Environmental Challenges Facing Generation Z

William G. Ross, Jr.
Visiting Professor of Environmental Science & Policy, Duke University

Introduction

Generation Z will inherit a world whose workings have been radically changed by humans. In order for this generation to enjoy the same opportunities for health, well-being, and prosperity as their parents' generation, North Carolina will have to think and act differently. Business as usual will be a path to misfortune. North Carolina must change how we think about our place in the world (as The Economist advocates in "Welcome to the Anthropocene"), how we make things (as William McDonough and Michael Braungart suggest in *Cradle to Cradle*), and how our children interact with nature (as Richard Louv proposes in *Last Child in the Woods*). If North Carolina does these three things, we will provide a roadmap to a bright future for Generation Z and those who follow.

The Reality Today

Humans have changed the way the world works in ways that nature never intended. For example, there have been disruptions in the carbon and nitrogen cycles that change the natural flow of life. Unintended consequences of the carbon cycle have included a warmer climate, a melting Arctic, higher sea levels, improvements in the photosynthetic efficiency of many plants, an intensification of the hydrologic cycle, and new ocean chemistry. An unintended consequence of disrupting the nitrogen cycle has been the growing number of coastal dead zones or regions of water that lack the oxygen necessary to support animal life. The Gulf of Mexico has one of the largest dead zones in the world. As a coastal state, North Carolina is particularly immune to sea level rise, natural disasters and coastal dead zones. It remains to be seen how much these factors will impact North Carolina's natural environment in the future.

All of these negative environmental impacts result from increases in population, consumption and technology. This year, the earth's population will reach 7 billion people, up from 3 billion in 1960. By 2045, global population is projected to reach nine billion. North Carolina's population is also growing rapidly, having reached 9.5 million in 2010, an increase of 18.5% since 2000. Projections put North Carolina on track to be the seventh largest state in 2030.

In his book, *The Earth Remains Forever: Generations at a Crossroads*, Duke University professor Rob Jackson asserts that Americans "are, in fact, the greatest consumers in the history of the planet." Others aspire to be like us. According to Jackson, there is little doubt that the earth cannot sustain billions of people pulling themselves out of poverty and living as Americans do. "There isn't enough food, water, or raw materials. There aren't enough places to hide our pollution or store our waste. And there certainly isn't enough room for the other millions of species on earth."

Ironically, but not surprisingly, as we change the environment the impact can be felt in ways we never expected. For example, newborn babies routinely test positive for more than 300 chemicals. Those changes raise important questions about our health that will be passed on to Generation Z when they become adults. As H. Kim Lyerly, a

physician at Duke University Medical Center recently observed, "There is an increasing appreciation of the impact of the environment on the behavior of cells." The potential health impact of behavioral changes may range from preventing the normal development of critical tissues, to the promotion of cancer. A methodical and systematic look at the biologic effects of these environmental changes is critical and we are just on the cusp of that scientific discovery.

Implication for Generation Z

With so many more people on the planet, with levels of consumption increasing, and with technology amplifying the results of the complex interaction of population and affluence, it's impractical and impossible to address the changes in the way the world works simply by trying to return to an earlier age or pursuing business as usual. Instead, the roadmap to a bright future for Generation Z will need to include a change in the way we think about the world that we've changed and that's changing us.

Changing the Way We Perceive the World

Changing the way we think about the world (and acting accordingly) is a tall order, but it is both possible and critical that we do so to provide solutions for a new generation. Thought leaders such as William McDonough, Michael Braungart, and Richard Louv are among those who have suggested points of entry to a new way of thinking and doing.

Imagine a smart planet and cooperate and innovate to make it so

The challenge of the next generation is to use human ingenuity to set things up so that the planet can accomplish its 21st-century task. Increasing the planet's resilience will involve a few dramatic changes and a lot of tweaking at the margin. Dreaming of a smart planet involves coming up with ways to remove carbon from the atmosphere. The Economist observes that it would be odd not to be worried about the changes that we have wrought in the way the world works, but that human intelligence, the same new and powerful planetary force that has remade the living environment and disrupted key biogeochemical cycles, allows us also to imagine new ways of being and, through cooperation and innovation, to achieve them.

Small steps such as smarter farming and better sewage treatment, if well thought out, can help a lot. Piecemeal actions collectively add up to planetary change. On every level of response, from dramatic change to working on the margin, it seems clear that imagination, cooperation and innovation will be keys to success.

Remake the way we construct things, from chemicals to communities.

In their thought-provoking book, *Cradle to Cradle: Remaking the Way We Make Things*, William McDonough and Michael Braungart challenge the belief that industry must damage the natural world. They suggest using nature as a model for making things. In other words, things must be designed from the beginning with the idea that, after their useful lives, the byproduct will provide for something new. The authors make a convincing case that, if we were to follow their new design assignment, and if we were to do it for everything from chemicals to communities, we could create a world of abundance, not one of limits, pollution and waste.

These two changes in behavior suggest altering the way we think and act regarding the world around us will offer a roadmap to abundance and hope.

Another point that McDonough and Braungart emphasize is the importance of diversity in remaking the way we make things. In the face of a tide of sameness and "one-size-fits-all," the authors advance the principle of "respect diversity." They mean "to include not only biodiversity but also diversity of place and culture, of desire and need, the uniquely human element." An important element of respecting diversity is getting a broader and deeper segment of society involved in solving environmental challenges. How to do that has been a persistent issue for

the environmental movement, and remains so today. Nevertheless, the challenges are too big to solve without all segments of the community being involved in imagining, cooperating and innovating for solutions.

Generation Z and Their Connection with Nature

In 2005, Richard Louv wrote a groundbreaking book *Last Child in the Woods* because he was concerned about the growing disconnect between children and nature. He noted that the human costs of alienation from nature included: "diminished use of the senses, attention difficulties, and higher rates of physical and emotional illnesses." Louv coined a term for this phenomenon called nature-deficit disorder. He observed that the disorder can be detected in individuals, families, and communities, but he also notes that the disorder can be recognized and reversed.

Fortunately, North Carolina has been a leader in the effort to reconnect children with nature through innovative environmental education programs and outstanding parks and greenway. For example, the North Carolina Museum of Natural Sciences will soon complete a new wing known as the Nature Research Center (NRC). The NRC will connect people with science that affects their everyday lives. The museum also helped organize the Take a Child Outside Initiative, a national effort in response to Louv's book. North Carolina has an excellent program for training and certifying outdoor educators. Through its parks and recreation trust fund, the state has helped local governments finance an explosion of greenways across the state while it has continued to work with many partners to complete the state's Mountains to Sea Trail. Even with those positive steps, much more needs to be done to save our children from nature-deficit disorder, and, unfortunately, the state's budget woes have had a serious adverse impact on every program just listed.

Not only do children need nature, nature needs children. It is hard to imagine a world in which people will be inspired to imagine solutions to more complex challenges when those people haven't been exposed to and inspired by the wonders of nature.

Conclusion

Humans have changed the way the world works. Now we need to change the way we think and act about it. It is time for imagination, cooperation, and innovation; it is time to remake the way we make things; it is time to save our children from nature-deficit disorder. If we do those things, and do them well, the future for Generation Z and those that follow after can be abundant, positive and full of hope.