

Earth Day, Planetary Boundaries, and the Green New Deal

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Theme: [Environment](#)

Global Research, April 20, 2019

[Dissident Voice](#)

As we celebrate Earth Day in 2019, we need to recognize that more than climate change threatens our environment and our very existence. We have passed or are approaching several Planetary Boundaries outside of which human society may not survive.

[Environmental scientists have developed the concept of Planetary Boundaries](#) to identify Earth system processes that human activity is disrupting. They have tried to identify boundaries beyond which that disruption will trigger radical planetary environmental changes that endanger the survival of human society.

Of the nine planetary boundaries these scientists have identified, they say that we have already passed four of them:

Climate Change: At [412 ppm atmospheric carbon last month](#), we have already passed the [safe zone of below 350 ppm](#) that would keep global temperature rise to under 1°C and within the range of the current interglacial Holocene climate in which agriculture, the material foundation for human civilization, developed.

Biogeochemical Cycles: Earth's biogeochemical nitrogen and phosphorus cycles have been disturbed even more than the carbon cycle. Nitrogen and phosphorus fertilizers pollute waterways and coastal zones overwhelm ecosystems' capacity to absorb and recycle them, resulting in ecosystem collapse and low-oxygen dead zones.

Biodiversity: The 6th Mass Extinction in Earth's history is underway and threatening to collapse ecosystems and hence agriculture and food production. For example, [scientists recently reported](#) that insects have declined at a 2.5% rate of annual loss over the last 25-30 years, a reduction of 80% of insect biomass. Insects are at the base of every terrestrial ecosystem food web and energy pyramid. Agricultural pesticides, along with climate change and habitat destruction, are killing off the insects.

Land Use: Forests, wetlands, and biomes have been converted to industrialized agriculture and urban sprawl to the degree it is disrupting biogeochemical cycles and reducing biodiversity.

The other five boundaries these scientists identify are:

Ocean Acidification: Oceans are acidifying as atmospheric carbon dioxide dissolves into the water as carbonic acid. Acidification is already killing off the corals, threatening the ability of shellfish to form their shells, and thus threatening the stability of ocean ecosystems. The greatest danger is posed by the threat of acidification to phytoplankton. Recent scientific

reports warn that by 2100, ocean [heating](#) and [acidification](#) could so reduce phytoplankton, the source of two-thirds of atmospheric oxygen, that it may result in the suffocation of animal life on Earth. If we have not passed this planetary boundary, we are fast approaching it.

Stratospheric Ozone Depletion: We have good news here thanks to the Montreal Protocol adopted in 1987 by the world's nations to ban the production of the chemicals that depleted stratospheric ozone. This ozone layer that protects life from excessive ultraviolet radiation (UV) from the Sun is recovering. The Montreal Protocol is a model for the kind of binding international agreements we must forge to address climate change and other environmental threats

Freshwater: Intense water use by industrialized agriculture and urban systems is depleting fresh water faster than it is naturally replenished. Pollution, aquifer depletion, and water-conserving habitat destruction are the causes. At present trends, half of the world's people and agriculture will face water shortages by 2050.

Atmospheric Aerosols: Microscopic particles in the atmosphere affect the climate and living organisms. Some aerosols warm and others cool the planet, with a slight net cooling affect so far, though it is far from overriding the warming effect of greenhouse gases released by human activity. But aerosols have a negative affect on human respiratory organs, resulting in an estimated [4 million premature deaths annually](#).

Novel Chemicals and Materials: These include chemical pollutants, heavy metals, radioactive materials, nanomaterials, and micro-plastics. Barry Commoner, the late environmental scientist and Citizens Party presidential candidate in 1980 (which German Green Petra Kelly called America's Green Party), warned us in his book *Making Peace with the Planet* (1990) that these novel entities disrupt the biosphere in which every new chemical created in the course of evolution co-evolved with enzymes to break them down to be recycled in the web of life. Without these enzymes for biodegradability, these novel entities bioaccumulate in the ecosystems and organisms, with potentially dangerous consequences to ecosystems and human health. While it is debatable how close we are to overshooting this planetary boundary, there is no debate that [microplastics](#), for example, are now in our food and our organs. Of the over 80,000 novel chemicals created for commercial use, only [200 have been tested](#) for safety by the Environmental Protection Agency.

Expanded Green New Deal

What the Planetary Boundaries analysis means is that a Green New Deal must do more than build a clean energy system by 2030. It must be expanded into a full-scale Green Economy Reconstruction Program that not only transforms energy production to renewables, but transforms all our production systems to ecological sustainability. We can't even get to 100% clean energy without reconstructing all of our production systems, from agriculture to transportation.

Industrial corporate agriculture must be converted to regenerative organic agriculture to eliminate pesticides and draw atmospheric carbon into living soils. Manufacturing must be converted to processes that rely on biodegradable or recyclable chemicals and materials. Transportation must be electrified, powered by clean renewables, with more emphasis on

freight rails, high-speed rails, and urban light rails than trucking, personal vehicles, and air travel for intermediate distances. Urban systems must be reconfigured around walkable communities where homes, work, shopping, and mass transit are within a short walk of each other.

The vast majority of the military-industrial complex must be converted to ecological civilian production. The U.S. should be the world's humanitarian superpower, not its sole military superpower. We should be helping poor countries meet basic needs and jump over the fossil fuel age into the solar age. We should be making friends with a Global Green New Deal instead of enemies with endless wars and a military empire of over 800 military bases placed in other countries to make the world safe for exploitation by global corporations instead of safe for the world's peoples.

Ecosocialist Green New Deal

Conversion to an ecologically sustainable and just economy cannot happen under the capitalist system. Capitalism's competitive structure drives blind, relentless growth that is consuming and destroying the biosphere. Its competitive international structure breeds wars for resources, markets, cheap labor, and geopolitical military advantages. With the nuclear weapons of the nuclear powers on hair-trigger alert and a new nuclear arms race now underway, the capitalist system will annihilate us if we don't replace it with an ecosocialist system first.

We need an ecosocialist Green New Deal in order to coordinate the conversion of all production systems to sustainability. We need social ownership of key industries, like the energy sector. Exxon and the Koch Brothers are not going to reinvest their fossil fuel earnings in renewables. We must nationalize big oil. We need a bottom-up democratic process of economic planning so the public sector—public enterprises, infrastructure, and services—is responsive to the people in their communities.

We need a Just Transition to a green economy so no one is harmed in the process. The Green New Deal must include an Economic Bill of Rights that guarantees to all a living-wage job, an income above poverty, decent housing, comprehensive health care, and a good tuition-free public education from pre-K to college.

We need system change, not business as usual.

Howie Hawkins in 2010 became the first person to run for office on the Green New Deal. He is now exploring the possibility of running for president as the Green Party nominee.

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