy revolution” was launched by 2015, motivated by concerns for ending America’s dependence on oil, as well as increasing energy security, minimizing climate change, reducing the foreign exchange deficit and strengthening the dollar, creating jobs, and taking a position of leadership in the global clean energy economy. Between 2015 and 2030, major improvements in energy efficiency saved energy across the economy and more than paid for themselves. Private investment and federal research and development stimulated innovation that brought down the cost of alternative energy and ensured that the benefits of the new technologies were shared by all.

¹² See Lee Radick, op cit.