

Clear Cut

Wood Pellet Production, the Destruction of Forests, and the Case for Environmental Justice



Clear Cut

Wood Pellet Production, the Destruction of Forests, and the Case for Environmental Justice

Authors

**Alexandra Wisner, The Rachel Carson Council
Robert K. Musil, Ph.D, M.P.H., The Rachel Carson Council
Shom Tiwari, Duke University
Sarah Sung, Duke University
William McAuliff, The Rachel Carson Council**

**Design and layout: Ross Feldner, newagegraphicsonline.com
Cover Photo: Dogwood Alliance**



The Rachel Carson Council, founded in 1965, is the national environmental organization envisioned by Rachel Carson to carry on her work. We promote Carson's ecological ethic that combines scientific concern for the environment and human health with a sense of wonder to build a more sustainable, just, and peaceful future.

Rachel Carson Council
8600 Irvington Avenue
Bethesda, MD 20817
www.rachelcarsoncouncil.org
(301) 214-2400
[Facebook.com/RachelCarsonCouncil](https://www.facebook.com/RachelCarsonCouncil)
Twitter: @RachelCarsonDC
Instagram: @RachelCarsonDC

The photo sources included in this report do not in any way suggest that they endorse RCC's stance on the issues. For inquiries, please email office@rachelcarsoncouncil.org

We thank Mary Booth, Tavares Bostic, Stefan Koester, Robert Parr, Cary Rodgers, Jack Spruill, Heather Hillaker and the Southern Environmental Law Center, and Rachel Weber, Emily Zucchini and The Dogwood Alliance for sharing their wisdom and advice about wood pellets, justice, and a true clean energy future.

EXECUTIVE SUMMARY

Clear Cut: Wood Pellet Production, the Destruction of Forests, and the Case for Environmental Justice

The industrial-scale production of wood pellets arrived in the Southeastern United States in the early 2000s bolstered by growing European and global need for alternative, sustainable fuel sources. The Rachel Carson Council's new report, **Clear Cut**, highlights the fallacies and economic and political injustices surrounding the industry, focusing on Enviva, the largest producer of wood pellets globally, and its operations within North Carolina.

Though touted as a clean, environmentally safe alternative to fossil fuels, wood pellets are a carbon-intensive, destructive and polluting industry based in flawed carbon accounting in international agreements. Wood pellet material sourcing leads to massive deforestation of critical habitats, and Enviva alone is responsible for 50 acres a day of clear-cut land. Pellet production facilities release dangerous air pollutants including particulate matter and volatile organic compounds putting surrounding communities at higher risk for health complications. Finally, burning wood pellets releases 65% more CO₂ than coal per megawatt hour. In order to keep global climate change below 1.5 degrees Celsius, wood pellets must not be used as an energy alternative.

Enviva is a privately-owned corporation operating seven, soon to be eight, processing plants in the southeastern United States which produce three and a half million metric tons of wood pellets each year. Half of these plants are in North Carolina, each of which are sited in environmental justice communities. These communities directly suffer three-fold from wood pellet production. First, as wood pellet plants source within a 70 mile radius, the communities experience higher rates of tree loss leading to lower air and water quality and increased risk of flooding. Second, wood pellet production plants in North Carolina until recently have skirted Clean Air Act requirements, freely emitting dangerous pollutants into the communities. Third, and finally, these communities sit on the coastal plain of North Carolina and are under direct threat from climate change which wood pellet production and consumption contribute to.

Many North Carolina residents understand these dangers and have been fighting back to protect their communities and ensure their environment is not being wasted on this misleading industry. Enviva, however, has continued to expand operations even in the face of community mobilization. It has used North Carolina's favorable political environment and long history of industrial logging operations to ingratiate itself with key decision makers and landowners. From these alignments, it has mislead North Carolinians to believe it is a sustainable industry which bolsters local economies. This has garnered it over \$6 million in state and local subsidies and allowed it to skirt critical regulations. The reality is that it has only brought around 250 jobs to the state of North Carolina, lining the pockets of a few, at the direct risk to the health and environment of the many.

Industrial-scale production of wood pellets is entirely unnecessary to combat climate change. It pushes us further away from our climate goals which, according to the 2018 IPCC report, we have even less time to meet, and takes critical subsidies and resources away from real renewable energies like wind and solar. However, this industry has managed to entrench itself in global and local political and economic systems. Taking action against the wood pellet industry requires a coordinated approach from community members, nonprofits and political actors alike. We must work at all levels to bring about systemic change for a more just and sustainable world without wood pellets.

TABLE OF CONTENTS

Introduction	1
The Wood Pellet Industry: Current & Future Trends	3
The “Green” Myth Behind Wood Pellets	4
Current Status & Growth	7
North Carolina & Enviva	10
Industrial Effects: The Environment, Climate Change & Health	12
Sourcing: Clear Cutting & Deforestation	12
Production & Burning	18
North Carolina Environmental Justice Communities	21
Hertford County	21
Northampton County	21
Sampson County	23
Richmond County	24
What drives Enviva in North Carolina?: The Convergence of Injustice	27
Pre-existing Industries	27
Private Land Ownership	29
County Commissioners & Community Representation	31
Permitting Process: Loopholes & Injustices	32
Campaign Financing	34
Industrial Subsidies	37
Federal Failings: Affordable Clean Energy Rule	40
Issue Reframing	40
Take Action to Oppose Wood Pellets	41
Political Engagement: What can you do?	42
Looking Forward: The Green Amendment	48
2018 and Our Reasons for Hope	49
Appendix	50
Definitions	50
Works Cited	52

INTRODUCTION

Clear Cut is the fourth comprehensive report from the Rachel Carson Council. These reports, *Pork and Pollution*, *Fowl Matters*, *Blast Zone*, and now *Clear Cut*, constitute a series around a common theme central to the work of the Rachel Carson Council and to the ecological ethic of Rachel Carson — environmental justice. Carson is best known for the exposé in her 1962 classic, *Silent Spring*, of the harmful effects of pesticides like DDT on wildlife and on human beings alike. But Carson’s larger, more enduring contribution — in her writing and in her environmental and political advocacy — is the combination of reverence, awe, and wonder for all living things, their interdependence, and their beauty, along with stark warnings of the destructive nature of human arrogance in attempting to control and dominate nature in the interests of efficiency, profit and greed. Faced with environmental degradation and harm to animals or humans, Carson consistently reminds us, action must be taken, something must be done.

In addition to toxic chemicals, Rachel Carson also wrote about the inhumanity and health risks of factory farms in her “Introduction” to Ruth Harrison’s *Animal Machines* (1964) and about the dangers of nuclear weapons testing and radioactive wastes in the “Preface” to her revised edition of *The Sea Around Us* in 1961. Here Carson spoke eloquently about how radioactive fallout, carried through bioaccumulation and the food chain, endangers a nursing Inuit mother and her child in the seemingly remote Arctic. Carson felt keenly the injustice of harming those who bore no responsibility for their own degraded environment and who had limited financial and political resources to fight back. Carson understood environmental justice long before the term and a sustained movement to combat it arose in North Carolina in the 1980s.

In each of our previous reports, and, as we document in *Clear Cut*, the environmental harms described also cause global climate change — from the methane from animal wastes, the methane from natural gas, and the CO₂ produced from fossil fuels used during the industrial processes involved. In *Clear Cut*, the damage to the environment and to humans comes from a relatively new, rapidly growing and little-known form of energy production that incinerates huge amounts of industrially produced wood pellets to create electricity.

As you will see, these wood pellets are increasingly manufactured out of woods and forests that are clear cut throughout the Southeast, and especially in North Carolina on which we focus. The pellets are then shipped from the U.S. to the European Union and Great Britain to produce electricity and heat. Ironically, these nations are then given credit toward climate change goals under the Paris Accords, since such “biomass” production is counted as renewable and carbon neutral. As we report in *Clear Cut*, it is neither. What is left behind is a growing area of ugly, devastated woodlands which will not become forests again, if ever, for about a half century. All of the benefits of forests — wildlife, biodiversity, clean air, clean water, the absorption of CO₂ — and the aesthetic, psychological, and recreational benefits that come with them, are lost for at least two generations. And, once again, the pollution, noise, and adverse environmental health effects are concentrated in predominantly low-income, people of color and indigenous communities. Worse, the communities we focus on, such as Northampton and Richmond Counties in North Carolina, are the very ones already suffering heavily from factory farms and natural gas infrastructure.

Rachel Carson had just learned about the newly-emerging science of global climate change when she died in 1964. But she had already observed, written and speculated about the causes of our warming climate in the United States. And, she had described the beauty of forests and fought actively to protect and preserve a coastal forest in Maine near her summer cottage in Southport.

Her description of what she called “The Lost Woods” captures some of what would have been lost there; it also captures the beauty of what has been lost, and increasingly will be lost, in North Carolina unless wood pellet production is finally halted:

Behind this [the shoreline] is the wonderful, deep, dark woodland — a cathedral of stillness and peace. Spruce and fir, some hemlock, some pine, and hardwoods along the edges where a fire once destroyed what was there and set in action the restorative forces of nature. It is a living museum of mosses and lichens, which in some places form a carpet many inches deep. Rocks jut out here and there, as a flat floor where only lichens may grow, or rising in shadowed walls. For the most part the woods are dark and silent, but here and there one comes out into open areas of sunshine filled with the wood’s smells. It is a treasure of a place to which I have lost my heart, completely....I have had many precious moments in these woods, and this past fall as I walked there the feeling became overwhelming that something must be done.



*Photo: Rachel Carson at microscope, 1951
Brooks Studio*

Something must be done. The urgency of taking action to prevent clear cutting forests to produce electricity in Europe is greater than ever as a result of the devastating flooding and destruction caused by Hurricane Florence in September 2018. Cutting down forests is a contributor to global climate change, fueling fiercer hurricanes like Florence. So is burning wood pellets on a huge, industrial scale. An end to wood pellet production and the preservation of forests, as **Clear Cut** makes evident, would help mitigate climate change; it would provide natural buffers against what, unfortunately, will be further flooding and damage unless we act now. And it would begin to restore some measure of health, well-being, and justice for those Americans, often poor and of color, whose families and homes suffer, through no fault of their own, from their proximity to clear cutting and wood pellet facilities.

These Americans have already begun to take action. But it will take even a broader movement of people and organizations — in North Carolina and throughout the United States – to support them and save our forests and ourselves. We hope that **Clear Cut** will give you the information, resources, and resolve to take action along with us and the growing resistance to clear cutting that has inspired us.

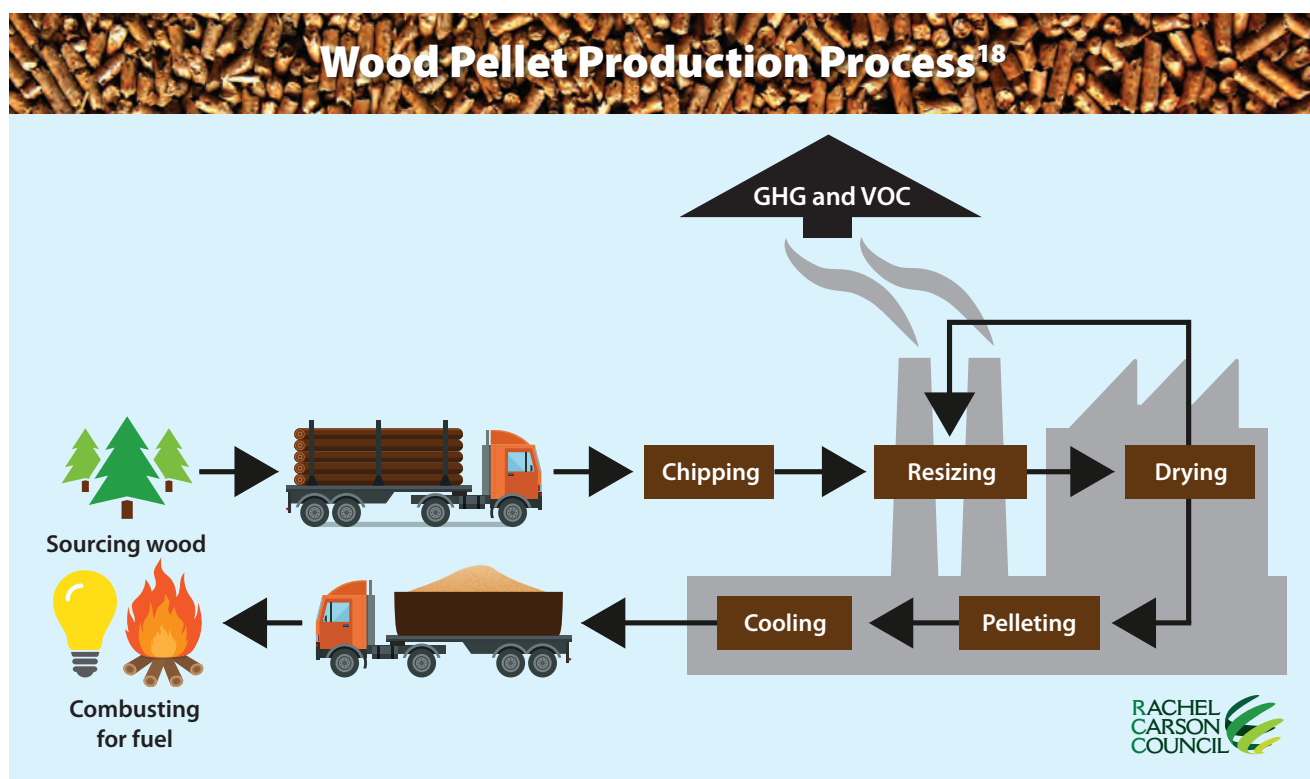
Clear Cut is designed to provide the evidence you need, not only to understand why wood pellet production has burgeoned in just over a decade, but also how you and the communities and organizations we describe can, together, act to stop it.

Robert K. Musil, Ph.D., M.P.H., President & CEO
Alexandra Wisner, Assistant Director, Policy and Programs

THE WOOD PELLET INDUSTRY: CURRENT AND FUTURE TRENDS

The wood pellet industry is a growing global industrial enterprise, but its effects, in addition to causing global climate change, are felt in particular places and communities. How and why the industry and corporations like Enviva are thriving in the United States, especially the Southeast and North Carolina the site of its largest concentration for clear cutting and wood pellet production, are critical to understanding current and future trends and how ultimately they can be slowed and stopped.

In the early 2000s, industrial-scale wood pellet production moved to the southeastern United States prompted by growing demand from the European Union. The exponential increase in production and demand rose out of heightened international pressure to implement renewable alternatives to carbon-intensive fossil fuels. Fossil fuels are major causes of climate change and domestic energy insecurity that take millions of years to renew themselves.¹ Trees, on the other hand, take in and **sequester** carbon dioxide as they grow and have the potential to renew themselves in a relatively short amount of time to consistently satisfy large demands for energy.²



Wood, in its raw form, contains water and is inconsistent in size and shape, making it inefficient to process and transport in the energy sector.¹ Wood pellets do not have these drawbacks because they are created through a process of drying, chopping and compressing wood into a small, dehydrated cylinder. Further, wood pellets can be created from waste byproducts from other timber industries such as misshapen trees, tree tops and saw mill chips, making them an even more attractive option for a renewable fuel.³

Another key selling feature of wood pellets is that they can be used in pre-existing coal-fired power plants without requiring significant short-term economic investment, creation of new infrastructure, or job loss and re-training costs associated with switching to wind and solar. For countries and environmentalists around the world looking to make a switch to more renewable sources of fuel, wood pellets can seem to be the most economically and structurally sustainable option that would not require a drastic change in the status quo.



Photo: Wood pellets; D-Kuru, Wikimedia Commons¹

The “Green” Myth Behind Wood Pellets:

These hopes are misguided. In recent years, devastating carbon accounting errors have been discovered and new science has been brought to light that destroys the idea that wood pellets are a “green” fuel source. Now, however, a thriving industry has grown around these mistakes, and countries in the EU have become dependent on wood pellets to meet their climate goals. So, how did green myth start and why does the industry continue to grow?

1. Bad Accounting in International Agreements:

Wood pellets were originally used in personal-use wood stoves in the 1980s after the unstable oil prices of the 70s.⁴ As prices leveled, they fell into a steady decline until the early 2000s when EU climate mitigation policies and a carbon accounting error made them incredibly attractive to European countries attempting to meet their climate goals.

In the 1990 International Panel on Climate Change (IPCC) climate assessment, two of the categories for counting **greenhouse gas** (GHG) emissions were energy use and land use.⁵ To avoid double counting the carbon emitted from using forests for energy, these numbers were only counted in the land-use section of the report.⁶ The intent was not to suggest that these emissions were **carbon neutral**, but this oversight opened the way for the thriving wood pellet industry we see today.

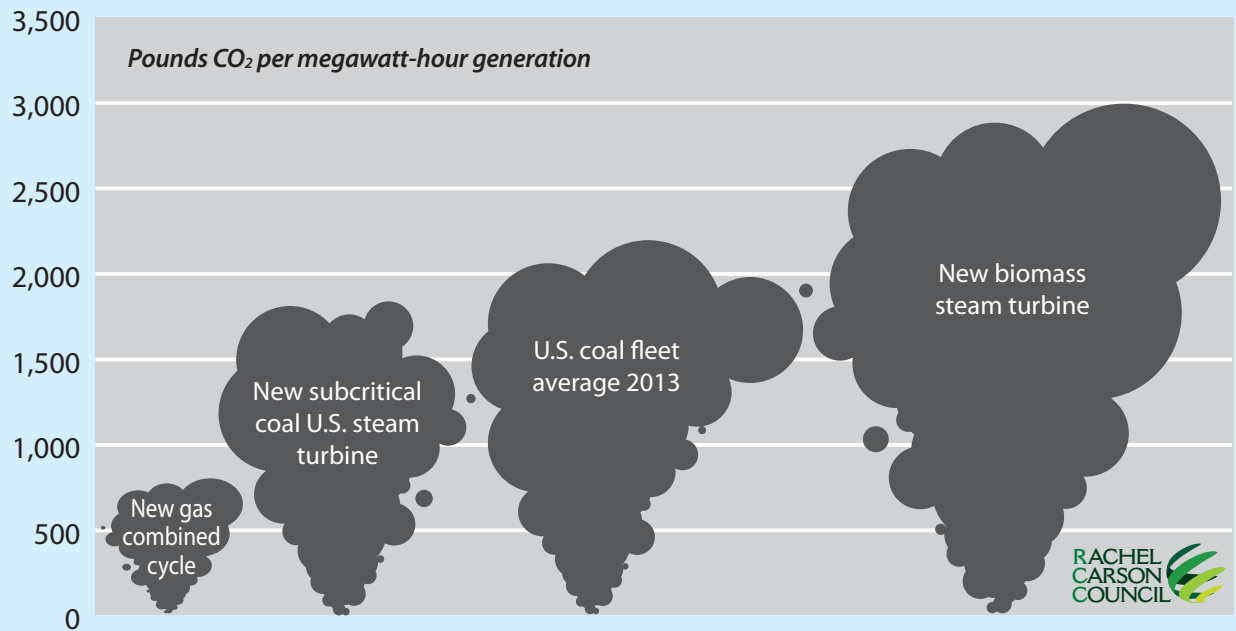
The 1992 United Nations Framework Convention on Climate Change (UNFCCC) further entrenched this problematic approach to carbon accounting.⁷ This international policy required countries to report their greenhouse gas emissions in different categories. When industries **clear cut** forests for fuel, the carbon lost from the forest was recorded solely under land-use emissions.

The 1997 Kyoto Protocol and E.U. Renewable Energy Directives from 2005 to present have since followed this model.⁷ These later international policies treat wood as carbon-neutral without recognizing the emissions from deforestation.⁷ This omission wrongly allows nations to claim their wood-derived energy is a carbon-neutral tool for combating climate change.⁷

With the way clear, the small and dwindling wood pellet industry seized upon its new ‘carbon neutral’ status and found a niche in European markets which had large carbon reduction goals but lower access to other renewable sources like solar and wind energy. Wood pellets are further attractive in European countries with large coal infrastructure because they can be combusted to generate energy with coal in coal power plants or without coal in converted coal power plants.⁸ The United Kingdom, for example, with massive coal infrastructure where annual available sunlight is only half of that of Los Angeles, California^{9,10}, relies on wood pellets to achieve its carbon reduction commitments.

As the market for wood pellets grew, so did the concern over this climate accounting error. Now, there is a well-respected and growing body of research demonstrating that wood pellets are neither carbon-neutral nor sustainable.¹¹ **Many of these studies, like one done by the NRDC in 2015, have found that burning wood pellets for fuel releases as much as, or even more, carbon dioxide per unit of energy than coal.**^{12, 13}

Comparison of Power Plant Emissions¹



If you have ever sat downwind from a campfire, you know wood doesn't burn cleanly. Even without the particulates released from combustion that threaten European health, biomass emits more carbon to get the same amount of heat than most fossil fuels. Biomass energy is excessively inefficient and bioenergy power plants emit approximately 65 percent more CO₂, per MWh than modern coal plants, and approximately 285 percent more than natural gas combined cycle plants.

2. Source Materials: Waste Products?

Various factors affect the science behind total carbon emissions of wood pellets and thus their claim as a green energy source. These include the source material for pellet production, the time frame studied, and forest management practices after harvest.

Many believe that the wood pellet industry only consumes waste material from other wood-based industries which have no use for misshapen trees, saw mill waste and the top limbs and roots of processed trees. If the industry did not use these products, they would be thrown away and decompose. Wood pellets are carbon-neutral **if and only if** pellets exclusively consist of forest by-products and residues.¹⁴ This practice ensures that carbon emissions from sourcing are less than those of an unharvested forest.¹⁵

The problem is that international demand for wood pellets, due to misguided designs in renewable energy policies, is so high that the industry cannot rely on residues alone. As of now, it is difficult to ascertain the precise amount of whole forest products which are used in wood pellet operations, but environmental groups have done investigations following clear cut trees directly to wood pellet production facilities.

16, 17

3. Natural regeneration of trees:

The natural regeneration of trees underpins many assumptions that wood pellets are carbon-neutral. Theoretically, trees that regrow after being harvested for wood pellet production can act as **carbon sinks** to offset the increase in atmospheric carbon coming from the production, transportation and combustion of wood pellets.^{2, 14} In truth, much of the wood sourced for the wood pellet industry, both waste products and whole trees, comes from plots with no proper plan for reforestation.¹⁸

If plots do have plans for reforestation, it is key to understand that their ability to sequester carbon is dependent on *how* they are reforested. A recently published scientific study conducted over eight years demonstrated that plots of land with greater forest species diversity absorb more carbon than those with only one species.¹⁹ However, in areas of the southeastern United States, because of inadequate forest oversight, reforestation plans often allow for owners to replant using just a singular species.^{20, 21} Most often, these are pine plantations valued for their commercial need and fast growth rate. Between the 1950s and the early 2000s, pine plantations in the Southeast grew by 30 million acres, drastically decreasing the forest diversity of the region.²²

Even if biodiverse forests are fostered in areas of clearcutting, we have run out of time to wait for the trees to regrow. Given that climate change impacts are already disrupting the planet, committing to net zero emissions and decreasing atmospheric carbon is essential. It is necessary to contain global temperature rise to 1.5°C or less within the century before we face a human-induced, irreversible environmental catastrophe.²³ However, it takes a half-century for new trees to remove carbon dioxide from the wood pellet process.²⁴ The time lag for trees to regrow and pay off their **carbon debt** undermines the very efforts the renewable portfolio standard, Paris Agreement, and E.U. climate targets were initially designed for: immediate climate change mitigation. The best strategy to lower atmospheric CO₂ levels is to preserve and expand forests, rather than destroy them and use trees as fuel.²⁵

4. Misnomers for the industry:

To better understand how wood pellet production based on mistaken notions is perpetuated, it is critical to understand the misuse of language to describe the industry, specifically the difference in meaning between carbon-neutral, 'green', renewable and sustainable since these terms should not be interchangeably used. **Renewable** energy only relates to the ability of any energy source, like trees, to regenerate over time, often when referring to a timespan relevant to human life. However, this does not inherently mean that the process of using trees as a fuel is carbon-neutral. A **carbon-neutral** fuel source indicates that whatever carbon is released during the production and consumption of a fuel is, in the end, absorbed, stored, or 'sequestered.' Finally, **sustainable** fuel is a resource that is renewable, carbon-neutral and has limited negative effects on the environment.



Photo: Dogwood Alliance, Wetland Logging Investigation of Enviva2

Carbon-Neutral vs. Renewable vs. Sustainable

Carbon-Neutral: an energy resource that produces a net zero change in atmospheric carbon dioxide levels; the life-cycle emissions from producing the energy are offset by the source's carbon sequestration efforts

Renewable: an energy resource that naturally replenishes with time, such as the growth of new organisms or the natural recycling of materials

Sustainable: an energy resource that can be produced for the foreseeable future without significantly damaging the environment

'Green': a colloquial term used to describe any energy source or technology that is environmentally friendly

Note: Renewable resources can be used unsustainably! If an energy resource is used faster than it recreates itself, it will eventually run out despite its renewability.

Under these definitions, the science is unmistakable: wood pellets can, under certain scenarios, be a renewable source of energy, but they are far from a sustainable, carbon neutral fossil fuel substitute.

Unfortunately, on November 1, 2018, the heads of the U.S. Environmental Protection Agency, the U.S. Department of Agriculture and the U.S. Department of Energy sent a letter to the Senate Appropriations Committee in which they stated their agencies would,

"work to ensure consistent federal policy on forest **biomass** energy and promote clear policies that encourage the treatment of forest biomass as a *carbon-neutral renewable* energy solution"²⁶

According to the best science available however, this comment is incorrect in its description of forest biomass. It more accurately reflects the current political penchant in favor of U.S. industrial expansion regardless of the environmental impacts both locally and globally.

Wood pellets can only be a clean alternative if their total GHG emissions are less than those of the fossil fuels they displace and if the forests they come from are replaced.¹⁴ Science has moved on. Why hasn't the world?

Current Status & Growth

In 2009, the European Union created their 2020 Renewable Energy Directive. This policy sets a collective target for 20% of total energy generation from renewable sources by 2020; it includes all forms of biomass as carbon-neutral and sustainable sources. As a result, it has driven some of the world's largest energy consumers to turn to wood pellets to meet this goal without heavy investment in new infrastructure. Wood pellets now account for nearly half of the E.U.'s "renewable" energy production.²⁷

As the European Union is quickly approaching the 2020 deadline for its commitments, it is becoming ever more crucial to maintain the myth behind wood pellets. For example, the U.K. is struggling to meet its target of 15% total generation and 30% electricity coming from renewables.²⁸ Falling short on renewability goals would result in geopolitical consequences for the U.K. and climate penalties for the planet. Rather than increase investment in sustainable, carbon-neutral energy sources to address climate change, the U.K. has simply increased its dependency on wood pellets. In 2014, an international lawyer at the Department of Energy and Climate Change in London told Tufts University professor and biomass energy expert, Dr. William

Moomaw, that if the U.K. does not count bioenergy as carbon neutral, it will fail to meet its obligations to the European Union.²⁹ Although wood pellets will allow the British government to appease geopolitical demands, they will do so without truly addressing the growing climate crisis.^A

The economic and political power of the wood pellet industry and its allies solidifies their dominance in countries' **energy mixes**. A key financial incentive for wood pellet consumption is that wood pellets can be integrated into existing fossil fuel infrastructure thus retaining jobs. The decades-long dominance of the fossil fuel industry established significant economic activity around a vast network of power plants. Fossil fuel power plants can burn wood pellets alongside coal or use wood pellets as the main feedstock.⁸ Converting coal plants to biomass energy plants is cheaper in the short-run compared to investing in new infrastructure for more sustainable renewables such as solar and wind.

In order for the wood pellet industry to operate in the U.K., which remains the largest importer, the government must provide large subsidies and avoid high infrastructure costs. The U.K. accesses different subsidy regimes by framing wood pellets as a green tool for combating climate change.⁸ Without this financial support for biomass, the industry would struggle to be economically sustainable.⁸ In 2015, The U.K. Energy Minister announced that the nation's coal fired power generation would end within a decade.³⁰ As coal still plays an important part in the U.K.'s electricity generation, wood pellets are an important tool to allow the U.K. to phase out fossil fuels without financing new infrastructure.



*Photo: Chris Allen, 2013, Drax Biomass Storage*³



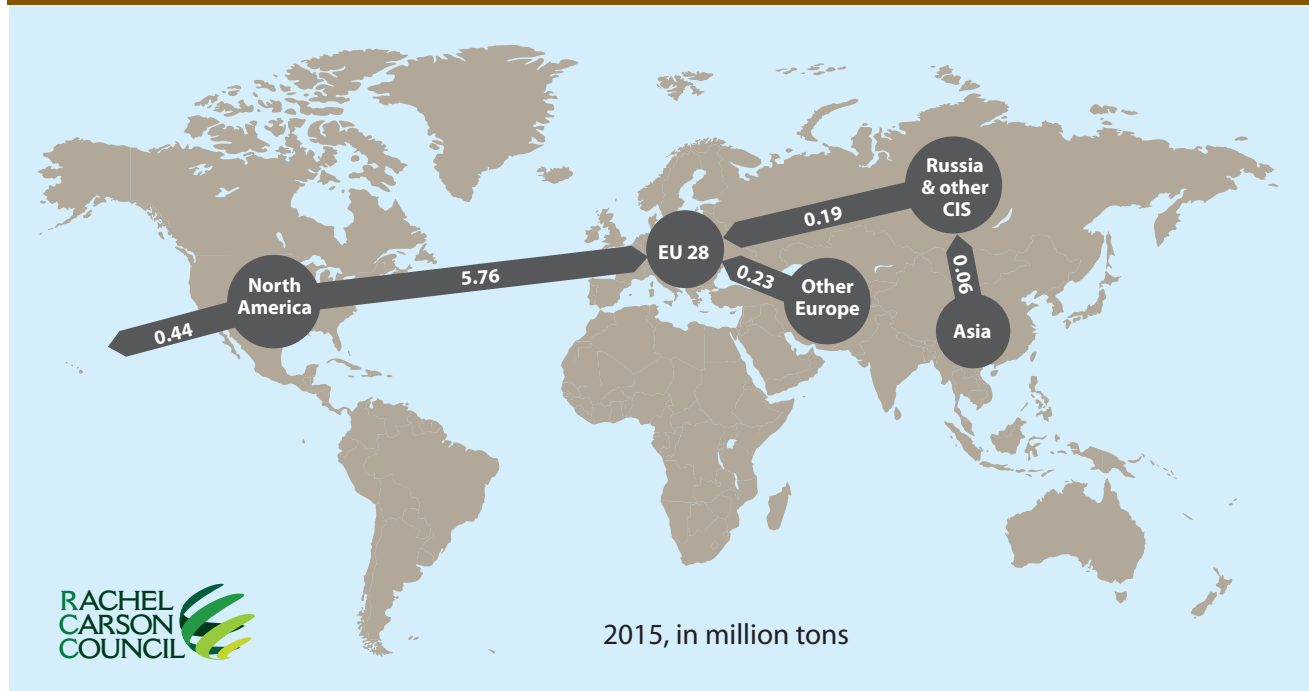
*Photo: Andrew Whale, 2011, Drax Power Station*⁴

The UK's Drax Power Station is phasing out coal to burn wood for "cleaner" operations. This transition, however, will ultimately increase CO2 emissions.⁶ Nevertheless, due to the accounting errors in the EU Energy Directive, the plant is able to avoid tens of millions of dollars in fees for pollution, while receiving hundreds of millions in subsidies.⁶ Fuel costs from Drax are sixty-two dollars per megawatt-hour.⁶ With the renewable subsidies, the cost goes down to thirty-six dollars, which is nearly half of the actual cost.⁶ A report from the Natural Resources Defense Council (NRDC) highlights that such investment in biomass makes poor economic sense.³¹ Without the subsidies for biomass, solar and wind power offer greater investment opportunities for a cheaper and more reliable source of electricity.³¹ In effect, the UK, as well as the broader European Union, are now victims of a market that was accidentally created to achieve greater carbon neutrality.

Currently, the European continent accounts for more than 75 percent of global wood pellet demand, of which a third goes to power plants to be burned for electricity generation.⁸ Now, countries such as Japan and South Korea are increasingly incorporating wood pellets into their renewable energy mix as well.⁸ This trend is growing, as on October 31, 2018, Enviva, the world's largest producer of wood pellets, announced it is committed to supply Mitsubishi, a Japanese power supplier, with 630,000 metric tons/year of wood pellets.³²

^A As of December 18, 2018, the UK lowered the imported biomass greenhouse gas threshold which means it will no longer be creating new biomass burning power stations. This critically slows the growth of its dependence on wood pellets.

Global Demand for Wood Pellets by Geographic Region²



These major consumers of woody biomass primarily import wood pellets from the United States, allowing them to externalize the environmental and human costs of their electricity supply to rural regions in the Southeastern United States.⁸

NORTH CAROLINA & ENVIVA

In the past 15 years, the Southeastern United States has emerged as a major supplier and net exporter of wood pellets. The proximity from the Southeast to Europe and the rich forest resources presented industries a geographical advantage to access European wood pellet markets.¹ This is critical, because in 2015, nearly all of the 4.6 million tons of wood pellets exported from the U.S. were shipped to Europe.¹

The industry has continued to thrive on the abundant timber resources in the Southeast. The region contains more than 24 million acres of **bottomland hardwood forests** that account for 65% of the total

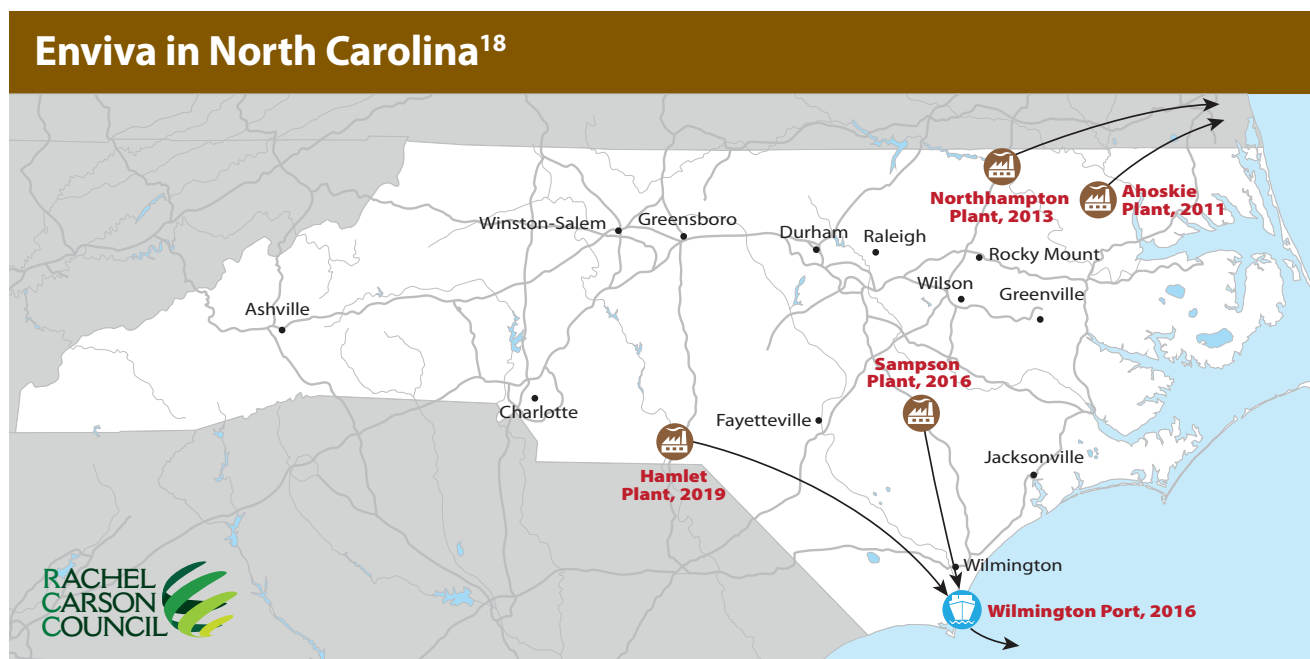
Enviva in the Southeast¹⁸



amount found in the nation.² Large-scale wood pellet plant operations extend throughout Southeastern states including Louisiana, Georgia, Florida, Virginia, Alabama, Mississippi, and North Carolina.¹

Enviva, the world's largest wood pellet producer, is a key industrial player in the Southeast.³ Founded and headquartered in Maryland in 2004, the company now owns plants and ports across North Carolina, South Carolina, Virginia, Florida, Alabama, and Mississippi. As of 2018, Enviva's seven processing plants have a combined annual production capacity of nearly three and a half million metric tons of wood pellets.⁴ This is the same mass as more than half a million African elephants.⁵ Projected growth in global wood pellet demand drives Enviva's operations. The company tells its investors that Denmark, Germany, France, Japan, South Korea, and several other nations will soon need millions of metric tons of wood pellets.⁶ Flawed renewable energy portfolios and misguided notions of sustainability underpin this demand.

Acknowledging the rising demand, Enviva plans to increase supply from the Southeastern U.S.⁶ Government support has already created an artificially cost-competitive market in the region. Enviva is set to invest hundreds of millions of dollars in new facilities to meet global demand.⁶ The company is examining over a dozen new production plants and two seaports as it prepares for expansion, and an eighth plant in Hamlet, North Carolina is under construction to open in 2019.⁶



North Carolina is unique because it houses more Enviva facilities than any other part of the country. It is home to three, soon to be four, wood pellet plants that are among the largest in the world — all owned and operated by Enviva. The North Carolina wood pellet plants have an annual production capacity of about 2 million tons, which are more than 15% of the total U.S. annual production capacity.¹ This level of production, though, has put a severe strain on the environment and communities in North Carolina.

INDUSTRIAL EFFECTS: THE ENVIRONMENT, CLIMATE CHANGE & HEALTH

Our environment is not only a “source of livelihood,” but it is also where we live.^{1,2} It is where our identity is created: the air we breathe, the water we drink, and the world we see are all intrinsically tied to who we are.² Therefore, the “fights for human rights and environment are inseparable.”¹

Environmental health encompasses the idea that people live *along with* nature, which is vulnerable to industrial processes and practices. It aims to maintain an environment that promotes a necessary standard of mental and physical health for humans and other living beings.³

As an **extractive industry**, Enviva threatens rural North Carolina communities’ environmental health. Its extractive economy depletes natural resources and harms human health in order to create a falsely “green” product.⁴ The wood pellet industry harvests forests and never makes independent efforts to regenerate them.

The wood pellet life cycle can be categorized into three key stages: sourcing, processing, and burning. While interconnected, these stages create unique impacts for local and global communities. The following sections closely examine the consequences of sourcing timber and timber products, processing trees into pellets, and combusting pellets for energy.

Sourcing: Clear Cutting & Deforestation

Less than five hundred years ago, the land that is now North Carolina was covered with vast, diverse forests.⁵ Native Americans who lived on this land used controlled forest fires and subsistence agriculture to support their communities.⁵ These practices worked within natural systems and merely created localized, short-term impacts.⁵

With European colonization, an extractive plantation economy took over, assaulting North Carolina’s forests.⁵ By the early twentieth century, the overwhelming majority of old-growth forests in North Carolina were decimated.⁵

While their numbers have fallen drastically since pre-colonial times, the state’s 18.8 million acres of forests support climate control, biodiversity, clean air, clean water, and other essentials for a healthy ecosystem.⁵ Yet with nearly 85% of forests privately owned and up to the discretion of their owners whether or not to be used for timber production, extractive industries like Enviva can easily disrupt these important forests.⁶

Enviva has three key source materials it relies on for wood pellet production – saw mill by-products, forestry waste, and whole trees.⁷ Each of these sources is at one point dependent on the practice of clear cutting forests or cutting down all of the trees in a given area of land.

Nevertheless, many still consider the industry as “green” since it claims that it predominantly uses sources that would otherwise be thrown away. The reality can be seen in the photo below taken of clear cut logs at an Enviva plant in North Carolina.

By 2015, it was clear that residual wood waste would be insufficient to supply the wood pellet market.⁸ So, Enviva had to turn to whole wood sources. The corporation primarily consumes pine trees found in softwood forests as well as a mixture of bottomland and upland hardwood trees.⁹ The softwood tree supply is often sourced primarily from pine plantations that are abundant in North Carolina, but the bottomland and upland hardwood trees generally come from older growth, biodiverse regions critical to the environmental health of North Carolina. Unfortunately, nearly **half of all bottomland hardwoods lie within the sourcing perimeters of Enviva’s three operational plants in North Carolina.**¹⁰

Given the escalating demand across European and Asian markets, Enviva will need to clear cut forests at even faster rates. The adverse effects of deforestation are already apparent. The practice threatens the state’s people, plants, animals, insects, and other organisms alike.



Photo: Dogwood Alliance, Enviva Harvest Site, May 2015⁵

Forests and Water

Forests simultaneously depend upon and support the Earth's **hydrologic systems**. They promote groundwater renewal and maintain the proper movement of the water cycle.¹⁰ Forests support strong riverbanks to capture sediment and control water temperature fluctuations. They further provide buffers that promote the health of rivers and of the many different species living in their waters.¹¹ Healthy forests contain productive soils and vegetation.¹⁰ In addition to acting as carbon sinks, soils are incredibly important for supporting life within and outside of a forest. Within forests, trees guide the formation of soils that are healthy in terms of their depth, structure, and ability to cycle nutrients.¹² Stable soils control water pollution by capturing potential runoff such as sediments and nutrients.¹³ River quality is deeply intertwined with the quality of coastal wetland systems that rely on forests to facilitate a clean and flowing water supply. Forests both upstream and close to the coast, therefore, influence river health.¹⁰

Just as forests support the water cycle, they are critically important for humans as well. North Carolina forests filter, store, and deliver fresh drinking water.¹² More than half the state's population directly depends on groundwater for their water supply.¹⁴ About 98 percent of all public supply systems also rely on groundwater.¹⁴ This means that North Carolina residents have directly benefited from the natural filtration system that forests provide. As North Carolina's population continues to grow, forest support for local freshwater will become increasingly important.¹⁴

Importantly, forested areas also control flooding by soaking up water, reducing its speed, and creating areas for it to pool.¹⁴ Strong forests protect North Carolinians from extreme weather events such as costly hurricanes.¹² In 2016, Hurricane Matthew caused \$4.8 billion in damage, affected 98,000 homes and nearly 20,000 businesses across North Carolina. While the federal government initially committed \$1.2 billion toward the recovery, this was still insufficient to properly address housing and infrastructure needs.¹⁵ Cutting down trees for wood pellets further weakens North Carolina's natural defense against such severe weather events.

Hurricane Florence

On September 14th, 2018 Hurricane Florence collided into North Carolina's coast and continued to dump rain inland for three days, flooding homes, towns, roads and multiple coal ash and animal waste pits.

One of the clearest and most devastating impacts of climate change has been the dramatic amplification of damage done to coastlines by hurricanes/tropical cyclones. Hurricanes have increased in frequency, intensity and duration since the early 1980s.² According to NOAA, these "observed records of Atlantic hurricane activity show some correlation, on multi-year time-scales, between local tropical Atlantic sea surface temperatures."³ Sea level rise to date has elevated storm surge, increasing the reach of coastal flooding driven by hurricanes, especially along low-lying areas and coastal plains.⁴ Warming seas and a wetter atmosphere are supercharging the deluge delivered by tropical cyclones, increasing flood risk.

By the Numbers

Approximately 2,200 primary and secondary roads closed due to flooding⁵

Damage reached an estimated \$12.7 billion⁶

36 lives lost⁷

83% in tier 1 & tier 2 counties⁸

Power outages peaked at 814,351⁹

In countries around the world, governments plant trees to protect their coastlines from climate change. Forests are critical in mitigating the threats of climate change, and it is more urgent than ever to invest in nature to protect our country against the damage that Hurricane Florence and storms like it pile onto our most vulnerable communities in years to come.

Carelessly dismantling these protective resources for short term profit directly undermines the safety of North Carolinians.








Photo: NASA/USGS; Hurricane Florence pollution

Forests and Biodiversity

Beyond fostering healthy hydrological systems, North Carolina's forests support an immense amount of biodiversity. The World Wildlife Fund labeled southeastern forests as "some of the most biologically important habitats in North America."¹⁰ Unique and threatened carnivorous plants like the Venus flytrap and pitcher plants are now only found in limited areas of North Carolina forests. What were once abundant species in the region, like some songbirds, black bears, bats, and butterflies, are now endangered.¹⁰ For example, birds like the Swainson's warbler rely upon North Carolina's tree canopies for migration.¹⁰ These forests also contain the highest diversity of amphibians in North America.¹⁰ Expanding their homes is critical to restoring the populations of these valuable yet vulnerable organisms. Protection of the forests, the rivers, and the species within them is all interconnected.

Species Under Pressure in Bottomland Hardwoods^{3, 4, 5, 6, 7}

Swainson's warbler <i>Migrates through bottomland hardwood canopies</i> U.S. Fish and Wildlife Service Northeast Region	Saint Francis' Satyr butterfly <i>Endangered</i> Wikimedia	Mountain Sweet Pitcher Plant <i>Endangered</i> U.S. Fish and Wildlife Service Southeast Region	Black bear <i>Found in hardwoods of North Carolina mountains and coast</i> Creative Commons
			



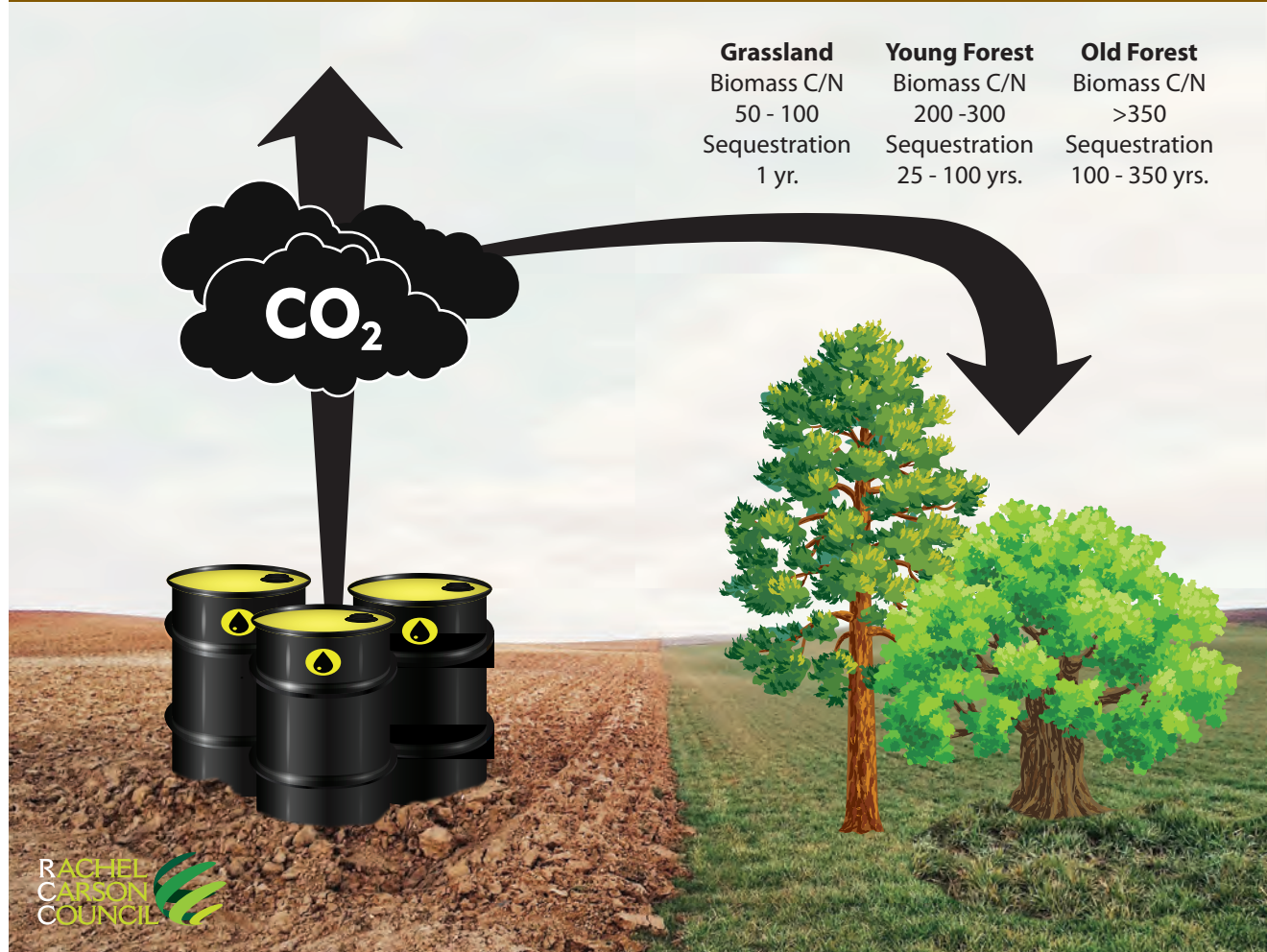
A number of beautiful and necessary species depend on North Carolina's bottomland hardwood forests. Many are already under significant pressure from the instability and destruction of their traditional ecosystems. Turning these forests into industrial sites will deny these species access to the complex forests they depend on, even if individual trees grow back.

Monoculture pine plantations threaten the biodiversity in natural forests. Enviva actively contributes to this issue by sourcing from pine plantations.¹⁶ Further, a lack of government regulation allows North Carolina industries to easily convert natural forest ecosystems to plantations for industry gain.¹⁷ To exclusively produce one tree species, pine plantations use harmful herbicides and pesticides such as Triclopyr, glyphosate and Imazapyr.^{18, 19, 20} By preventing other vegetation or organisms from existing, pine plantations diminish the rich biodiversity naturally found in the state's forests. In contrast, natural forests protect clean water and air, enhance climate regulation, and conserve wildlife habitats.²¹

Forests: Air and Climate

Severe weather events such as Hurricane Florence are only expected to worsen as carbon dioxide levels in the atmosphere rise. Forests play a critical defensive role in minimizing these impacts because they remove, filter, and sequester pollutants and greenhouse gases from the atmosphere. Greenhouse gases raise global temperatures and worsen the effects of climate change. Forests address this problem by acting as sinks for carbon dioxide, one of the primary greenhouse gases contributing to our current climate crisis. Through photosynthesis and other biological processes, forests absorb atmospheric carbon dioxide which is then stored in their cellular bonds. If you recently drove down one of North Carolina's many tree-lined highways,

Carbon Sequestration by Vegetation⁸



Globally, vegetation stores the same amount of carbon dioxide that would be emitted from burning over 6 billion barrels of oil.

those trees cleaned up some of your car's exhaust gas.

Forests and other communities of vegetation around the world remove about 2.6 billion metric tons of carbon (BMtC) from the atmosphere.²² That is the same amount of carbon dioxide emitted from burning over 6 billion barrels of oil.²³ Forests are the only proven system for taking out enough carbon from the atmosphere to prevent a 1.5 degrees Celsius increase in the global temperature by the end of the 21st century, making them ever more critical to protect from industries like Enviva.²²

In 2015, 195 countries adopted the landmark Paris Agreement to set targets for greenhouse gas mitigation and climate change adaptation. Article 5 of the agreement notes the important role of sustainable forest management in these efforts.²⁴ Such approaches should be used to protect communities and forests in all regions of the world. However, most efforts focus almost exclusively on tropical forests, leaving the hardwoods and softwoods of North Carolina at risk.²² While tropical forests are important, forests in the U.S. South need protection as well. In fact, **Southern forests are logged at a rate four times higher than that of South American rainforests.**²⁵ Such rapid logging has been shown to reduce the potential of the U.S. forest carbon sink by about 35 percent.²⁶

STAND4FORESTS Campaign



- 120 Organizations
- 60+ Elected Officials
- 30+ Scientists
- Over 25,000 signatures

If you care about the protection of our nation's forests, please follow the link below for more information and consider signing on to the pledge.

<https://stand4forests.org/>

In the Fall of 2018, Dogwood Alliance laid out a bold and necessary vision for the future of North Carolina's forests threatened by the wood pellet industry.

TheStand4Forests Platform urges decision-makers to put forest protection at the forefront of the national climate agenda by investing in forests as a resiliency strategy for communities; end the destruction of our most important carbon sinks; and recognize the inherent links between forest destruction, climate impacts, and environmental injustices.

The week of action featured a variety of coordinated events, actions and media across the country culminating in a press event in Raleigh, where Senator Erica Smith and other leaders placed the destruction of North Carolina's forests at the feet of the wood pellet industry and called for increased forest protection.

A heightened sense of gravity accompanied the campaign amid the dire warnings and pleas for action in the latest IPCC report, as well as the visible and hard-felt devastation from Hurricane Florence.

Dogwood Alliance, an organization protecting Southern forests and communities from industrial logging, has championed the cause against industrial wood pellets from the front line. Often integral to community organization and information efforts, Dogwood has the trusted record and the passion to fight for environmental and community health required to organize the many voices of the Stand4Forests campaign. <https://www.dogwoodalliance.org/>



Production & Burning

The production and burning processes that are involved in the creation of wood pellets heavily influence climate change as well as the human health of surrounding communities.



*Photo: Dogwood Alliance, Enviva Production Facility*⁶

Human Health Effects:

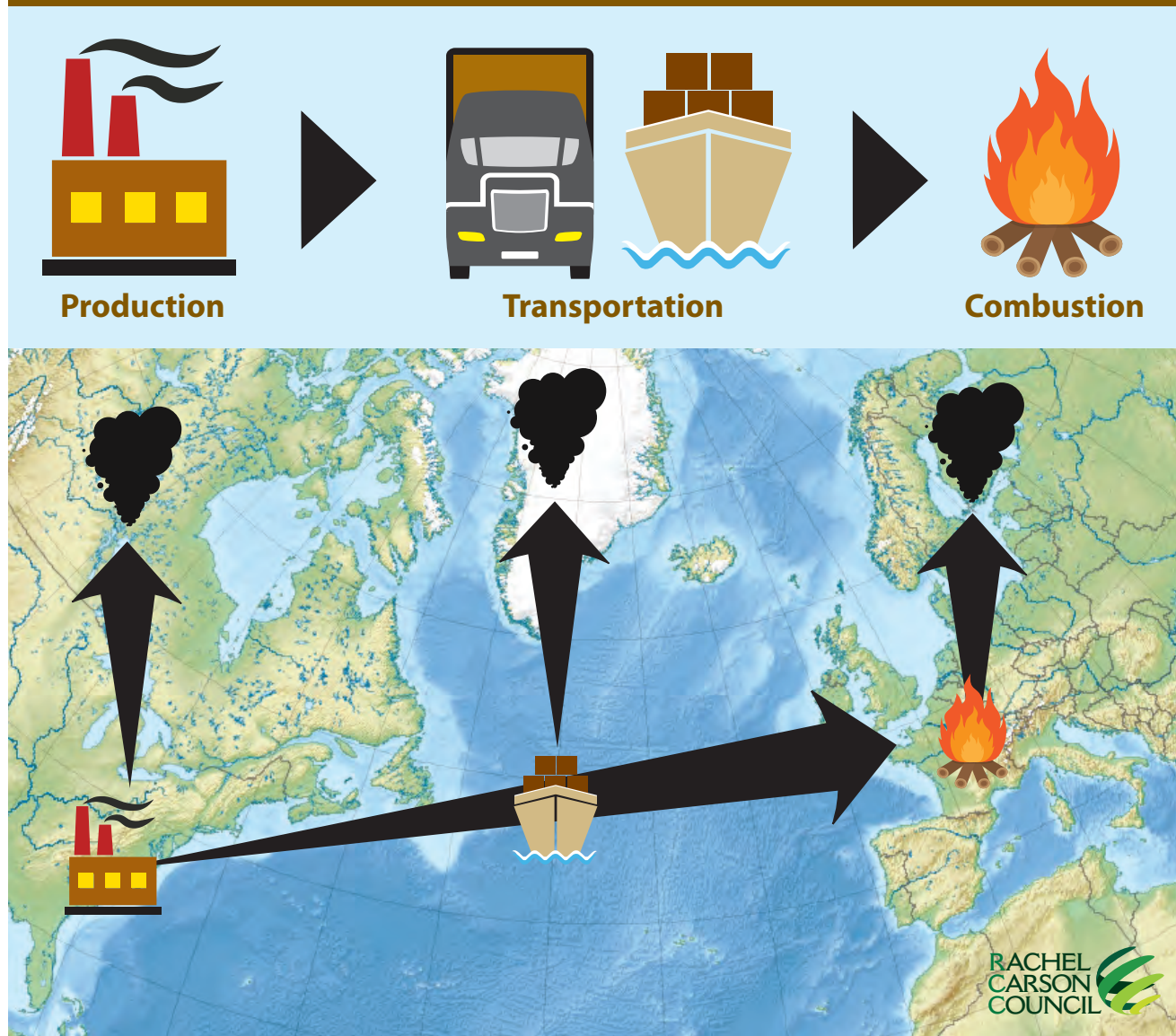
When wood pellets are first processed or chipped in mills, they release heavy amounts of carbon dioxide and harmful pollutants. These chipped wood materials are decreased to a size no larger than a paperclip, parched in drum dryers that heat up to 6000 degrees, and compressed to form the end product.²⁷ The processing and burning of wood pellets creates, Volatile Organic Compounds (VOCs), particulate matter (PM), nitrogen oxides (NO), and carbon monoxide, all of which are detrimental to human health.

In a recent study, the Environmental Integrity Project found that all 21 U.S. wood pellet mills combined emit 16 thousand tons of detrimental air pollutants annually.²⁸ North Carolinians are particularly at risk because up until 2018, the government has allowed Enviva facilities to operate without any VOC or hazardous air pollutant controls. This has left community members at risk from air-borne pollutants which can cause or worsen cardiovascular and respiratory issues and cancers. Long-term exposure to many of these pollutants, especially acetaldehyde, formaldehyde and methanol can also cause chronic symptoms and harm early child development.²⁸

Climate Effects:

The burning and processing of wood pellets are also massive sources of greenhouse gases. The process to produce wood pellets requires high inputs of energy that emit over three million tons of greenhouse gases, like CO₂, further contributing to global climate change.

Carbon Life Cycle of Industrial Wood Pellets^{9, 10}



Traditional fossil fuels like coal, gas and oil billow out from every stage of the production of wood pellets. Trees are cut down, ground up into pellets, shipped across the Atlantic Ocean, unloaded and combusted - all using fossil fuels. Even the carbon stored within the pellets won't necessarily be "neutralized" by other trees as their old wood and deep roots held more carbon than young trees can take up. At regional scales, a permanent increase in annual wood harvest results in a permanent reduction in the amount of carbon stored in forests and the deterioration of current biomass pools requires decades to centuries to reaccumulate.

Much of Enviva's pellet production ends up in the U.K.'s Drax Power station, the world's largest woody biomass power plant. The facility burns 13 million tons of wood pellets to generate electricity each year, emitting up to 23 million tons of carbon dioxide, making it the heaviest carbon emission source in the life cycle of a wood pellet.²⁹ Such a huge amount could only be sequestered if 60 million tree seedlings were planted and allowed to grow for a full decade. Instead, each year these emissions are compounded by additional burning, pushing carbon neutrality further out of reach for the industry.²³

These massive carbon emissions go on to affect global climate and weather patterns. In North Carolina in the last century the average temperature rose by 1.2 degrees Fahrenheit.³⁰ Even conservative estimates show that these hotter conditions will continue to amplify in the near future as CO₂ levels rise.¹⁴ It is predicted that across the southeastern United States, the total number of days above 90 degrees Fahrenheit will nearly triple in the next 100 years.³¹

Rainfall now occurs in more intense, shorter-lived episodes, with longer dry spells in between.³¹ Severe conditions, like the state's 2007 drought resulting in water restrictions for five million North Carolinians, will become more frequent and intense as companies like Enviva continue unsustainable, carbon intensive practices.³⁰

The changing climate will also intensify sea-level rise. When the U.S. Geological Survey evaluated the state's shoreline, it rated more than half of North Carolina's coast at "very high risk" from sea-level rise.³⁰ The rest of the shoreline is at high or moderate risk. As intense hurricanes, like Hurricane Florence batter the coast and push flooding further inland more areas will begin to fall under the "very high risk" category, affecting North Carolina communities, agriculture, public infrastructure, and ecosystems.³²

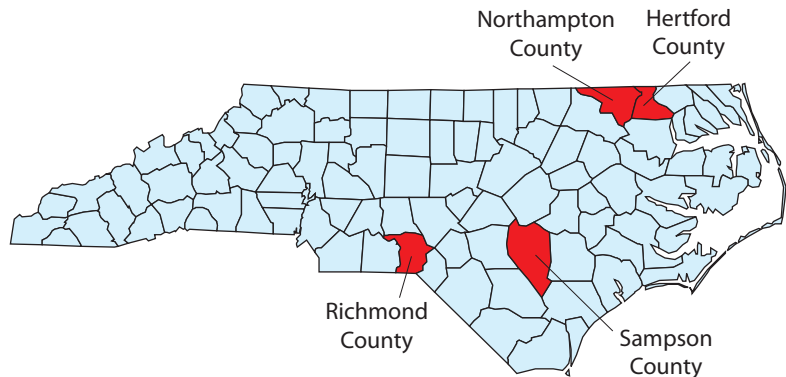
The impacts across North Carolina's varied regions will significantly hinder the state economy and low-income, rural communities across the state will bear the biggest burdens.³³

NORTH CAROLINA ENVIRONMENTAL JUSTICE COMMUNITIES

As North Carolina remains a net exporter of wood pellets, certain communities in the state are suffering disproportionately from the associated adverse health and environmental effects.

The Enviva facilities within North Carolina are located in Hertford, Sampson, Northampton and Richmond Counties.. Each of these counties lies on the coastal plain of the state in largely rural areas with easy access to rich forests, pine plantations, and ports, making them ideal for Enviva's operations.

The facilities also fall in counties that suffer some of the highest environmental degradation from industrial operations in the state. These operations are disproportionately clustered around poor communities of color. **In an important study done this past year by Dogwood Alliance, it was found that wood pellet facilities are 50% more likely to be cited in environmental justice communities. Worse, the study also found that every single facility in North Carolina lies within an environmental justice community.¹**



Hertford County

Enviva began its operations in North Carolina with its Ahoskie plant in Hertford County in 2011 when it converted an old Georgia Pacific sawmill.² Hertford County sits directly in the northern coastal plain region of North Carolina with direct access to rich wetland forests and pine plantations. This ecologically rich area was also once home to the Meherrin Native American tribe that had been in the area for hundreds of years before English colonization. During the 1800s this group was pushed onto a small reservation in the area. But, later on, even this land was taken from them. Nevertheless, a few hundred Meherrin remain in the area today.³

This history of injustice has continued into the present. Hertford County is currently listed as a tier 1 county, meaning it is one of the 40 most economically distressed counties in North Carolina. It has a poverty rate of 24.9%. In 2013 nearly half of the county's population was low-income.⁴ The county is composed of 65% people of color and over 72% of those in poverty identify as Black.⁵ Nevertheless, Enviva operations in the county have continued unabated since 2011, degrading its rich forest diversity and harming the health of its residents.

Northampton County

"I call this area a dumping ground."

—President of Concerned Citizens of Northampton County⁶

Various environmental injustices surround towns in Northampton County, where a majority (60%) of residents are people of color.⁷ In 2002, local community members were constantly exposed to noxious smells of sulfuric acid and negative health effects from a paper mill,⁸ and just a few years later, plans were announced for establishing the highly pollutive and controversial Atlantic Coast Pipeline through the county.⁹ Most recently, a proposal for rezoning areas to locate two coal ash landfills was drafted by local county officials.¹⁰

Enviva in North Carolina's Environmental Justice Communities^{11, 12, 13}

Ahoskie, Hertford County



68.6% Non-white population (30% NC level)

**33.8% poverty rate
(15.4% NC level)**

Hertford ranked 89th for health outcome out of 100 counties in North Carolina

Garysburg, Northampton County



98.68% Non-white population (30% NC level)

**32.3% poverty rate
(15.4% NC level)**

Northampton ranked 92nd for health outcome out of 100 counties in North Carolina

Clinton, Sampson County



**58.5% Non-white population
(30% NC level)**

**29.4% poverty rate
(15.4% NC level)**

Sampson ranked 79th for health outcome out of 100 counties in North Carolina

Hamlet, Richmond County



**46.2% Non-white population
(30% NC level)**

**28.2% poverty rate
(15.4% NC level)**

Richmond ranked 91st for health outcome out of 100 counties in North Carolina

Data USA (<https://datausa.io/profile/geo/garysburg-nc/?compare=hamlet-nc>), the US Census (<https://www.census.gov/quickfacts/nc>), and County Health Rankings (http://www.countyhealthrankings.org/app/north-carolina/2018/compare/snapshot?counties=37_153%2B37_131)



And there's the Enviva plant. The wood pellet mill, operating since April 2013, is a significant source of dangerous air pollutants exacerbated by lacking air quality control technology.^{11, 12}

Such pollution is especially troubling for a community where many citizens already suffer from chronic diseases.¹³ The county is ranked 92nd for health outcomes of all 100 counties in North Carolina and hospitalizations for asthma in Northampton County are higher than the state average.^{14, 15} A public comment by the Southern Environmental Law Center reveals that 22% of residents in their survey reported that they have been diagnosed with asthma, and 64% with high blood pressure.¹³

"The three leading causes of death in Northampton County are cancer, diseases of the heart, and chronic lower respiratory disease, all conditions that are aggravated by air pollution."
—Southern Environmental Law Center¹³

The cumulative environmental issues surrounding the Atlantic Coast Pipeline, paper mill, coal ash landfill rezoning, and wood pellet plant location highlight extractive economies that perpetuate environmental racism.

In the future, Northampton County faces heavy forest loss and climate change with an estimated 8% drop in gross domestic product over the next 100 years. This percentage loss will grow if wood pellets continue to be used as a 'green' source of energy.¹⁶

Stories of Resistance

Northampton Communities Fighting Back

In light of the realities they experienced every day as neighbors to these polluting industries, residents mobilized their communities to create awareness of how their "air, water, and soil are subject to institutional racial discrimination."¹⁰ While Enviva can produce a series of quotes from paid spokespeople, the people of North Carolina can speak too: In 2014, over 300 residents in the town of Garysburg signed petitions to county commissioners against Enviva. These petitions detailed how the smells, noises and vibrations from the plant disrupt their health and quality of life.

Thanks to their unified defense, the decision to rezone the Enviva area from 'light' to 'heavy' industrial status was successfully postponed.¹¹

The Concerned Citizens of Northampton County works with external environmental organizations to call for environmental justice. The Natural Resources Defense Council, Dogwood Alliance, Clean Air Carolina, Southern Environmental Law Center, the Environmental Integrity Project, and the Rachel Carson Council are just a few of many national and regional organizations that support local community mobilization for environmental health against the extractive wood pellet industry.

Sampson County

Sampson County, which sits in the southeastern coastal plain of the state, is one of the largest counties in North Carolina, about the size of Rhode Island. Its population is composed of 26% African Americans and 19% Hispanics, with over 25% of the population living in poverty.¹⁷ Yet, this is not a county lacking economic opportunity. Industrial operations, especially industrial-scale animal production, crisscross the region because of its proximity to the Port of Wilmington and easy access to two major interstate highways.

Such established industrial operations, as well as its access to forest products, led Enviva in 2016 to open a production facility in Sampson County. This plant currently produces around 500,000 tons of wood pellets a year and is expected to ramp up to its full 600,000-ton-per-year capacity during 2019.¹⁸ Much like the Northampton and Ahoskie plants, production of wood pellets at the Enviva facility in Sampson County leads to heavy air pollution including 110,000 pounds of acetaldehyde, methanol and formaldehyde, and 628 tons of VOCs per year, well above federal safety requirements.¹⁹

This pollution, combined with the air and water pollution from industrial animal production, has contributed to drastic adverse health effects for community members. Sampson County's average life expectancy (75.74 years old) is four years less than the United States' average.¹⁷ Leading causes of death among all ages include cancer, heart disease, diabetes, and chronic respiratory diseases, all of which are higher in Sampson County than the state average.¹⁷ Many of these, especially cancer and respiratory illnesses, can be caused or worsened by the pollutants pumped into the environment from industrial operations.

Richmond County

Two hours west of Sampson County, Enviva is constructing yet another wood pellet processing plant in Hamlet, Richmond County to open in early 2019. Nearly half of Hamlet's six thousand residents are Black (38.4%), Hispanic (7.1%), and Native American (1.7%), and about three in ten residents live below the federal poverty level.²⁰ Within Hamlet, Enviva has sited its plant next to Dobbins Heights, where four out of five residents are Black and more than a third live below the federal poverty line.²¹



The Enviva Sampson plant is positioned on land surrounded by CAFOs, compounding the degradation of local communities' air quality. Google Maps⁷

"... my children play at the park as well as play in their grandmother's yard... The health issues from this industry can cause big concerns for me, not only for my kids and family but for anyone who has to breathe in this pollution." ~Dobbins Heights Resident²²

Communities in Richmond County already face the cumulative effects of polluting and extractive industries. As one concerned resident stated, "Adding a wood pellet mill that harms our forests, health and quality of life to **CAFOs**, a dirty coal plant, and a potential terminal for the Atlantic Coastal [sic] Pipeline would be an injustice."²³ Enviva's processing plant will only exacerbate the problem by adding more toxic emissions.

Even larger than the Northampton plant, the Hamlet facility will emit at least three hundred tons of volatile organic compounds (VOC).¹¹ The plant is legally required to install the best available emissions control technologies based on what similar facilities use. Such controls can reduce VOCs and hazardous air pollutant emissions by 95% or more.¹¹ But, North Carolina decided that Enviva does not need to install any VOC controls. This decision happened for no discernable reason as neither Enviva nor North Carolina showed that it would be infeasible to install the controls on either plant. Instead, Enviva claimed the technology would be too expensive, even though all comparable companies utilized such technology for their wood drying operations.

By not requiring Enviva to install proper pollutant control devices, the Hamlet facility will soon emit more than double the legal threshold of hazardous air pollutants. One local resident wrote, "I have a lot of family here in Dobbins Heights, my children play at the park as well as play in their grandmother's yard." She continues, "The health issues from this industry can cause big concerns for me, not only for my kids and family but for anyone who has to breathe in this pollution."²²

Instead of listening to community concern, Enviva is already requesting an increase in production at the facility before it has even opened. To guise this as a benefit to the community, it has coupled this repermitting with one to increase its air pollution control technology.

Stories of Resistance

“Adding a wood pellet mill that harms our forests, health and quality of life to CAFOs, a dirty coal plant, and a potential terminal for the Atlantic Coastal [sic] Pipeline would be an injustice.” ~Debra David, Secretary of Concerned Citizens of Richmond County¹²

While working against Enviva in Northampton County, Dogwood Alliance learned that the company would soon expand their operations to Richmond County. The environmental group then informed Concerned Citizens of Richmond County (CCRC) because of the new threat to their community’s health and well-being.¹⁴ The two groups were able to combine their efforts and fight against Enviva’s disinformation.



Photo: Dogwood Alliance, Richmond County¹³

Facing the power of an organized and informed community, local politicians attempted to discredit both these groups. When CCRC and Dogwood Alliance campaigned against Enviva’s unjust impacts County Commission Chairperson Kenneth Robinette dismissed their claims as “smoke and mirrors.”¹⁵ Rather than addressing the environmental injustices his constituents face, Robinette described Dogwood as “corrupt” and using minorities.¹⁵

In a blatant and unconvincing attempt to discredit CCRC, Richmond County officials created a map allegedly showing that some county officials live closer to the plant than the residents of Dobbins Heights.¹⁵ However, in the map officials used, the location of the Dobbins Heights town hall is shown as a representative of all residents, ignoring the many people spread across the county including those that live just minutes away from the plant.

Concerned Citizens of Richmond County has worked with other environmental organizations including the Blue Ridge Environmental Defense League (BREDL) and the Southern Environmental Law Center (SELC). With CCRC members within just one mile of the plant, the group has been an active and integral part of opposition to Enviva. <https://www.facebook.com/Concern-Citizens-of-Richmond-County-706398899415725/>

RCC Public Testimony Nov. 08, 2018

Nearly 200 people attended a public hearing on November 8, 2018 in Richmond County for the chance to hear how and why Enviva planned to expand production at their Hamlet facility.¹⁶

At the hearing, The Rachel Carson Council joined local concerned residents and environmental justice advocates from across the state to voice support for clean air and increased forest protection.

The comments given at the hearing were accompanied by a letter signed by 40 organizations representing well over 1.5 million North Carolinians, calling on DEQ to deny Enviva's expansion and halt any future permitting until they complete a study of the cumulative impacts of the wood pellet industry.

Shockingly, this single hearing was the first time North Carolinians had any meaningful involvement in the permitting process, as the community had previously been denied an opportunity to have a public hearing on the initial permitting decision.



Photo: Dogwood Alliance, Richmond County Public Hearing, 2018¹⁶

WHAT DRIVES ENVIVA IN NORTH CAROLINA? THE CONVERGENCE OF INJUSTICE

North Carolina, especially its poor rural communities like those above, has become an attractive destination for many industrial operations because of its geographical location and its political alignments that currently favor economic growth over policies to protect people and the environment. These factors, as well as pre-existing forestry industries, created the perfect milieu in which Enviva's operations have developed. Once established in the state, Enviva has continued to drive its growth and expansion with close political relationships and by dominating the public narrative surrounding wood pellets.

Such corporate opportunism creates cycles of industrial development that get increasingly difficult to break as they become more heavily entrenched in the politics and economics of North Carolina. They also represent interconnected injustices to the poor communities of color in Hertford, Northampton, Sampson and Richmond Counties that undermine their ability to protect themselves and their environment. In order to create change and make progress against the wood pellet industry, it is key to understand the systems at play that allow a falsely "green" industry not only to grow, but also to thrive in the United States at the expense of people and the environment.

Pre-Existing Industries

The already established logging industries and transportation services in North Carolina have made it a strategic location for the wood pellet industry and have facilitated Enviva's development in the state.

In North Carolina, CSX freight rail lines and a well-developed highway system crisscross the state, connecting wood pellet plants to ports, like the Port of Wilmington.¹ These industries and infrastructure are critical to Enviva's operations, and help to dictate where new facilities are cited, as in Richmond County.

Unfortunately, these industries also take a heavy toll on surrounding communities. CSX is known among local residents in Richmond County for its threats to the community's health and environment. In the past it has been sued for failing to warn workers about asbestos exposure, and several of the company's rail workers in Richmond County have died from cancer.³ Further, the trucks needed to transport pellet materials substantially increase air and noise pollution levels in the communities close to pellet plants and the sourcing areas for wood. The trucks needed to transport pellet materials also create substantial noise pollution and increase the air pollution levels in communities near the roads they traverse.

Finally, the Port of Wilmington, where Enviva purchased two massive domes for storage of their pellets before being loaded, has been a large source of complaint for community members because of its round the clock operations, noise and air pollution.



Photo: Morven, Wikimedia Commons, CSX Diesel Train 2005⁸



Photo: RCC, Alexandra Wisner, 2018, Enviva Wilmington, NC Port storage facility⁹

RCC at the Port of Wilmington

The Rachel Carson Council joined other environmental advocacy groups on a fact-finding boat tour along the Cape Fear River in Wilmington, NC. Dr. Kyle Horton, a Democratic candidate for the U.S. House of Representatives at the time, was also in attendance.

The boat travelled past wood pellet dome silos maintained by Enviva, as advocates discussed the impact of the wood pellet industry on climate and public health.

While the pellets themselves wait to be shipped across an ocean, many of the industry's environmental and communal burdens are left behind in North Carolina and along the Cape Fear River.

"The wood pellet processing plants themselves are emitting really terrible particulate matter," said Alexandra Wisner, Assistant Director for the Rachel Carson Council. "That's little particulates in the air when you breathe them in (that) can cause different things like asthma or aggravate asthma."¹⁸



RCC's Alexandra Wisner on boat tour with concerned parties. Photo: Sherry O'Daniell, 2018¹⁷



The Rachel Carson Council, founded in 1965, is a nationwide membership organization that engages and empowers their supporters to take effective action in communities, campuses, and at the local, state and national level.



Carolina Wetlands Association works to promote the importance and value of Wetlands through science-based programs, education, and advocacy. <http://carolinawetlands.org/>



Alliance for Cape Fear Trees' mission is to preserve, protect, and plant trees to enhance the quality of life for present and future generations in the greater Wilmington area. They work to educate the community as a whole on how their region can support growth while still maintain its forest. <https://www.renaissancewilmingtonfoundation.org/alliance-for-cape-fear-trees1>



Cape Fear Sierra Club serves over 1500 members in Bladen, Brunswick, Columbus, Duplin, New Hanover, Pender, and Robeson counties. The club is focused towards opposition to industrial wood pellets as a priority for their work in 2018. <https://www.capefearsierraclub.com>



Clean Air Carolina was founded in 2003 by a group of passionate volunteers determined to improve the quality of Mecklenburg County's air. They now champion a statewide initiative to raise North Carolina's air quality to exceed that of scientific recommendations. CAC has led and joined multiple community efforts to oppose Enviva. <https://cleanaircarolina.org/>

Forestry industries in North Carolina are also key to Enviva's operations. These industries, including those of pulp, paper and sawmills, are sources of waste byproducts Enviva uses to supply its wood pellet production. In North Carolina, these businesses contribute up to \$29 billion to the state economy.⁴ The existing labor, infrastructure, and expertise in these systems allow the wood pellet business to have lower startup and operation costs within North Carolina.⁵ These industries also help set the stage politically for the wood pellet industry. The International Paper Company and Weyerhaeuser Company, multinational wood product companies with operations in North Carolina, frame all biomass as carbon-neutral and have a heavy political influence in North Carolina.^{6,7}

These industrial connections continue to benefit and deepen Enviva's operations in the state as well as worsen the environmental destruction in certain areas of North Carolina.

Private Land Ownership

In North Carolina, 82% of **timberland**, which accounts for 96% of forest land in North Carolina, is owned by private individuals and corporations according to the 2017 NC Forest Service Biennial Report.

Private land ownership by large corporate entities has its roots in the dispossession of land fostered by **systemic racism** in the 20th century. U.S. governmental agencies, including the USDA, have aggressively discriminated against people of color, preventing them from benefiting from loans, technical assistance, and extension programs for the land they own.⁸ **Today, African Americans comprise less than 1% of rural landowners, whereas almost 95% of forest land is owned by whites.**^{9, 10} These imbalances lead to disproportionate decision making power over forest resources.

Current private forestry regulations in North Carolina make it easy for Enviva to source wood from private owners without requiring either party to replant the original forest. Privately owned forests can be self-managed by industries and individual landowners without reporting any large-scale clear cutting activities. In fact, the North Carolina Forest Service (NCFS) encourages landowners to clear cut trees when harvesting timber and other wood products.¹¹ Worse, landowners have no required responsibilities for the resources they own.¹² Many of these laws, or lack thereof, stem from the long history of logging in North Carolina's forests and a desire to promote economic activity in rural regions by lessening restrictions on business.



The dominant presence of private land ownership in North Carolina poses challenges for public input for land management. Unlike public lands, private forest regulations are limited to zoning decisions and federally mandated environmental protection laws, largely to protect landowners' property rights.¹³ However, even these weak laws and regulations are enforced independently by individual states. For example, while the Federal Water Pollution Control Act prohibits any development of wetlands, North Carolina allows wetland clearcutting so long as "the forestry work will not adversely impact the wetland area or water quality."¹⁴ In addition, private property laws prevent public input in their land management decisions. Private ownership of land divides and precludes ordinary citizens from engaging effectively in the management of nearly 85% of North Carolina's forests.

Although forest landowners must submit woodland management plans to the NCFS, sustainable forest management largely depends upon statewide **stewardship** programs and individual voluntary activities.^{15, 16} In particular, there are no "state-sponsored best management practices prescribed specifically for harvesting and utilizing forest/woody material for biomass energy."¹¹ Under this insufficient legal framework, landowners easily implement forest management plans driven by Enviva, which primarily purchases its wood materials from private timberland.¹⁷

North Carolina Forests¹⁴



In Northampton County, Enviva is aware of the vital position landowners have in their business model as they purchase and source wood for wood pellet production from forests owned by private landowners.¹⁷ In order to foster these relationships, Enviva funds various forestry projects that develop management plans for privately owned land use.¹⁸ In particular, Enviva collaborates with the North Carolina Forest Landowners Association, the American Forest Foundation, and regional forestry management programs.¹⁹ These programs influence 56% of the area in Northampton County alone.^{20, 21} Private landowners there who want to generate income from their land receive resources to sell their harvested whole woods to forestry industries like Enviva. Enviva is able to effectively control public discussion surrounding their operations and to promote their interests while community members are left with little recourse to limit clear cutting operations.

North Carolina landowners are a part of a system that incentivizes timber production. The Present-use Value Program administered by North Carolina Department of Revenue can greatly lower property taxes for forest landowners.²² The program recognizes and qualifies a management plan as “sound” if the forest actively engages in “the commercial production and sale of forest products.”¹⁴ Such a system commodifies nature and ignores the inherent benefits a protected forest brings. With the opportunity to generate income by selling whole woods while lowering property taxes, landowners are left to choose between making a profit or losing money on higher taxes.

Not all landowners are happy with their decision to cut their trees, however. In an interview, a forest landowner in North Carolina testified that his neighbors regretted harvesting forests and selling timber to Enviva after seeing their barren land.²³ It is a practice that ends the legacy of family forests which have grown along with them, their children, parents and grandparents.

Democracy and **environmental justice** need local people to “have a voice in decision making processes that directly affect their lives and livelihoods.”²⁴ Therefore, it is important to facilitate collaborative efforts between landowners and local residents to protect the environmental health of the region.

County Commissioners & Community Representation

Many barriers prevent local residents from influencing decision-making processes. County commissioners and various boards set agendas, zoning laws, and budgets for communities. Sadly, in the four counties where Enviva plants are located, officials are quick to overlook the qualitative impacts of the industry on human lives and the environment. Instead, the focus has been on presumed local economic growth, ignoring the true cost of this growth for the well-being of their constituents.²⁵

In Sampson County for example, the uncontested 2018-2019 budget was created to lay, “the groundwork for Sampson County to move forward to attract industry... The people that served before us took a bold move on the Enviva property ... and in the last budget we saw those fruits and how impactful that could be for this county and its citizens,” said Clark Wooten, a Sampson County commissioner.²⁶

The case of Enviva in North Carolina follows this narrative of economic growth at the expense of surrounding communities. Reverend Cary Rodgers, a member of Concerned Citizens of Richmond County (CCRC), said that the placement of Enviva’s plants near poor, rural and minority communities is “not just happenstance.” He explains that they want to “create a dumping ground in a place where people are already suppressed from speaking up.”²⁷



*Richmond Board of County Commissioners
Photo: Richmond County Government, Richmond
County Board of Commissioners 2016*

Such suppression of community voices is the cornerstone of Richmond County politics. For any new development or economic activity to enter the county, it must first receive approval from the board.²⁸ However, all seven board members are at-large representatives.²⁹ This means that the diverse mix of communities within the county are not guaranteed representation on the board. Instead, commissioners represent all voters across the county. The National Association of the Advancement of Colored People explains that this system enables a majority of white voters to drown out voters of color.³⁰ At-large districts often have been struck down for their discriminatory effects, but the system remains in place in Richmond.³⁰ As a result, Dobbins Heights, until November 2018, had no direct representation on the board, thus eliminating the voices, concerns and needs of the affected community.³¹

At the Table

Tavares Bostic —a resident of Dobbins Heights— won the 2018 Democratic primary for the county board of commissioners.¹⁹ Now that he has won the November 2018 general election, Bostic is the first representative from his community to bring a voice to this board. While his election will not necessarily stop Enviva's operations, it is an important first step toward better controlling industries that exploit the low-income communities of color within Richmond County.

The youngest candidate for Richmond County commissioner in 2018, in some cases by over 40 years, Tavares Bostic earned a Masters of Social Work with certification in clinical mental health from the University of Pittsburgh and a Bachelor of Social Work from N.C. A&T State University.²⁰ Bostic also serves as the CEO of Bostic Counseling & Consulting and is the founder Brothers Leaning on Another Creating Kings, a youth mentorship group.²⁰

County commissioner boards do allow for public forums and public comments, but these avenues in North Carolina have been highly regulated to the point that they violate the First Amendment.³² For a community member to be allowed to make a public comment at a board meeting, they may not discuss any issue on the approved agenda.³³ For example, if there is a meeting discussing Enviva's operations, no citizen can comment on Enviva. The process to provide comment is unnecessarily complicated, overly regulated, and out-of-touch.³⁴

CCRC members explain that neither Enviva nor the county commissioners ever spoke with Dobbins Heights leaders or residents about the pellet plant plans.³¹ In fact, the community was unaware of the issue until Dogwood Alliance notified them.³¹ Richmond County officials reacted poorly to Dogwood's efforts, portraying them as an outsider group stirring up trouble in an otherwise transparent and responsibly handled matter of economic development.^{27, 35, 36}

The current composition and structuring of county politics in Hertford, Northampton, and Sampson counties, like Richmond County, prevents those most affected by Enviva's operations from voicing their needs.

Permitting Process: Loopholes & Injustices

These boards also host critical permitting processes for pollution, siting and expansion of Enviva's many plants. Unfortunately, time after time, these processes have been manipulated to benefit the industry and allow it to avoid penalties and the implementation of pollution reduction technologies, specifically under the Clean Air Act (CAA).

The 1990 CAA amendments establish a permitting process to strengthen pollution control standards for different facilities.³⁷ This Title V permit is administered at the state level. The Department of Air Quality (DAQ) oversees Title V permitting for the North Carolina Department of Environmental Quality (NCDEQ). In

2017, the Environmental Integrity Project documented the many ways in which the wood pellet industry avoids CAA regulations. While Title V requires public engagement in the permitting process, DAQ fails to make information publicly accessible in a timely manner. This practice silences voices from the communities that would suffer from the pollution. Of all the southeastern states studied, the report finds that North Carolina “has been the most egregious in terms of allowing unnecessary and unlawful pollution from the industry.”³⁸ The unjust silencing of community voices connects to the policy of underenforcement, thereby exposing the same communities to toxic air pollutants. The pattern across industries and counties has largely been the same.

In Northampton, there was no opportunity for public input on the Enviva plant’s development.³⁹ This is because the facility, now emitting more than most major sources of pollution, was originally listed as a minor source of pollution under permitting standards.³⁸ Minor sources of pollution, which are facilities that emit less than 250 tons of volatile organic compounds (VOCs), are not required to give public notice or undergo commenting periods for their construction.³⁸ Such lack of transparency, distortion of emissions, and disengagement of community members were made possible by the political injustices brought on by an already existing lack of information and understanding, policy loopholes resulting from top-down approaches, and representation systems manipulated by industrial interests.

As a result, the facility is authorized to emit up to 456 tons per year without being legally mandated to install the best existing VOC control technology as is required in the federal Clean Air Act.³⁸ A report by the Environmental Integrity Project (2018) concludes that Enviva purposefully exploited loopholes in current air pollution policies to avoid emission regulations.³⁸

Initially, Enviva agreed to limit the use of softwood products, a primary source of VOC emissions. But two years after its construction, Enviva requested that the restrictions be nullified. Surprisingly, North Carolina agreed to lift restrictions without any penalties. This change now allows a major polluter to operate without any technological regulations whatsoever. Because of the state’s lack of industrial pollution monitoring and the industry’s exploitation of policy loopholes, the Northampton plant is now the largest wood pellet facility in the United States without any appropriate VOC control technology. In 2014, residents were appalled to hear that county commissioners were considering rezoning Enviva’s area from ‘light industrial’ to ‘heavy industrial.’⁴⁰ Confused about why the enormous Northampton facility was placed in an area for light industrial uses, **nearly three hundred residents petitioned against a proposal** that makes their land an official ‘sacrifice zone’ for the industry. **Their mobilization successfully held the local officials accountable for this environmental justice as the rezoning case was tabled indefinitely.**⁴⁰

Unlike Northampton, the Enviva Sampson plant was originally permitted as a major source of hazardous air pollutants thus requiring it, “to perform a case-by-case analysis to determine maximum achievable control technology.” However, it avoided installing controls “by convincing North Carolina to treat its so-called “low emitting” dryers as a separate category,” which allowed them to claim that they did not need to install any additional controls.⁴¹ Recent emissions testing at the plant has revealed the fallacy behind this, as the pollutant-heavy wood dryer emits 50 times more total hazardous air pollution and 70 to 300 times more formaldehyde and acetaldehyde than similar wood pellet plants that do use controls.⁴¹

After this first round of tests showed a blatant violation of VOC emission limits, Enviva Sampson decided to clean up its emission reductions. The test conducted after this modification showed that the plant’s emissions were indeed lower. However, because the emissions were found to be exactly at the permitting limit, the compliance was deemed “Inconclusive.”⁴¹ The Hamlet plant, which is still under construction, also has gone through a permitting process similar to those for Northampton and Sampson. Again, NCDEQ failed to enforce the Clean Air Act, allowing Enviva to operate without the legally mandated emissions control technologies.³⁸

Beyond this lack of regulation, a variety of issues complicated the Hamlet plant’s permitting process. According to the CAA, the NCDEQ should have offered public hearings for Dobbins Heights.⁴² However, Enviva changed the physical location of the facility multiple times without allowing for public input from residents.

Once Enviva finally listed the true address of the plant, it gave no public notice and no opportunity for public hearing from community members that the plant would affect.⁴²

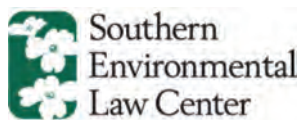
On behalf of CCRC, the Southern Environmental Law Center entered a legal battle with both Enviva and the NCDEQ for ignoring public input and violating the Clean Air Act.⁴² However, the judge sided with the wood pellet industry and community members still were unable to voice their concerns on the matter.

New Permitting Threat

Enviva has applied to the DEQ for a permit modification so that it can “meet new consumer softwood percentage and production rate demands, and to incorporate significant emission-reduction efforts to minimize emissions impacts associated with the project,” Michael Carbon, an air-quality consultant with Ramboll, said in a letter.²¹

Enviva’s proposed modifications include installing air pollution control devices that will lower their emission rates. But, “Enviva has shown at its other North Carolina facilities that it cannot keep its emissions below limits laid out in the federal Clean Air Act despite its attempts to reduce them,” said Rachel Weber, grassroots political organizer for Dogwood Alliance, at the November 8th DEQ hearing.²¹

For this reason, community members and environmentalists alike gathered to demand the permit be modified to increase emission reduction efforts and decrease production levels, at a permit hearing in November 2018. Many also demanded that the DEQ complete a FULL environmental justice impact study as opposed to the one page snapshot it currently has posted on its website. This snapshot is limited in breadth and depth, looking at a limited geographical area surrounding the plant and leaving out cumulative impacts of other industries in the area.



Southern Environmental Law Center calls for clear standards that protect native forests and air quality as well as insure sustainable practices. This protections include keeping national forests off-limits to biomass extraction while conserving old growth forests, streams and wetlands, wildlife habitat, and other natural treasures. <https://www.southernenvironment.org/>

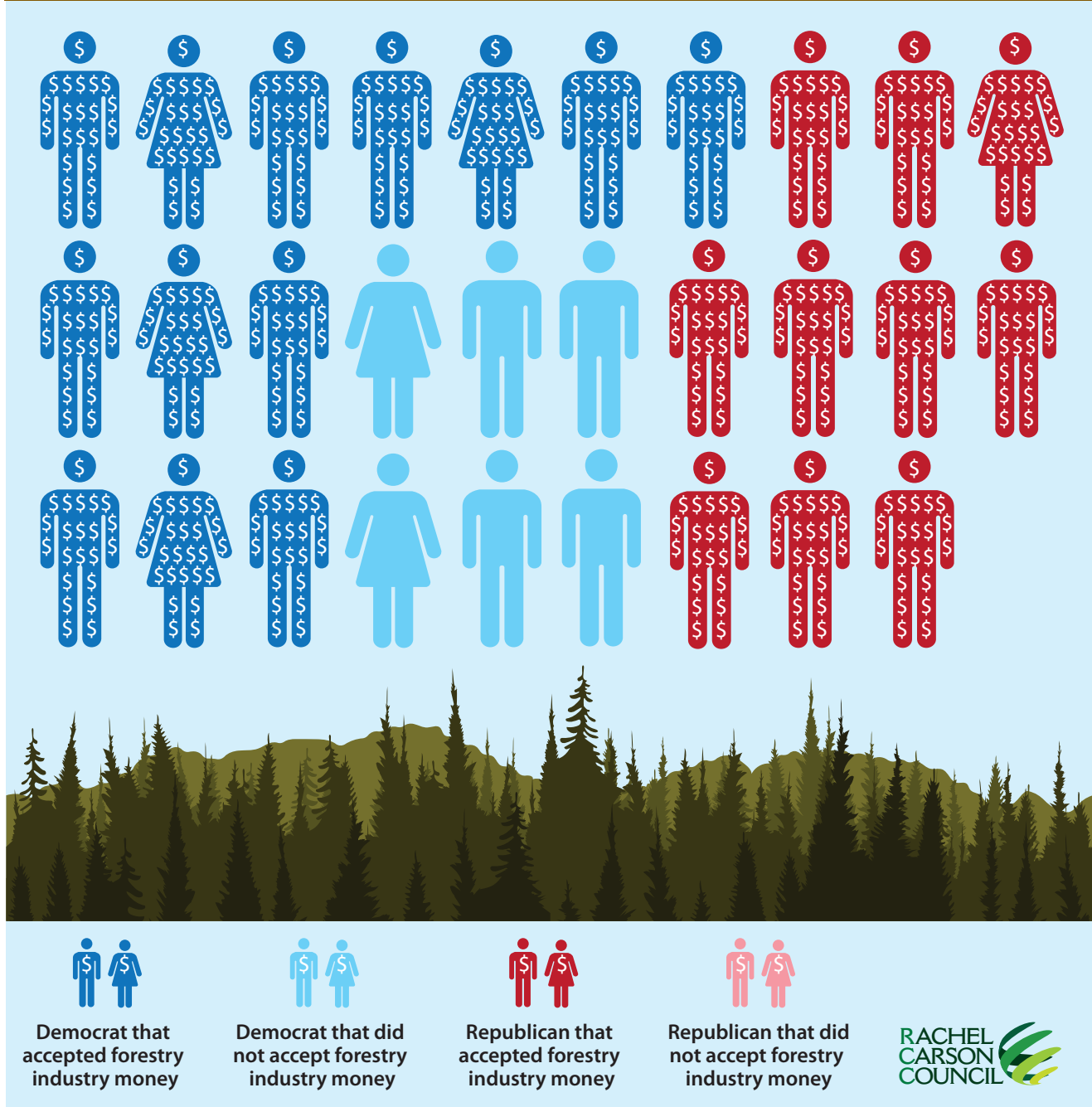


Environmental Integrity Project works to to limit the growth of the wood bioenergy industry in the United States and the associated climate change driven by deforestation and air pollution, research, political action and strategy development. <https://www.environmentalintegrity.org/>

Campaign Financing

Despite the increasingly apparent problems with industrial wood pellets, North Carolina largely supports this product and the forestry industry overall. Many North Carolina politicians accept financial contributions from the forestry industry. Enviva and its industrial wood pellet allies are no different. Since its initial plans to enter the state in 2009, twenty-nine different officials — governors, senators, representatives, and state legislators — have represented the communities surrounding Enviva’s four processing plants within North Carolina.⁴³ Twenty-three of these politicians—Republicans and Democrats alike—have accepted nearly \$400,000 from the forestry industry throughout their careers.

North Carolina Politicians Who Accepted Money from the Forestry Industry¹⁵



Two key donors from the industry are the International Paper Company and the Weyerhaeuser Company. These multinational wood product companies frame all biomass as carbon-neutral.^{6,7} With pockets filled with industry money, North Carolina officials have written and upheld policies that treat all wood-based biomass as renewable. By distorting the facts about industrial wood pellets, companies and the politicians enable Enviva to exploit North Carolinians.^{44, 45}

Governor Roy Cooper

While Campaigning in 2016- Governor Cooper highlighted his support for environmental issues.²²

As Governor- His administration has created an Environmental Justice & Equity Advisory Board, spoken out against offshore drilling, and continuously vetoed devastating environmental legislation coming from a Republican-dominated General Assembly.²³

In October 2018, Governor Cooper also signed Executive Order 80 that reaffirms his administration's commitment to the Paris Agreement and aims to reduce greenhouse gas emissions across all sectors of the state's economy by 40% by 2025.²⁴



*Governor Roy Cooper*³¹

BUT

Governor Cooper has remained silent about the forest pellet industry even as more than 50 organizations, 100 scientists, and 10,000 individuals petitioned Governor Cooper to stop Enviva from expanding its operations in 2017.^{25, 26, 27, 28, 29}

Dogwood Alliance has called on Governor Cooper to give North Carolinians the power to protect themselves from Enviva.³⁰ They need:

A North Carolina study to assess the cumulative impact of the industrial-scale wood pellet industry on forests, the climate, and communities.

Until this study is completed:

- **NO NEW** industrial-scale wood pellet facilities.
- **STOP** expansions of existing wood pellet facilities.
- **NO MORE** taxpayer dollars to subsidize industrial-scale bioenergy.
- **ENFORCE** full compliance of existing facilities with state and federal air quality standards.

A **Commission on Climate Action** that includes a focus on forests and resiliency.

This commission should:

- **ENSURE** that frontline communities and environmental advocacy groups have a seat at the table.
- **IDENTIFY & PRIORITIZE** conservation and economic development projects in our state's most vulnerable communities and valuable forest ecosystems using resilience mapping.
- **INTEGRATE** rural economic development centered around forest protection into existing economic development and workforce readiness initiatives.

Such industry financing also leads to heavy promotion of the industry by politicians. North Carolina's past Democratic and Republican governors alike have shown unrelenting support for the major corporation.

*"Our terrific business climate, skilled workforce and diverse natural resources make North Carolina an excellent location for the growing biomass industry and other alternative energy producers. Enviva will be a great addition for Northampton County."*⁴⁶

—Former Governor Bev Perdue (D), 2011

*"This is a great example of how we can use natural resources to grow business... And if we continue to take advantage of and unleash these great resources we'll continue to help the existing businesses grow."*⁴³

—Former Governor Pat McCrory* (R), 2013

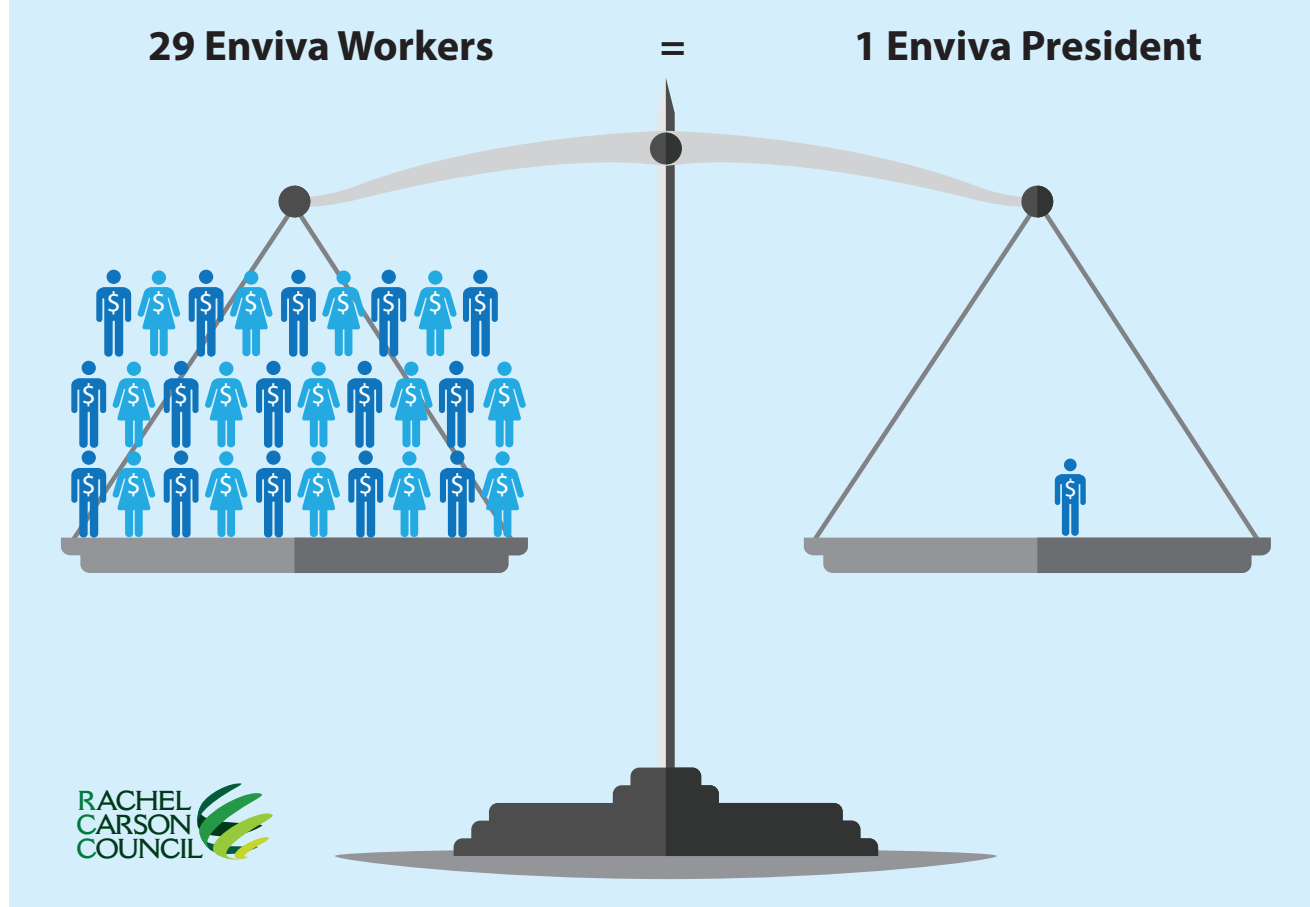
*"The Obama administration is committed to job growth and business development and this grant will fund vital infrastructure needed in Northampton County."*⁴⁷

—U.S. Commerce Secretary Rebecca Blank, 2011

Industrial Subsidies

The campaign financing, rural development, and misconceptions about the wood pellet industry discussed above have set up the industry to be first in line to receive financial benefits from its operations. Both the local (NC) and federal (U.S.) government have misallocated millions of dollars from taxpayers to fund Enviva's development.

Income Disparity Between Enviva's President and Enviva Plant Workers^{16, 17}



One of Enviva's claims is that its processing plants strengthen rural economies.⁴⁸ This is false. While these facilities bring a few new jobs, they do not necessarily hire from the communities they pollute. These jobs require technical skills and education that are not easily accessible to environmental justice community residents. Further, jobs at pellet processing plants pay just a fraction of what Enviva's executives receive. **An Enviva plant worker must work for nearly thirty years to earn what the company president receives in just one year.**^{46, 49}

Nevertheless, the false premise of supporting local economies grants Enviva large government subsidies. Under the guise of a sustainable business model that benefits rural communities, **Enviva's North Carolina facilities have received over six million dollars in state and local subsidies.**^{50, 51, 52, 53} These are funds that could have gone towards economic development that better supports communities, their environmental health, and their futures.

In Northampton County, Enviva received subsidies and grants from The Economic Development Agency (EDA) (\$2 million), The Community Development Block Grant (CDBG) Program administered by the Department of Housing and Urban Development (\$930 thousand), North Carolina Rural Center (\$220 thousand), and from the local county (more than \$31 thousand).⁵⁴ Ultimately, the money paid for suitable living environments went to funding environmental degradation and injustice to low income people of color.

Enviva has congratulated itself for its contribution to local economic development, bringing approximately 90 jobs to Sampson County, 70 jobs to Northampton County, 50 jobs to Ahoskie County and 80 jobs promised to Hamlet County.^{50, 54, 55, 56} However, the limited jobs they provide are not sustainable. Wood pellet industries can only operate with the immense subsidies and tax from renewable energy of international and national agencies. With increasing awareness of the unsustainability of wood pellets, these subsidy allocations are at risk.

"It creates jobs, but as we move toward extractive industries, the quality of life and communities declines. They're low-paying jobs, basically liquidating the resources that communities are relying on, for short-term industries."

—Scot Quaranda, Dogwood Alliance⁵⁷

Although the grant Enviva received from the CDBG program requires the facility to employ local people, to whom these jobs actually go is in question. There is a lack of information on the status of Enviva's employment of local residents.²⁵ The jobs Enviva provides are technical. Hence, it is possible that they do not hire people from environmental justice communities that are directly affected by plant operations.²⁵ To better assess economic justice implications of the environmental justice communities, full disclosure of Enviva's current employment status is necessary.

In Richmond County, despite its assault on the local community, Enviva has received millions of dollars in local and state level subsidies for the Hamlet plant.^{51, 53} The company claims that they promote economic stimulation and job creation to support Richmond County. Specifically, Enviva officials state that the Hamlet facility will employ 80 workers.⁵⁸ Yet, when repeatedly asked by community members, "Who will these jobs go to? Will you actually hire local residents?", Enviva has not answered.³⁵

Nevertheless, the promise of a small number of technical jobs can be enough to foster support from some community members.⁵⁸ Given that the average annual wage in the county is just over \$30,000, some residents are willing to accept the risks for a job paying \$38,000.²⁹

Alternative Industry: Solar Power

When solar panels are installed in a given neighborhood, residents benefit directly and save money on their electricity bill, unlike with wood pellet production plants where the products are exported and lead to heavy environmental degradation and pollution. Solar farms are already appearing across Richmond County, among other Tier 1 and Tier 2 counties in North Carolina. In order for these sustainable and beneficial energy sources to grow, private and public investment in renewable energy needs to stop being diverted to wood pellets, and rather go to technologies that mitigate climate change, maintain healthy communities and do not harm the environment around them.³³

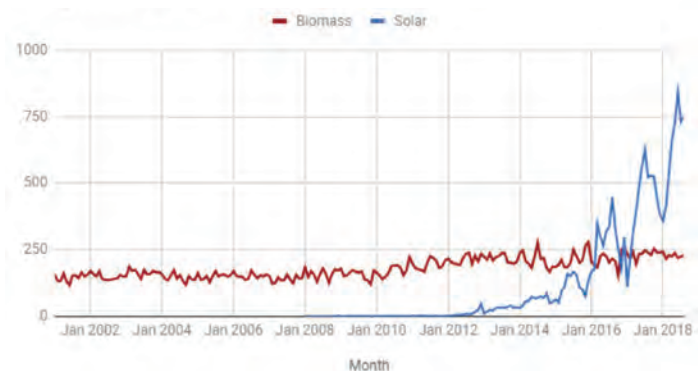


Photo: Solar Array Wikimedia Commons³²

Total Number of Solar Panels³⁷

STATE	RANK
California	1
North Carolina	2
Utah	3
New Jersey	4
Nevada	5

Net generation, monthly^{35, 36}



Enviva built off the forestry industry's established influence over North Carolina politics to support its own practices. By working extensively with state and local officials, Enviva has received government support and funding. This industry, however, depletes North Carolina's resources, pollutes its environment, and threatens the lives of residents. As seen in the U.K., **greenwashing** the wood pellet industry to receive subsidies is the only way that this industry can operate.^{50, 51, 52, 53} Without such strong support for its operations, Enviva would not be able to expand rapidly across the across the state, and other, sustainable energies like wind and solar could prosper.

Federal Failings: Affordable Clean Energy Rule

Enviva benefits from the public endorsements and regulatory leniency of state and federal agencies. These agencies should protect forests, the environment, and the communities around them. Instead, they actively promote Enviva's damaging practices.

In 2015, USDA Chief Economist Robert Johansson wrote, "An industry that can reduce greenhouse gas emissions, increase forest growth, and create jobs sounds too good to be true. But that is the reality of the emerging wood pellets market in the Southern U.S."⁵⁹ Johansson's inaccurate declaration ignores the reality of wood pellets. This source of energy emits more greenhouse gases than coal, destroys critical forest ecosystems, and exploits communities to profit private companies. But Enviva cites Johansson to convince investors that their practices are responsible.⁶⁰

This situation has grown worse with the current administration that has reiterated its support for wood-based biomass and reaffirmed its belief that these are carbon-neutral, sustainable energy sources.

Recently, the Trump administration released its Affordable Clean Energy (ACE) rule, or as it is known by environmentalists, the Coal Power Plan. ACE is supposed to be a replacement for the Obama administration's Clean Power Plan that promoted divestment from coal in favor of renewables and natural gas. Instead, the ACE rule promotes investments to make coal plants cleaner and more efficient which marks a turn away from renewable commitments.

According to the EPA, the ACE rule defines the best system of emission reduction (BSER) for existing power plants as "on-site, efficiency improvements and provides a list of candidate technologies that can be used in state plans."⁶¹ It is within these recommendations that the EPA proposes burning biomass with coal to serve as an option for states to meet compliance goals. If this strategy is pursued, the United States would become both a consumer and producer of wood pellets, drastically increasing demand.

The Biomass Power Association issued a statement following release of the ACE rule, stressing the benefits of bioenergy.

*"The members of the biomass industry look forward to contributing to any carbon reducing plans put forth by the EPA, including the Affordable Clean Energy rule unveiled today," said Carrie Annand, vice president of external affairs at BPA. "Biomass power facilities generate renewable baseload power from mostly unusable organic materials like forestry residue and agricultural byproducts. Our members offer rural jobs and support the economic development of other industries like logging and farming. As our economy and transportation sector become increasingly electrified, biomass power will play a growing role in providing essential renewable baseload power. We look forward to working with EPA on its Affordable Clean Energy rule, and we urge the EPA to allow biomass power to participate in the Renewable Fuel Standard as soon as possible."*⁶¹ - Carry Annand, VP of External Affairs at BPA

Issue Reframing

The Biomass Power Association statement demonstrates the industry's misleading reframing of wood pellets as green and beneficial. Moreover, the industry also oversimplifies protests and community outcry as merely a **Not In My Backyard (NIMBY)** phenomenon.^{62, 63} The premise of the NIMBY effect is that people in a community "will raise no objections to similar developments elsewhere," because they recognize its general benefits.^{64, 65} Such industrial attitudes toward community mobilization incorrectly categorizes concerned citizens as acting stubbornly because of self-interest, completely dismissing the role of race and class.⁶⁶ To regard community opposition as a NIMBY effect ignores the heavy environmental and health burdens they face.

The wood pellet industry should Not be in Anyone's Backyard (NIABY), and especially not in areas that already have poor health outcomes, pre-existing industrial pollution, and deep-rooted institutional, political and economic discrimination.⁶⁷

Dialogue and action surrounding the environmental injustices of the wood pellet industry are critical to reshape the narrative as an issue of social and human rights.⁶⁶

TAKE ACTION TO OPPOSE WOOD PELLETS

Clear Cut demonstrates the far reaching influence, at the Federal, state, and local level, of the wood pellet industry and its severely adverse effects on the communities, politics and economies of North Carolina. Its many successful operations in the state have been falsely bolstered by international carbon accounting errors and have been allowed to continue because of political imbalances, legal loopholes and a disregard for environmental justice communities that continue to bear the brunt of environmental degradation. This report makes clear that the wood pellet industry can only continue if those in power continue to ignore the truth – that wood pellets are not a sustainable or carbon neutral substitute for fossil fuels.

The Rachel Carson Council believes that such problems also need a solution that involves and combines the power of citizens and their organizations throughout North Carolina and nationwide. The RCC focuses on uplifting environmental justice communities through a combination of education, advocacy, grassroots organizing, and political involvement at schools and college campuses. To find more information about us or get involved, visit <https://rachelcarsoncouncil.org/> or contact us at office@rachelcarsoncouncil.org.

On Campus? Get Involved



The Rachel Carson Campus Network promotes education, research, and civic engagement around environmental health, social justice and climate change. The RCCN builds alliances between campuses across the country and other stakeholders, including communities, organizers, and advocacy organizations. The RCCN's mechanisms for action include curricular development, coordinating research partnerships, conducting advocacy trainings, and creating calls-to-action for sustainable and equitable policy.

RCCN currently coordinates initiatives across campuses, sharing resources, setting up trainings, and orchestrating interdisciplinary research for environmental justice and social action. The RCC also routinely convenes panels and presentations at national conferences in Washington, DC and elsewhere, raising the profile of specific issues and bringing leaders together across different backgrounds.

The RCC Campus Dispatch keeps you up to date on environmental endeavors on campuses nationwide along with the latest RCC reports, fact sheets, and presentations.

For more information, contact the RCC Campus Coordinator, Mackay Pierce, at mackay@rachelcarsoncouncil.org.

The work we do could not be done without key alliances with the other environmental and justice-based organizations that are highlighted throughout this report. Their consistent advocacy and lobbying over the past decade of Enviva's presence in North Carolina have helped to fight the false rhetoric and injustices which surround wood pellets.

But in order to continue to create a sufficiently powerful movement and successful fight against the industry, the inspiring community and local efforts we have highlighted here must be bolstered by the involvement of environmentalists, justice advocates, and concerned citizens across the country. These efforts can then be brought together in coalitions and collaborative efforts in order to push policy makers at the local, state and Federal level to recognize the unsustainability of wood pellets and remove them from renewable energy goals within the U.S. and globally. Wood pellets are an extractive industry that should be considered

as bad as fossil fuels and eliminated from climate solutions. Forests, meanwhile, should be protected and expanded as one of the best hopes to mitigate and alleviate worsening climate change.

Political Engagement: What can you do?

Whether or not you live in North Carolina, one of the best ways to take action and amplify your voice against the wood pellet industry and systems that perpetuate it, is by joining national and state organizations such as the Rachel Carson Council, Dogwood Alliance, and others listed below.

Get Involved



The National Resources Defense Council is an international environmental advocacy group that has published multiple reports on, and helped organize actions against, the wood pellet industry in the southern United States. Find NRDC's policy solutions, fact sheets and reports on biomass at their Support Renewable Energy that Protects the Wild webpage. (<https://www.nrdc.org/>)



The National Audubon Society is a non-profit environmental organization that uses science, education and grassroots advocacy to advance its conservation mission. They have published articles like, Why U.S. Forests Are Fueling Europe and Let's Say It Again: Wood Pellets Are Not a Sustainable Fuel Source, to bring attention and action to the wood pellet industry and the threat it poses to the natural environment. (<https://www.audubon.org/>)



The Environmental Integrity Project, founded in 2002 by former U.S. Environmental Protection Agency attorneys Eric V. Schaeffer and Michele Merkel, advocates for more effective enforcement of environmental laws. Their 2018 report, Dirty Deception: How the Wood Biomass Industry Skirts the Clean Air Act, and webpage on their Wood Bioenergy work, are a great place to learn more. (<https://www.environmentalintegrity.org/>)



The Rachel Carson Council, founded in 1965, is a nationwide membership organization that engages and empowers their supporters to take effective action in communities, campuses, and at the local, state and national level. By signing up for the (Link) or (Link) you can keep up to date on pressing environmental news as well as the work of The Rachel Carson Council and its allies.

Regional



Dogwood Alliance, based out of Asheville, NC, Dogwood is unmatched in their organizational focus and efforts against forest destruction from the wood pellet industry. It mobilizes diverse voices to protect forests and communities, has published a number of reports, organized the Stand4Forests day of action and is the first-stop resource to learn more on how to engage on wood pellet issues. (<https://www.dogwoodalliance.org/>)

Get Involved *(continued)*



The North Carolina Coastal Federation is a nonprofit organization that works with coastal residents and visitors to protect the beautiful and productive N.C. coast. (<https://www.nccoast.org/>)



Carolina Wetlands Association works to promote the importance and value of Wetlands through science-based programs, education, and advocacy. (<http://carolinawetlands.org/>)



Clean Air Carolina was founded in 2003 by a group of passionate volunteers determined to improve the quality of Mecklenburg County's air. They now champion a statewide initiative to raise North Carolina's air quality to exceed that of scientific recommendations. CAC has led and joined multiple community efforts to oppose Enviva's industrial pollution and destruction of forestland. (<https://cleanaircarolina.org/>)



Southern Environmental Law Center calls for clear standards that protect native forests and air quality as well as ensure sustainable practices. For insight into their work to conserve the South's forests, check out their .Biomass Energy in the South webpage. (<https://www.southernenvironment.org/>)



The North Carolina Audubon Society works to protect North Carolina's unique environment for birds by advocating for land conservation, coastal protection and clean energy. They have published a number of op-eds warning against the damages of wood pellet biomass harvesting and feature a robust webpage on the subject that includes their policy goals, strategies and networks for you to join. (<http://nc.audubon.org/>)

Local



Coastal Plain Conservation Group works to "protect rare and imperiled plants and wildlife and the habitats that benefit them and us." Their efforts support habitat monitoring, management, protection and endangered species advocacy.



Alliance for Cape Fear Trees' mission is to preserve, protect, and plant trees to enhance the quality of life for present and future generations in the greater Wilmington area. They work to educate the community as a whole on how their region can support growth while still maintaining its forest. <https://www.renaissancewilmingtonfoundation.org/alliance-for-cape-fear-trees1>



Cape Fear Sierra Club serves over 1500 members in Bladen, Brunswick, Columbus, Duplin, New Hanover, Pender, and Robeson counties. The club is focused towards opposition to industrial wood pellets as a priority for their work in 2018. <https://www.capefearsierraclub.com>



The Blue Ridge Environmental Defense League is a network of grassroots community groups that work to maintain the dignity of human and natural environments. Their expertise and advocacy center around toxic chemicals, industrial expansion, public health and intensive agriculture. (<http://www.bredl.org/>)

These organizations track the industry and provide alerts and avenues for action through political engagement. Local action in North Carolina is critical to change the political and economic structures within which Enviva and its allies thrive.

Depending on your time and resources, this can include voting at the polls, providing public comment during permit hearings, running for office or applying to be on an advisory board in your community. Each of these are crucial aspects of decision making processes especially in local communities where zoning and regulatory decisions lie with local governments and can reshape what areas bear the burden of industry and what areas are spared.

Provide Public Comment

Every time any new industry wishes to enter a county, site its facility, expand operations, or install new technologies, a permit along with a period for public comment is required. Although this process has been abused in North Carolina, specifically in Richmond County, public comment periods are key opportunities for communities and allies to voice their opinions and provide critical research on the approval, dismissal or restructuring of permits and facilities in their area. Public comments can be submitted online, in writing or at public hearings that grant each speaker 3-5 minutes to make their remarks. While all are beneficial, in-person hearings garner awareness and put a face on the issue at hand.

It is important to note that these hearings are not just for experts or those with research to present, but also for people to tell their own stories, a critical and important piece of comment periods that cannot be seen by purely looking at studies or science. ***Your voice matters.*** *Providing public comment can change minds, stall decisions, push further research and even make decision-makers rethink their support of an industry.*

If you are interested in getting more involved by providing public comment, keep an eye on your local paper as well as the zoning and permitting authorities in your area who are mandated to put out a public notice on these proceedings. Remember, all you need to do is show up, speak out, and tell your story.

Vote

Many know and understand that voting is a critical and important civic duty. In local elections, this is even more the case. Unlike federal elections which are separated by hundreds of thousands or millions of votes, local elections can be determined by a matter of tens to hundreds of votes. In North Carolina, they also determine your most direct form of elected representation, a board of county commissioners which crucially determines industrial zones and the budget for the county.

In Northampton, Richmond and Hertford Counties, commissioners are elected at-large, meaning there are not guaranteed seats based on districts within the county nor guaranteed representation for each part of the county. This has dangers as it can mean certain areas are left under-represented and thus at higher risk for unfair decision making. In Sampson County, commissioners are elected by district. While this guarantees representation of certain areas, it does also have the risk of gerrymandering votes and minimizing possible total representation of certain regions.

Although both types have flaws, each is dependent upon voter turnout which can easily swing who gets the ultimate decision making power for the county. In the 2016 elections shown below, especially in Richmond County, you can see how only a few hundred votes separated candidates. Tavares Bostik, who has since won a seat in 2018 and is openly outspoken against the wood pellet industry, only needed 314 more votes to win in 2016.

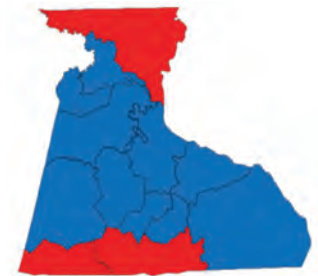
Hertford County ¹

HERTFORD COUNTY BOARD OF COMMISSIONERS DISTRICT 1

John D. Horton DEM	7,524	100.00%
--------------------	-------	---------

HERTFORD COUNTY BOARD OF COMMISSIONERS DISTRICT 2

Ronald J. Gatling DEM	7,079	90.5%
Donald Kim Kirkland (Write-In)	440	5.60%
Write-In (Miscellaneous)	342	4.35%



2018 Presidential Election Results, Hertford County

Sampson County ²

SAMPSON COUNTY BOARD OF COMMISSIONERS DISTRICT 2

Robert (Jerol) Kivett REP	4,226	100.00%
---------------------------	-------	---------

SAMPSON COUNTY BOARD OF COMMISSIONERS DISTRICT 4

Harry Parker DEM	3,635	100.00%
------------------	-------	---------



2018 Presidential Election Results, Sampson County

Northampton County ³

Officials elected at-large with residency requirements

NORTHAMPTON COUNTY BOARD OF COMMISSIONERS DISTRICT 1

Charles R. Tyner, Sr. DEM	6,945	100.00%
---------------------------	-------	---------

NORTHAMPTON COUNTY BOARD OF COMMISSIONERS DISTRICT 2

Geneva N. Riddick DEM	6,952	100.00%
-----------------------	-------	---------



2018 Presidential Election Results, Northampton County

Richmond County ⁴

RICHMOND COUNTY BOARD OF COMMISSIONERS (Vote for 3)

Jimmy Capps DEM	9,244	22.48%
John Garner DEM	8,333	20.26%
Kenneth R. Robinette UNA	8,117	19.74%
Tavares Bostic DEM	7,803	18.98%
Donnie Richardson REP	7,625	18.54%



2018 Presidential Election Results, Richmond County

Run for Office

The above statistics also demonstrate that many of these positions are uncontested, especially those in Sampson and Northampton. When a candidate runs uncontested, they will get the seat, even if you abstain. This effectively neutralizes people's ability to choose their representative and does not give an opportunity to push critical issues during pre-election debates and campaigning.

However, uncontested positions also reveal the opportunity for others to run. County commissioner positions are elected at the same time as members of the General Assembly and other state officers in elections

held in the month of November in even-numbered years. Because boards have staggered four-year terms and two-year terms, about half of the state's county commissioners are elected at each general election.

But, who can run? The qualifications to be elected to county office are as listed below:

1. One must reside in the electoral district
2. One must be a registered voter in the electoral district *
3. One must be at least 21 years of age

The voting requirement also means that those with felony charges cannot run unless they have been restored to full voting citizenship.

And who is running?

Statewide county commissioners ⁵

	2010	2012	2014	2016	2018
Total Seats	578	580	583	583	587
Democrats	295	271	275	256	242
Republicans	277	303	304	322	334
Independents	6	6	3	5	7
New Commissioners	145	121	131	107	97
Vacancies	0	0	1		4
Females	93	93	93	91	98
African-Americans	108	112	111	109	116
American Indians	7	7	6	5	5
Asian	0	0	0	0	0
Hispanic	0	0	0	0	0
Democratic Boards	50	45	47	45	41
Republican Boards	49	53	52	55	56

As you can see, of the 583 seats up for re-election in 2016, less than 1/5 were filled by females, less than 1/5 were filled by African-Americans, none were filled by Asians or Hispanics and only 1/5 of the open seats were filled by new commissioners. Current Boards of Commissioners across the state of North Carolina clearly do not reflect the actual diversity of the people they represent. There is a huge opportunity for community members to make real and drastic change by running for office to better represent their communities.

According to the North Carolina Government & Heritage Library, Boards of Commissioners can pass:⁶

- 1. An order:** Usually a directive to a county administrative officer to take or refrain from taking a specified action. For example, a board of commissioners may enter an order directing the county manager to advertise for bids for a new office building. An order may also declare the existence of a given fact, such as an order declaring the results of an election. Finally, an order may sometimes be used to decide a question before the board, such as an order awarding a construction contract to the lowest responsible bidder.
- 2. A resolution:** Expresses the sense of the board on a question before it. For example, the board may resolve to petition the State Department of Transportation to pave a rural road.
- 3. An ordinance:** An action of the board taken in its capacity as the county's legislative body. As such, an ordinance is analogous to an act of the General Assembly. The board of commissioners may adopt ordinances relating to such varied matters as zoning of industry, or use of the county landfill.

Credit: NC Government & Heritage Library

All of these give power to decide the direction of the community, its economic development, and, sometimes, in what areas of the county harmful industries are sited.

If you are a member of one of the counties where there is a wood-pellet production facility, are unhappy with the actions or inactions of your Board of Commissioners, and are interested in running, in 2020 the following seats are up for re-election:

Richmond County: 3 of 7 Commissioners ⁷

Kenneth Robinette, Chairman (First elected 1996)

John Garner, Vice-Chairman (First elected 1996)

Jimmy Capps, Commissioner (First Elected 2012)

Northampton County: 2 of 5 Commissioners ⁸

Charles Tyner, Commissioner (First Elected 2016)

Geneva Riddick, Commissioner (First Elected 2016)

Hertford County: 3 of 5 Commissioners ⁹

William F. Mitchell Jr, Vice-Chairman (First Elected 2008)

Ronald J. Gatling, Commissioner (First Elected 2012)

John D. Horton, Commissioner (First Elected 2016)

Sampson County: 2 of 5 Commissioners ¹⁰

Jerol Kivett, District 2 (First Elected 2016)

Harry L. Parker, District 4 (First Elected 2012)

Each of the above political engagement strategies are critical if equitable action is to be taken against wood pellets and other polluting industries. However, they are particularly crucial for the wood pellet industry as it has had relative success avoiding scrutiny by hiding behind its so-called economic and environmental benefits. Many voters and politicians alike are unaware of its existence, and even more are unaware of its dangers. Further, the politicians who are aware of the industry and generally support environmental protections are careful to not take a side in this seemingly murky issue, much like North Carolina's Governor Cooper. But, this issue is not murky, it is clear. The wood pellet industry harms our ability to meet critical climate goals while harming the health and environment of communities it is near. Education, conservation and action need to combine to push citizens and politicians to take a stand against this industry in North Carolina.

Looking Forward: The Green Amendment

"The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic and aesthetic values of the environment. Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people."

Article 1, Section 27, Commonwealth of Pennsylvania Declaration of Rights, 1971¹¹

In the early 1970s during a peak in environmental movements and protections across the United States, Pennsylvanians voted to make an amendment to their Constitution that gave the people, as well as future generations, an inherent right to a clean and healthy environment.

Nevertheless, in recent years, Pennsylvania has been defined by its hefty environmental destruction caused by the fracking industry and lax regulations placed on its operations by a heavily Republican legislature. In 2012, this legislature passed a devastating piece of legislation, later known



*Photo: Nicholas A. Tonelli, Wikimedia Commons; NE Pennsylvania*¹¹

as Act 13, which gave the shale gas industry the right to seize land for gas storage, opened all residencies, schools, and protected areas to fracking permits, and put a gag on medical professionals treating patients exposed to fracked gas drilling chemicals.¹¹

In response, environmentalists and community members fought back against the legality of this action. In 2013 in the Pennsylvania Supreme Court, a heavily conservative panel of judges ruled that Act 13 was unconstitutional. Pennsylvania's Article 1, Section 27 played a critical role in the Supreme Court's landmark decision, made even more pivotal as it took place in a state where environmental degradation was rampant.

Pursuing a Green Amendment for North Carolina, and eventually the United States, could be a key strategy for environmental justice communities; environmental rights would become the rights of everyone, not just those who have the time, money and resources to protect their health and surroundings. Instead of consistently placing unsavory industries into low-income communities of color, polluting industries would not be allowed anywhere without proper environmental and community protections.

Since Pennsylvania incorporated an environmental amendment and finally upheld its enactment, could North Carolina and the United States follow a similar path?

In the 1970s, North Carolina also incorporated environmental protections into its Constitution in Article 14, Section 5.

"It shall be the policy of this State to conserve and protect its lands and waters for the benefit of all its citizenry, and to this end it shall be a proper function of the State of North Carolina and its political subdivisions to acquire and preserve park, recreational, and scenic areas, to control and limit the pollution of our air and water, to control excessive noise, and in every other appropriate way to preserve as a part of the common heritage of this State its forests, wetlands, estuaries, beaches, historical sites, open lands, and places of beauty."¹²

This article, though, is far less specific and protective than that found in Pennsylvania's Constitution and it lacks legal precedent unlike Pennsylvania's Article 1. North Carolina citizens' rights to clean air, clean water and a healthy environment are thus left less protected.

In order to get a true Green Amendment included in the North Carolina Constitution, citizens must first convince their legislators to change the constitution and then, in statewide elections, to vote to amend the constitution to include a Green Amendment. Although this seems difficult given North Carolina's rampant gerrymandering and heavy Republican presence, every day it is becoming more possible.

2018 and Our Reasons for Hope

The events and midterm elections which have taken place in 2018 have brought us even closer to a future where *all people* enjoy the rights to a healthy environment and just political and economic system.

The Supreme Court is still hearing the case for district voting maps in the 2020 election, but in mid-2018 recognized that the original and redrawn maps unconstitutionally favored the Republican party.¹³ Even with gerrymandered maps, in the November 2018 election North Carolina was able to break the veto power of the anti-environmental supermajority in the General Assembly by electing more Democrats who support environmental and community protections. These elections also created a liberal majority in the North Carolina Supreme Court of 5-2, which will be critical in maintaining just litigation.

This mirrored a national trend as many pro-environment Democrats were elected, wresting control of the U.S. House of Representatives from anti-environmental, Republicans. The new House also will contain an historically diverse set of representatives — from women to Native Americans to Muslims to openly LGBTQ+ people — who pledged to fight for justice and against discrimination.

As these new members of Congress both in state and federal positions, it is critical they are educated to the dangers and fallacies of large scale wood pellet production and burning. The United States cannot continue to support this industry as a sustainable way forward. It worsens global climate change while harming the health and environment of southeastern communities. If it is allowed to continue expanding, it will place even more forests and communities across the United States and world at risk.

Rather, the U.S. needs to set an example for the world to cut ties with this misleading energy source. Wood pellet production at an industrial scale is relatively young and is not yet critical to the global supply of energy as are fossil fuels. If society is already transitioning away from fossil fuels which have been in use for hundreds of years, then it can move away from the clear cutting of forests to produce wood pellets — an industry based on poor science and policy loopholes that is only a couple of decades old.

APPENDIX

Definitions

Biomass is any organic material that can be used as a source of energy and is generally renewable within a time-scale relevant to humans.

Bottomland Hardwood Forests are seasonally flooded forests located along waterways that contain many plant species and support structurally complex ecosystems.

Carbon Debts are the measurable imbalance between the carbon footprint of a particular activity, country, group or person and any carbon offsetting measures they pursue.

Carbon Neutral energy resources produces a net zero change in atmospheric carbon dioxide levels; the life-cycle emissions from producing the energy are offset by the source's carbon sequestration efforts.

Carbon Sequestration is the process, natural or artificial, of capturing and storing atmospheric carbon dioxide.

Carbon Sinks are reservoirs that accumulate and store more carbon dioxide than they release. like grasslands, trees and the ocean.

Clear Cutting is a logging practice in which most or all marketable trees in a designated area are cut down.

Concentrated Animal Feeding Operations (CAFOs) are industrialized animal storage, feeding and butchering factories.

Energy Mixes are a group of different energy or fuel sources from which electricity is primarily produced.

Environmental Health is a key part of any comprehensive health system as it relates to all aspects of the natural and built environment impacting human health.

Environmental Justice Communities disproportionately bear the burden of environmental degradation where the poverty level is above the state median and 25% or more of the population is nonwhite.

Environmental Justice is a movement and framework that “seeks to reduce harm for everyone as opposed to distributing harms equally throughout society.”¹ The 17 Principles of Environmental Justice were written in 1991 and are rooted in “the need for a healthy and safe work environment, and the importance of economic and political alternatives to develop environmentally safe production methods and livelihoods.”¹ The movement traces its roots to the resistance to an illegal siting of a landfill in Warren County, North Carolina.

Extractive Industries operate “through the depletion and degradation of natural resources, the exploitation of human labor and the accumulation of wealth by interests outside the community.”² Work in the extractive economy is divorced from values, and exploiting humans in this way enables ecological erosion.

Greenhouse Gasses are compounds in the atmosphere that are capable of absorbing infrared radiation and trapping heat in Earth's atmosphere.

Greenwashing is a deceptive corporate strategy in which particular products and practices are promoted to be environmentally responsible or beneficial.

Hydrologic Systems are the respective interactions and pathways of interrelated components including but not limited to the processes of precipitation, evaporation and groundwater flow. All together, these systems make up what is commonly called the water cycle.

Monoculture is the agricultural or aesthetic practice of growing and producing a single crop, plant or species on land at a time. These systems have and support very little biological diversity.

Renewable energy solely relates to the ability of any energy source, like trees, to regenerate over time, often when referring to a timespan relevant to human life. However, this does not inherently mean that the process of using trees as a fuel is carbon-neutral.

Sacrifice Zones are geographic regions, often occupied by low-income and minority communities, that have been permanently impaired and relegated to environmental degradation by the inputs and outputs of an extractive industry.

Stewardship is the careful and responsible management of natural resources as systems entrusted into one's care from previous generations to be maintained and passed down to future generations, educated to do the same.

Sustainable fuel is a resource that is renewable, carbon-neutral and has limited negative effects on the environment.

Systemic Racism: Discrimination based on race which shows up in institutions and society.

Timberland: Forested land that is managed or can be used for human purposes like industry, building or carpentry.

Volatile Organic Compounds (VOCs) are gasses emitted into the air that are typically not acutely toxic but have compounding long-term negative health impacts. While some VOCs occur naturally, anthropogenic VOCs are regulated by law.

Works Cited

The Wood Pellet Industry: Current and Future Trends

1. V. Karkania, E. Fanara, and A. Zabanitout. "Review of sustainable biomass pellets production—A study for agricultural residues pellets' market in Greece." *Renewable and Sustainable Energy Reviews* 16, no. 3 (2012): 1426-1436.
2. Donald Klass. *Biomass for renewable energy, fuels, and chemicals*. Elsevier, 1998. <https://doi.org/10.1016/B978-0-12-410950-6.X5000-4>.
3. Suz-Anne Kinney, "Dispelling the Whole Tree Myth: How a Harvested Tree Is Used," Forest2Market (F2M), December 20, 2013, www.forest2market.com/blog/dispelling-the-whole-tree-myth-how-a-harvested-tree-is-used.
4. Lislie, Bruce. "The History of the Wood Pellet Industry on the East Coast." In *Wood-Based Energy in the Northern Forests*, by Michael Jacobson and Daniel Ciolkosz, 153-60. New York, NY: Springer, 2013.
5. J.T. Houghton, G.J. Jenkins and J.J. Ephraums (eds.). Cambridge University Press, Cambridge, Great Britain, New York, NY, USA and Melbourne, Australia 410 pp.
6. John Upton, "Pulp Fiction," Climate Central, October 20, 2015, <http://reports.climatecentral.org/pulp-fiction/1/>.
7. "Opinion of the EEA Scientific Committee on Greenhouse Gas Accounting in Relation to Bioenergy," European Environment Agency Scientific Committee, September 15, 2011, <https://www.eea.europa.eu/about-us/governance/scientific-committee/sc-opinions/opinions-on-scientific-issues/sc-opinion-on-greenhouse-gas/view>.
8. Daniela Thraen et al. "Global wood pellet industry and trade study 2017." *Paris, France: IEA Bioenergy* p 243 (2017).
9. «Solar Energy and Solar Power in Los Angeles, CA.» Solar Energy Local. Accessed November 28, 2018. <https://solarenergylocal.com/states/california/los-angeles/>.
10. Burnett, Dougal, Edward Barbour, and Gareth P. Harrison. "The UK Solar Energy Resource and the Impact of Climate Change." *Renewable Energy* 71 (November 2014): 333-43. doi:10.1016/j.renene.2014.05.034.
11. The U.S. Industrial Pellet Association. Accessed November 26, 2018. <http://www.theusipa.org/>.
12. Timothy D. Searchinger, et al., "Fixing a critical climate accounting error," *Science*, 326, no. 5952 (2009): 527-528, <https://doi.org/10.1126/science.1178797>.
13. "Think Wood Pellets Are Green? Think Again." NRDC Issue Brief. May 2015. <https://www.nrdc.org/sites/default/files/bioenergy-modelling-IB.pdf>.
14. Mary S. Booth. "Not carbon neutral: Assessing the net emissions impact of residues burned for bioenergy," *Environmental Research Letters* 13, no. 3 (2018): 035001, <https://doi.org/10.1088/1748-9326/aaac88>.
15. Joseph Fargione, Jason Hill, David Tilman, Stephen Polasky, and Peter Hawthorne, "Land Clearing and the Biofuel Carbon Debt," *Science* 319: 1235-1238 (2008), <https://doi.org/10.1126/science.1152747>.
16. Roger Drouin. "Wood Pellets: Green Energy or New Source of CO2 Emissions?" *Yale Environment* 360, January 22, 2015. https://e360.yale.edu/features/wood_pellets_green_energy_or_new_source_of_co2_emissions.
17. *Wetland Logging Investigation, Southampton, VA and Ahoskie, NC: May 13/14th, 2015*. PDF. Dogwood Alliance, June 2015. <https://www.dogwoodalliance.org/wp-content/uploads/2015/06/Wetlands-Logging-Investigation-Flyer.pdf>
18. "FAQ: Forests and Fiber Sourcing" Enviva, accessed June 12, 2018. <http://www.envivabiomass.com/faq-forests-fiber-sourcing/>
19. Aton, Adam. "Woods Rich in Tree Diversity Capture More Carbon." *Climatewire*. October 5, 2018. Accessed November 26, 2018. <https://www.eenews.net/climatewire/stories/1060100585?t=https://www.eenews.net/stories/1060100585>.
20. Jaclyn M. Hall, Tracy Van Holt, Amy E. Daniels, Vincent Balthazar, and Eric F. Lambin, "Trade-offs between tree cover, carbon storage and floristic biodiversity in reforesting landscapes," *Landscape Ecology* 27, no. 8 (2012): 1135-1147, <http://dx.doi.org/10.1007/s10980-012-9755-y>.
21. Renee Cho, "Is Biomass Really Renewable?" *Earth Institute, Columbia University*, October 19, 2016, <https://blogs.ei.columbia.edu/2011/08/18/is-biomass-really-renewable/>

22. Fox, Thomas R., Eric J. Jokela, and Lee H. Allen. "The Evolution of Pine Plantation Silviculture." Southern Research Station. 2004. Accessed November 26, 2018. https://www.srs.fs.usda.gov/pubs/gtr/gtr_srs075/gtr_srs075-fox002.pdf.
23. Intergovernmental Panel on Climate Change. "Summary for Policymakers of IPCC Special Report on Global Warming of 1.5°C Approved by Governments." News release, October 8, 2018. Wwww.IPCC.ch. https://www.ipcc.ch/pdf/session48/pr_181008_P48_spm_en.pdf.
24. John D. Sterman, Lori Siegel, and Juliette N. Rooney-Varga, "Does replacing coal with wood lower CO2 emissions? Dynamic lifecycle analysis of wood bioenergy," *Environmental Research Letters* 13, no. 1 (2018): 015007, <https://doi.org/10.1088/1748-9326/aaa512>.
25. Stephen R. Mitchell, Mark E. Harmon, and Kari E.B. O'connell. "Carbon debt and carbon sequestration parity in forest bioenergy production." *GCB Bioenergy* 4, no. 6 (2012): 818-827, <https://doi.org/10.1111/j.1757-1707.2012.01173.x>.
26. "Tri-agency Response to Congress on Biomass Carbon Neutrality." EPA. November 01, 2018. Accessed November 29, 2018. <https://www.epa.gov/air-and-radiation/tri-agency-response-congress-biomass-carbon-neutrality>.
27. Kenneth Richter, "A Comparison of National Sustainability Schemes for Solid Biomass in the EU," Fern, July 2016, <http://www.fern.org/sustainabilityschemes>.
28. "United Kingdom Renewable Energy Policy Framework Summary," International Energy Association, accessed July 30, 2018, <https://www.iea.org/policiesandmeasures/renewableenergy/?country=United%20Kingdom>.
29. Wood Pellet Forum, "Burning American Forests to Electrify Europe," January 9, 2018 <https://www.youtube.com/watch?v=c-EvgYZS8bM>.
30. Department of Energy & Climate Change, "Amber Rudd's speech on a new direction for UK energy policy," November 18, 2015, <https://www.gov.uk/government/speeches/amber-rudds-speech-on-a-new-direction-for-uk-energy-policy>.
31. Natural Resources Defense Council, "Money to burn II: Solar and wind can reliably supply the United Kingdom's new electricity needs more cost-effectively than biomass," September 2017, https://assets.nrdc.org/sites/default/files/money-to-burn-ii-uk-biomass-ib.pdf?_ga=2.11803890.779950692.1531941270-630624546.1528303161.
32. Voegelé, Eric. "Enviva to Supply Pellets to Power Plant Being Converted in Japan." Biomass Magazine. October 31, 2018. Accessed November 26, 2018. <http://www.biomassmagazine.com/articles/15719/enviva-to-supply-pellets-to-power-plant-being-converted-in-japan>.

North Carolina & Enviva

1. Daniela Thrän, David Peetz, Kay Schaubach, S. Backéus, L. Benedetti, and L. Bruce. *Global wood pellet industry and trade study 2017*. IEA Bioenergy Task 40, 2017, <http://task40.ieabioenergy.com/wp-content/uploads/2013/09/IEA-Wood-Pellet-Study-final-2017-06.pdf>.
2. "In the U.S. Southeast, Natural Forests Are Being Felled to Send Fuel Overseas," *Natural Resource Defense Center*, October 2015, <https://www.nrdc.org/sites/default/files/southeast-biomass-exports-report.pdf>.
3. "Welcome to Enviva," Enviva, accessed August 1, 2018, <http://www.envivabiomass.com/>.
4. Based on listed capacities within "Enviva Assets," Enviva, accessed August 1, 2018, <http://www.envivabiomass.com/enviva-assets/>.
5. "Elephant," San Diego Zoo, accessed August 1, 2018, <http://animals.sandiegozoo.org/animals/elephant>.
6. "Enviva Partners, LP: Business Overview" Enviva, updated February 26, 2018, http://www.envivapartners.com/sites/envivabiomass.investorhq.businesswire.com/files/doc_library/file/EVA_Investor_Presentation_Feb_2018_vFinal.pdf

Industrial Effects: The Environment, Climate Change & Health

1. Martinez-Alier, Joan. *The Environmentalism of the poor: a study of ecological conflicts and valuation*. Edward Elgar Publishing, 2003.
2. Kimberly Renee Allen, "The Cultural Politics of Environmental Justice Activism: Race-and Environment-Making in the Contemporary Post-Civil Rights Period," PhD diss., University of North Carolina Chapel Hill, 2009, <https://search.proquest.com/docview/304958593>.

3. Lee, Charles. "Environmental justice: building a unified vision of health and the environment." *Environmental Health Perspectives* 110, no. Suppl 2 (2002): 141.
4. "Banks and Tanks to Cooperation and Caring: A Strategic Framework for a Just Transition," Movement Generation Justice & Ecology Project, accessed August 1, 2018, http://movementgeneration.org/wp-content/uploads/2016/11/JT_booklet_Eng_printspreads.pdf.
5. "History of NC Forests" NC Forestry. <http://search.ncforestry.org/WEBPAGES/NC%20FOREST/history.htm>
6. "2017 - Biennial Report" North Carolina Forest Service, 2017.
7. <https://www.nrdc.org/sites/default/files/bioenergy-modelling-1b.pdf>
8. Roger Drouin. "Wood Pellets: Green Energy or New Source of CO2 Emissions?" *Yale Environment* 360, January 22, 2015. https://e360.yale.edu/features/wood_pellets_green_energy_or_new_source_of_co2_emissions.
9. "Track & Trace Wood Supply Tracking Data." Enviva & Sustainable Sourcing. 2017. http://www.envivabiomass.com/wp-content/uploads/041018_Track-and-Trace-Infographic_Final.png.
10. "In the U.S. Southeast, Natural Forests Are Being Felled to Send Fuel Overseas," *Natural Resource Defense Center*, October 2015, <https://www.nrdc.org/sites/default/files/southeast-biomass-exports-report.pdf>.
11. J.W. Gilliam, D.L. Osmond, and R.O. Evans, "Riparian Buffers: What Are They and How Do They Work?," Selected Agricultural Best Management Practices to Control Nitrogen in the Neuse River Basin, North Carolina Agricultural Research Service Technical Bulletin 311, North Carolina State University, 1997, www.soil.ncsu.edu/publications/BMPs/buffers.html.
12. Sam L. Davis, "Treasures of The South: The True Value of Wetland Forests", *Dogwood Alliance*, accessed July 15, 2018, <https://www.dogwoodalliance.org/wp-content/uploads/2018/01/Treasures-of-the-South-Web-Report.pdf>.
13. Scot Quaranda, "Don't Log the Forests for the Fuel: A Position Paper on the Potential Environmental and Economic Impacts of the Cellulosic Ethanol Industry in the Southern United States," *Dogwood Alliance*, August 2010, <https://www.dogwoodalliance.org/wp-content/uploads/2010/08/Forest4Fuel08.pdf>.
14. "North Carolina: Assessing the Costs of Climate Change," *National Conference of State Legislatures*, 2008, <http://www.ncsl.org/print/enviro/ClimateChangeNC.pdf>.
15. Jess Bidgood, "North Carolina, Still Reeling From Hurricane Matthew, Stares at Irma", *The New York Times*, September 8, 2017, <https://www.nytimes.com/2017/09/08/us/north-carolina-hurricane-rebuild.html>.
16. Adam Colette, "Destruction in Disguise," *Dogwood Alliance*, March 15th, 2018, <https://www.dogwoodalliance.org/2018/03/destruction-in-disguise/>.
17. "The Truth About the Biomass Industry: How Wood Pellet Exports Pollute Our Climate and Damage Our Forests," *Natural Resources Defense Council*, August 2014, www.nrdc.org/sites/default/files/wood-pellet-biomass-pollution-FS.pdf.
18. Rick Hamilton, "Reforestation of North Carolina Pine", *NC State Forestry & Environmental Resources*, January 1, 1997, <https://content.ces.ncsu.edu/reforestation-of-north-carolina-pines>.
19. "Forestry Pesticide Applications Complying with Georgia's Pesticide General Permit (GAG820000)," *Georgia Forestry Commission*, accessed August 1, 2018, <http://www.gatrees.org/forest-management/water-quality/ForestryPesticideApplicationsGA.pdf>.
20. Dickens, E. David. "Pre-Plant Chemical Site Preparation Options to Establish Loblolly, Longleaf, and Slash Pine Plantations on Cut-over Sites" *The University of Georgia*. November 9, 2015. https://bugwoodcloud.org/bugwood/productivity/pdfs/Chem_site_prep.pdf.
21. Sam L. Davis, "A history of forests in the U.S. South", *Woodworking Network*, May 10, 2018, <https://www.woodworkingnetwork.com/news/almanac-market-data/history-forests-us-south>.
22. Bill Moomaw and Danna Smith, "The Great American Stand: US Forests And The Climate Emergency", *Dogwood Alliance*, accessed June 28, 2018, <https://www.dogwoodalliance.org/wp-content/uploads/2017/03/The-Great-American-Stand-Report.pdf>.
23. "Greenhouse Gas Equivalencies Calculator", *U.S. Environmental Protection Agency*, September 2017, <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>.

24. "Paris Agreement," United Nations, 2015, https://unfccc.int/sites/default/files/english_paris_agreement.pdf.
 25. Hansen, J. et al. Young People's Burden: Requirement of Negative CO2 Emissions, 2016, <https://doi.org/10.5194/esd-2016-42>.
 26. Harris, N. L. et al. Attribution of net carbon change by disturbance type across forest lands of the conterminous United States. *Carbon Balance Manag.* 11, 24. (2016). <https://link.springer.com/article/10.1186/s13021-016-0066-5>
 27. Wood Biomass Energy, February 2016" Hatton-Brown Publishers, Inc, published February 2016, https://issuu.com/hattonbrown/docs/wb_0216-digimag.
 28. Patrick Anderson and Keri Powell, "Dirty deception: how the wood biomass industry skirts the Clean Air Act," *Environmental Integrity Project*, April 26, 2018, <http://www.environmentalintegrity.org/wp-content/uploads/2017/02/Biomass-Report.pdf>.
 29. Fred Pearce, "Carbon Loophole: Why Is Wood Burning Counted as Green Energy?," *Yale Environment* 360, December 19, 2017, <https://e360.yale.edu/features/carbon-loophole-why-is-wood-burning-counted-as-green-energy>
 30. "Economic Impacts of Climate Change on North Carolina," Center for Integrative Environmental Research, September 2008, <http://cier.umd.edu/climateadaptation/North%20Carolina%20Economic%20Impacts%20of%20Climate%20Change%20Full%20Report.pdf>.
 31. "Effects of Climate Change on the Southeast," North Carolina Climate Office, accessed August 1, 2018, <https://climate.ncsu.edu/edu/Impacts>.
 32. "Sea Level Rise Study Update." NC DEQ. Accessed November 29, 2018. <https://deq.nc.gov/about/divisions/coastal-management/coastal-resources-commission/sea-level-rise-study-update>.
 33. Luis Toledo, "Here's how much climate change will cost each county in North Carolina," NC Policy Watch, September 8, 2017 <http://pulse.ncpolicywatch.org/2017/09/08/heres-much-climate-change-will-cost-north-carolina-counties/>
- NC Environmental Justice Communities**
1. Koester, Stefan, and Sam Davis. "Siting of Wood Pellet Production Facilities in Environmental Justice Communities in the Southeastern United States." *Environmental Justice* 11, no. 2 (April 2018): 64-70. doi:10.1089/env.2017.0025.
 2. Rodriguez, Amanda. "Monster Enviva Wood Pellet Plants Invade Northeast NC Communities." Dogwood Alliance. March 12, 2014. Accessed November 26, 2018. <https://www.dogwoodalliance.org/2014/03/monster-enviva-wood-pellet-plants-invade-northeast-nc-communities/>.
 3. Brenda Linton and Leslie S. Stewart, "Economic Development Assessment for the Meherrin Tribe", University of North Carolina, Jul 2003, accessed 26, Oct 2009 http://www.kenan-flagler.unc.edu/assets/documents/ED_Meherrin.pdf.
 4. "Economic Snapshot: Hertford County." North Carolina Budget & Tax Center. May 2015. <http://www.ncjustice.org/sites/default/files/BTC/County-Economic-Snapshot/2015/BTC-County-Snapshot-2015-Hertford-County.pdf>.
 5. "Hertford County, NC." Data USA. Accessed November 26, 2018. <https://datausa.io/profile/geo/hertford-county-nc/#economy>.
 6. Elizabeth Ouzts, "Report: Wood pellet mills threaten public health in North Carolina" *Energy News Network*, May 22, 2018, <https://energynews.us/2018/05/22/southeast/report-wood-pellet-mills-threaten-public-health-in-north-carolina/>.
 7. U.S. Census Bureau, "Quick Facts: Northampton County, North Carolina," accessed July 30, <https://www.census.gov/quickfacts/fact/table/northamptoncountynorthcarolina/PST045217>.
 8. Kimberly Renee Allen, "The Cultural Politics of Environmental Justice Activism: Race-and Environment-Making in the Contemporary Post-Civil Rights Period," PhD diss., University of North Carolina Chapel Hill, 2009, <https://search.proquest.com/docview/304958593>.
 9. Elizabeth Ouzts, "Critics highlight Atlantic Coast Pipeline's environmental justice impact" *Energy News Network*, December 1, 2017, <https://energynews.us/2017/12/01/southeast/critics-highlight-atlantic-coast-pipelines-environmental-justice-impact/>.
 10. Lisa Sorg, "Private company wants to build two new coal ash landfills, six ponds in Northampton County," *NC Policy Watch*, January 26, 2017, <http://pulse.ncpolicywatch.org/2017/01/26/private-company-wants-build-two-new-coal-ash-landfills-northampton-county/>

11. Patrick Anderson and Keri Powell, "Dirty deception: how the wood biomass industry skirts the Clean Air Act," *Environmental Integrity Project*, April 26, 2018. <http://www.environmentalintegrity.org/wp-content/uploads/2017/02/Biomass-Report.pdf>
12. Emily Zucchini, "Health Professionals Call On NC Governor Roy Cooper To Protect Public Health," *Dogwood Alliance*, September 11, 2017, <https://www.dogwoodalliance.org/2017/09/health-professionals-call-on-nc-governor-roy-cooper-to-protect-public-health/>
13. David Neal, "Comments on Draft Air Permit No. 10466ROO for the Northampton Compressor Station (Facility ID# 6600169) of the Atlantic Coast Pipeline", *Southern Environmental Law Center*, November 20, 2017, https://www.southernenvironment.org/uploads/words_docs/SELC_et_al_comments_ACP_Northampton_CS_air_permit.pdf
14. "County Health Rankings." County Health Rankings & Roadmaps. Accessed November 26, 2018. <http://www.countyhealthrankings.org/>.
15. Northampton County Health Assessment, Northampton County Health Department (2015), https://www.northamptonhd.com/images/Northampton_County_2015_Community_Health_Assessment__51215.pdf.
16. Luis Toledo, "Here's how much climate change will cost each county in North Carolina," NC Policy Watch, September 8, 2017 <http://pulse.ncpolicywatch.org/2017/09/08/heres-much-climate-change-will-cost-north-carolina-counties/>.
17. The Sampson Regional Medical Center, "2017 Community Health Needs Assessment Report," <https://www.sampsonrmc.org/Content/Uploads/sampsonrmc.org/images/2017%20CHA%20Final.pdf>
18. Voegelé, Erin, "Enviva to acquire Sampson plant from joint venture affiliates," *Biomass Magazine*, October 20, 2016. <http://biomassmagazine.com/articles/13826/enviva-to-acquire-sampson-plant-from-joint-venture-affiliates>
19. Environmental Integrity Project, et. al., "North Carolina Action Letter, April 26, 2018. <http://www.environmentalintegrity.org/wp-content/uploads/2017/02/North-Carolina-Action-Letter.pdf>
20. United States Census Bureau, "Quick Facts: Hamlet city, North Carolina; Richmond County, North Carolina," <https://www.census.gov/quickfacts/fact/table/hamletcitynorthcarolina,richmondcountynorthcarolina/IPE120216>
21. "Dobbins Heights, NC." Data USA. Accessed November 26, 2018. <https://datausa.io/profile/geo/dobbins-heights-nc/#demographics>.
22. Zucchini, Emily. "NC Legislative Black Caucus Listens to Richmond County Concerns." Dogwood Alliance. October 12, 2017. Accessed November 28, 2018. <https://www.dogwoodalliance.org/2017/10/nc-legislative-black-caucus-listens-to-richmond-county-concerns/>.
23. Scot Quaranda, "Press Release - Groups Call on Governor Cooper to Pull the Brakes on Wood Pellet Industry in North Carolina," Dogwood Alliance, July 18, 2017. <https://www.dogwoodalliance.org/2017/07/press-release-groups-call-on-governor-cooper-to-pull-the-brakes-on-wood-pellet-industry-in-north-carolina/>.

What Drives Enviva In NC?:

The Convergence of Injustice

1. Gavin Stone, "Economic impact touted at Enviva groundbreaking," *Richmond County Daily Journal*, November 13, 2017. <https://www.yourdailyjournal.com/news/77260/economic-impact-touted-at-enviva-groundbreaking>.
2. Donna Elliott, "Court Upholds \$7.5 Million Verdict Against CSX and Denies Appeal for New Trial" *PRWeb*, March 10, 2006, <https://www.prweb.com/releases/2006/03/prweb356795.htm>
3. Blue Ridge Environmental Defense League. The League Line- Summer 2017. PDF. Summer 2017. <http://www.bredl.org/theleagueline/Summer2017.pdf#page=10>
4. Robert Bardon, "Economic Impact Data", *NC State*, 2018, <https://forestry.ces.ncsu.edu/economic-impact-data/>.
5. Daniela Thrän, David Peetz, Kay Schaubach, S. Backéus, L. Benedetti, and L. Bruce. *Global wood pellet industry and trade study 2017*. IEA Bioenergy Task 40, 2017, <http://task40.ieabioenergy.com/wp-content/uploads/2013/09/IEA-Wood-Pellet-Study-final-2017-06.pdf>.
6. "What we procure," *International Paper*, accessed August 1, 2018, <http://www.internationalpaper.com/company/suppliers/what-we-procure>.

7. "Climate Change and Biomass", *Weyerhaeuser*, accessed August 1, 2018, <https://www.eyerhaeuser.com/sustainability/environment/environmental-footprint/climate-change-biomass/>.
8. Pete Daniel. *Dispossession: Discrimination against African American farmers in the age of civil rights*. UNC Press Books, 2013.
9. Leah Douglas, "African Americans Have Lost Untold Acres of Land Over the Last Century", *The Nation*, June 26, 2017, <https://www.thenation.com/article/african-americans-have-lost-acres/>
10. Brett J. Butler et al., "Family Forest Ownerships of the United States, 2013: Findings from the USDA Forest Service's National Woodland Owner Survey." *Journal of Forestry* 114, no. 6 (2016): 638-647.
11. "Frequently Asked Questions about Logging in North Carolina" North Carolina Forest Service, last modified November 10, 2016, http://ncforestservice.gov/managing_your_forest/logging_faq.htm
12. Ben France-Hudson. "No private property rights in the atmosphere" in the *The Search for Environmental Justice* (Cheltenham, UK: Edward Elgar Publishing, 2015), <https://doi-org.proxy.lib.duke.edu/10.4337/9781784719425>
13. "Rule Of Law: Criminal Justice And Property Rights-Full Chapter," *Freedom House*, accessed August 1, 2018, <https://freedomhouse.org/report/todays-american-how-free/rule-law-criminal-justice-and-property-rights-full-chapter>.
14. "Present-Use Value Program Guide," *North Carolina Department of Revenue*, January 1, 2018, https://files.nc.gov/ncdor/documents/files/puv_program_guide_2018_version.pdf.
15. "Proposed and Existing Woody Biomass Facilities in the Southeastern US," *Southern Environmental Law Center*, March 4, 2011, https://www.southernenvironment.org/uploads/pages/file/biomass/woody_biomass_facilities_detailed_map_list_new.pdf.
16. Brian Kittler, Will Price, Will McDow, and Ben Larson, "Pathways to sustainability: An evaluation of forestry programs to meet European biomass supply chain requirements." *New York, NY: Environmental Defense Fund* (2012), <https://www.edf.org/sites/default/files/pathwaysToSustainability.pdf>.
17. "Enviva/Endowment Working Bottomland Hardwood Forest Workshop Meeting Report", *Enviva Forest Conservation Fund*, accessed July 20, 2018, <http://envivaforestfund.org/wp-content/uploads/2015/12/Enviva-Co-Creation-Workshop-Final-Report-FINAL.pdf>.
18. "Financial assistance available to landowners to fund forest management plan development", *Roanoke-Chowan News Herald*, April 16, 2018, <https://www.roanoke-chowannews herald.com/2018/04/16/financial-assistance-available-to-landowners-to-fund-forest-management-plan-development/>
19. "The American Forest Foundation, Enviva Holdings, LP and The Nature Conservancy Announce Partnership for Forest Certification and Habitat Restoration", *Enviva*, November 29, 2017, <http://www.envivabiomass.com/media-center/the-american-forest-foundation-enviva-holdings-lp-and-the-nature-conservancy-announce-partnership-for-forest-certification-and-habitat-restoration/>
20. "County Profile." Northampton Chamber of Commerce. Accessed November 26, 2018. <https://northamptonchamber.org/index.php/northampton-county-nc-county-profile?start=13>.
21. "U.S. Census Bureau QuickFacts: Northampton County, North Carolina." Census Bureau QuickFacts. Accessed November 26, 2018. <https://www.census.gov/quickfacts/fact/table/northamptoncountynorthcarolina/PST045217>.
22. "Alton Perry of the Sustainable Forestry and African-American Land Retention Project", *Domtar*, accessed July 12, 2018, <https://newsroom.domtar.com/profiles/alton-perry-sustainable-forestry-project/>
23. *Burned*. Directed by Alan Dater and Lisa Merton. Marlboro Films, 2017.
24. Lynch, Owen James, and Emily Harwell. *Whose Natural Resources? Whose Common Good?: Towards a New Paradigm of Environmental Justice and the National Interest in Indonesia*. CIEL, 2002.
25. Emily Zucchini, interview by Sarah Sung, July 12, 2018.
26. MarketScreener. "Enviva Partners LP : County OKs 2018-19 Budget." MarketScreener.com. June 15, 2018. Accessed November 28, 2018. <https://www.marketscreener.com/ENVIVA-PARTNERS-LP-22033571/news/Enviva-Partners-LP-County-OKs-2018-19-budget-26786688/>.
27. Gavin Stone, "Map counters activists' claims: 3 Richmond County commissioners live close to

- Enviva plant," *Richmond County Daily Journal*, September 29, 2017, <https://www.yourdailyjournal.com/news/76080/map-counters-activists-claims-3-richmond-county-commissioners-live-close-to-enviva-plant>
28. "The Board of County Commissioners." NCpedia, North Carolina Government & Heritage Library, www.ncpedia.org/government/local/commissioners.
 29. "Board of County Commissioners." Richmond County, NC Official Website. Accessed November 26, 2018. <http://www.richmondnc.com/155/Board-of-County-Commissioners>.
 30. "At-large voting frequently asked questions," NAACP Legal Defense and Educational Fund, http://www.naacpldf.org/files/case_issue/At-Large%20Voting%20Frequently%20Asked%20Questions.pdf
 31. Rodgers, Cary, interview by Shom Tiwari, June 21, 2018.
 32. Sorg, Lisa, "Richmond County Commission's public comment policy has violated First Amendment — for 20 years," *The Progressive Pulse*, March 13, 2017 <http://pulse.ncpolicywatch.org/2017/03/13/richmond-county-commissions-public-comment-policy-violated-first-amendment-20-years/>
 33. Cook, Dena R., "Public Appearance Policy," Richmond County, February 17, 2011, <http://www.richmondnc.com/156/Public-Appearance-Policy>
 34. Stone, Gavin, "Pierce: communication 'breakdown' cause of Enviva concerns," *Richmond County Daily Journal*, September 27, 2017, <https://www.yourdailyjournal.com/news/76016/pierce-communication-breakdown-cause-of-enviva-concerns>
 35. Harrelson, Matt, "Groups speak out against Enviva," *Richmond County Daily Journal*, May 2, 2017, <https://www.yourdailyjournal.com/news/72779/groups-speak-out-against-enviva>
 36. "2018 Election Primary Results." Richmond County Board Of Commissioners. <http://152.28.194.177/election2018primary.htm>.
 37. "1990 Clean Air Act Amendment Summary: Title V", U.S. Environmental Protection Agency, accessed August 1, 2018, <https://www.epa.gov/clean-air-act-overview/1990-clean-air-act-amendment-summary-title-v>.
 38. Patrick Anderson, and Keri Powell, "Dirty deception: how the wood biomass industry skirts the Clean Air Act," *Environmental Integrity Project*, April 26, 2018, <http://www.environmentalintegrity.org/wp-content/uploads/2017/02/Biomass-Report.pdf>.
 39. Silverleen Alston, interviewed by Dogwood Alliance, "Our Forests Aren't Fuel: Injustice in Northampton," YouTube video, 2:19, posted by "Dogwood Alliance", March 12, 2014, <https://www.youtube.com/watch?v=xNJFPefdnlw>
 40. Clean Water for North Carolina, "Clean Currents, Spring 2014", 2014, https://cwfnc.org/documents/Spring-2014_Newsletter-Final.pdf
 41. Environmental Integrity Project. North Carolina Action Letter to Gov. Cooper. PDF. EIP, April 26, 2018. <http://www.environmentalintegrity.org/wp-content/uploads/2017/02/North-Carolina-Action-Letter.pdf>
 42. Stone, Gavin, "Judge dismisses Enviva permit lawsuit," *Richmond County Daily Journal*, November 16, 2017. <https://www.yourdailyjournal.com/news/77324/judge-dismisses-enviva-permit-lawsuit>
 43. Amanda VanDerBroek, "Enviva 'footprint' widens," *The Roanoke-Chowan News-Herald*, May 23, 2013, <https://www.roanoke-chowannews herald.com/2013/05/23/enviva-footprint-widens/>.
 44. "Session Law 2007-397 Senate Bill 3," General Assembly of North Carolina, Session 2007. <https://www.ncleg.net/Sessions/2007/Bills/Senate/PDF/S3v6.pdf>.
 45. "Court rules that "biomass" includes all forms of wood," *TreeLine*, North Carolina Forestry Association, August 2011 <http://search.ncforestry.org/WEBPAGES/MEMBERSECTION/ATREELINE/treeline%20issues/2011%20Treeline/AUGUST%20TREELINE%20WEB%202011.pdf>.
 46. "NC: Alternative energy producer to invest \$60M in Northeastern N.C.," *Trade & Industry Development*, August 5, 2011, <http://www.tradeandindustrydev.com/region/north-carolina/news/nc-alternative-energy-producer-invest-60m-northeast-5472>
 47. Cal Bryant, "Northampton secures EDA grant," *The Roanoke-Chowan News-Herald*, September 28, 2011, <https://www.roanoke-chowannews herald.com/2011/09/28/northampton-secures-eda-grant/>
 48. "Strong Communities," Enviva, accessed July 26, 2018, <http://www.envivabiomass.com/sustainability/strong-communities/>.

49. "John C. Kepler," Salary.com, accessed July 26, 2018, <https://www1.salary.com/John-K-Keppler-Salary-Bonus-Stock-Options-for-ENVIVA-PARTNERS-LP.html>.
50. Cal Bryant, "Enviva to open Ahoskie plant," *Roanoke-Chowan News-Herald*, December 23, 2010, <https://www.roanoke-chowannewsheald.com/2010/12/23/enviva-to-open-ahoskie-plant/>.
51. Scot Quaranda, "Press Release - Groups Call on Governor Cooper to Pull the Brakes on Wood Pellet Industry in North Carolina," Dogwood Alliance, July 18, 2017, <https://www.dogwoodalliance.org/2017/07/press-release-groups-call-on-governor-cooper-to-pull-the-brakes-on-wood-pellet-industry-in-north-carolina/>.
52. "U.S. EDA Invests \$2 Million to Boost Business Development and Job Growth in Northampton County, North Carolina," U.S. Economic Development Administration, September 26, 2011, <https://www.eda.gov/archives/2016/news/press-releases/2011/09/26/451.htm>.
53. Bruce Sicheloff, "NC tax breaks support wood pellet mills in Sampson, Richmond counties," *The News & Observer*, September 9, 2014, <http://www.newsobserver.com/news/politics-government/state-politics/article10055087.html>.
54. Della Rose, "Northampton County impact through pellets: Governor, Enviva CEO celebrate Garysburg plant's ribbon cutting, contribution," *The Daily Herald (Roanoke Rapids)*, May 21, 2013, http://www.rrdailyherald.com/news/northampton-county-impact-through-pellets/article_ed925a72-c22a-11e2-adbf-001a4bcf887a.html.
55. "Enviva Pellets Sampson." Enviva. Accessed November 28, 2018. <http://www.envivabiomass.com/enviva-assets/enviva-pellets-sampson-llc/>.
56. "Enviva Pellets Northampton." Enviva. Accessed November 28, 2018. <http://www.envivabiomass.com/enviva-assets/northampton/>.
57. Karen Chávez, "Wood pellet industry creating confusion," *Citizen Times*, November 28, 2015, <https://www.citizen-times.com/story/news/2015/11/28/wood-pellet-industry-creating-confusion/76241058/>.
58. "Top Story: Breaking Ground at Enviva Plant Signifies New Economic Development in Richmond County," *The Richmond Observer*, November 13, 2017, <https://richmondobserver.com/national-news/item/892-top-story-breaking-ground-at-enviva-plant-signifies-new-economic-development-in-richmond-county.html>.
59. Robert Johansson, "Study Finds Increasing Wood Pellet Demand Boosts Forest Growth, Reduces Greenhouse Gas Emissions, Creates Jobs," *U.S. Department of Agriculture*, June 8, 2015, <https://www.usda.gov/media/blog/2015/06/8/study-finds-increasing-wood-pellet-demand-boosts-forest-growth-reduces>.
60. "Enviva Partners, LP: Business Overview" Enviva, updated February 26, 2018, http://www.envivapartners.com/sites/envivabiomass.investorhq.businesswire.com/files/doc_library/file/EVA_Investor_Presentation_Feb_2018_vFinal.pdf.
61. Voegelé, Erin. "EPA Proposes ACE Rule as Replacement for Clean Power Plan." *Biomassmagazine.com*. August 21, 2018. Accessed November 28, 2018. <http://biomassmagazine.com/articles/15536/epa-proposes-ace-rule-as-replacement-for-clean-power-plan>.
62. Al Maiorino, "Battling NIMBY-ism with Better Tactics," *Pellet Mill Magazine*, Q2 2013, https://issuu.com/bbiinternational/docs/q2-2013_pmm-outlines.
63. Shiloh Sundstrom, Max Nielsen-Pincus, Cassandra Moseley, and Sarah McCaffery. "Woody biomass use trends, barriers, and strategies: Perspectives of US Forest Service managers." *Journal of Forestry* 110, no. 1 (2012): 16-24, <https://doi.org/10.5849/jof.10-114>.
64. "Nimby, n.," OED Online, Oxford University Press, accessed August 1, 2018, <http://www.oed.com/view/Entry/245895>.
65. Boholm Å 2004 Editorial: what are the new perspectives on siting controversy? *Journal of Risk Research* 7 99– 100
66. Maarten Wolsink, "Invalid theory impedes our understanding: a critique on the persistence of the language of NIMBY," *Transactions of the Institute of British Geographers* 31, no. 1 (2006): 85-91, <https://doi.org/10.1111/j.1475-5661.2006.00191.x>.
67. Kimberly Renee Allen, "The Cultural Politics of Environmental Justice Activism: Race-and Environment-Making in the Contemporary Post-Civil Rights Period," PhD diss., University of North Carolina Chapel Hill, 2009, <https://search.proquest.com/docview/304958593>.

Take Action to Oppose Wood Pellets

1. "11/08/2016 Official General Election Results-Hertford." NC SBE Contest Results. Accessed November 28, 2018. https://er.ncsbe.gov/?election_dt=11/08/2016&county_id=46&office=ALL&contest=0.
2. "11/08/2016 Official General Election Results-Sampson." NC SBE Contest Results. Accessed November 28, 2018. https://er.ncsbe.gov/?election_dt=11/08/2016&county_id=82&office=ALL&contest=0
3. "11/08/2016 Official General Election Results-Northampton." NC SBE Contest Results. Accessed November 28, 2018. https://er.ncsbe.gov/?election_dt=11/08/2016&county_id=66&office=ALL&contest=0
4. "11/08/2016 Official General Election Results-Richmond." NC SBE Contest Results. Accessed November 28, 2018. https://er.ncsbe.gov/?election_dt=11/08/2016&county_id=77&office=ALL&contest=0
5. "Makeup of County Boards by Decade." NCACC.org. Accessed November 28, 2018. <https://www.ncacc.org/196/Makeup-of-County-Boards-by-Decade>.
6. "The Board of County Commissioners." NCPedia, North Carolina Government & Heritage Library, www.ncpedia.org/government/local/commissioners.
7. "Meet Our Commissioners." Richmond County, NC - Official Website. Accessed November 28, 2018. <https://www.richmondnc.com/325/Meet-Our-Commissioners>.
8. "Boards, Commissions and Committees." Northampton County Official Website. Accessed November 28, 2018. http://www.northamptonnc.com/government/boards_commissions_and_committees/index.php.
9. "Hertford County Commissioners." Hertford County. Accessed November 28, 2018. <http://www.hertfordcountync.gov/localgovernment/commissioners/>.
10. "Board of Commissioners." Sampson County. Accessed November 28, 2018. http://www.sampsonnc.com/departments/board_of_commissioners.php.
11. Van Rossum, Maya K. *The Green Amendment: Securing Our Right to a Healthy Environment*. Austin, TX: Disruption Books, 2017.
12. "Local Government and the Environment: The Constitutional Starting Point." UNC Chapel Hill School of Government. March 02, 2015. Accessed November 29, 2018. <https://elinc.sog.unc.edu/local-government-and-the-environment-the-constitutional-starting-point/>
13. Wines, Michael, and Richard Fausset. "North Carolina Is Ordered to Redraw Its Gerrymandered Congressional Map. Again." *The New York Times*. August 27, 2018. Accessed November 29, 2018. <https://www.nytimes.com/2018/08/27/us/north-carolina-congressional-districts.html>.

Photos

1. D-Kuru. "Wood Pellets-small Huddle." Digital image. Wikimedia Commons. November 19, 2010. https://commons.wikimedia.org/wiki/File:Wood_pellets-small_huddle_PNr°0108.jpg.
2. *Wetland Logging Investigation, Southampton, VA and Ahoskie, NC: May 13/14th, 2015*. PDF. Dogwood Alliance, June 2015. <https://www.dogwoodalliance.org/wp-content/uploads/2015/06/Wetlands-Logging-Investigation-Flyer.pdf>
3. Allen, Chris. "Drax Power Station - Biomass Storage." Digital image. Geograph. August 5, 2013. <https://www.geograph.org.uk/photo/3584383>.
4. Whale, Andrew. "Drax Power Station." Digital image. Geograph. March 28, 2011. <https://www.geograph.org.uk/photo/2328563>.
5. Dogwood Alliance, Enviva Harvest Site, May 2015.
6. Dogwood Alliance, Enviva Production Facility, May 2015.
7. Google Maps. "Enviva Sampson." Map. Google.com/maps. 2018. <https://www.google.com/maps/place/Enviva+Sampson/@35.1208108,-78.2032038,5168m/data=!3m1!1e3!4m5!3m4!1s0x89abee61ed5c5f33:0x57705b6c27f21d06!8m2!3d35.1188281!4d-78.1841974>.
8. Morven. "CSX SD50." Digital image. Wikimedia Commons. February 7, 2005. https://commons.wikimedia.org/wiki/File:CSX_SD50_8522.jpg.
9. RCC, Alexandra Wisner, 2018, Enviva Wilmington, NC Port storage facility
10. Richmond County Government, "Richmond County Board of Commissioners." 2016. <https://www.richmondnc.com/155/Board-of-County-Commissioners>

11. Nicholas A. Tonelli, Wikimedia Commons; NE Pennsylvania. 2014. [https://commons.wikimedia.org/wiki/File:Off-Trail_View_\(1\)_ \(14930566916\).jpg](https://commons.wikimedia.org/wiki/File:Off-Trail_View_(1)_ (14930566916).jpg)

Call Out Boxes

1. "A Broad View of Flooding in the Carolinas." NASA. Accessed November 28, 2018. <https://earthobservatory.nasa.gov/images/92786/a-broad-view-of-flooding-in-the-carolinas>.
2. "Extreme Weather." National Climate Assessment. Accessed November 28, 2018. <https://nca2014.globalchange.gov/highlights/report-findings/extreme-weather>.
3. "Global Warming and Hurricanes." NOAA Geophysical Fluid Dynamics Laboratory. September 20, 2018. Accessed November 28, 2018. <http://www.citationmachine.net/bibliographies/383510072?new=true>.
4. Davis, Sam L., PhD. "The Seeing Forest: Nature's Solution to Climate Change." Dogwoodalliance.org. <https://www.dogwoodalliance.org/wp-content/uploads/2018/09/The-Climate-Plan.pdf>.
5. Karimi, Faith, and Anne Claire Stapleton. "Florence Kills 5 in North Carolina, Officials Say." CNN. September 15, 2018. Accessed November 28, 2018. <https://www.cnn.com/2018/09/14/us/hurricane-florence-south-east-coast-wxc/index.html>.
6. Held, Amy. "Florence Blamed For 4 More Deaths As 'Unheard Of Amounts Of Water' Keep Flowing." NPR. September 20, 2018. Accessed November 28, 2018. <https://www.npr.org/2018/09/20/649854188/florence-claims-four-more-lives-as-unheard-of-amounts-of-water-keep-flowing>.
7. Murphy, Brian. "Young and Old among Florence's Victims. Here Are the 36 NC Deaths Blamed on the Storm." Newsobserver. Accessed November 28, 2018. <https://www.newsobserver.com/news/local/article218984940.html>.
8. "County Distress Rankings (Tiers)." North Carolina Department of Commerce. Accessed November 28, 2018. <https://www.nccommerce.com/grants-incentives/county-distress-rankings-tiers>.
9. "Florence Power Outages down to about 658,000 across NC." WNCN. September 17, 2018. Accessed November 28, 2018. <https://www.cbs17.com/weather/hurricane-center/nc-knocks-out-power-for-at-least-773-000-across-nc/1440719862>.
10. Kimberly Renee Allen, "The Cultural Politics of Environmental Justice Activism: Race-and Environment-Making in the Contemporary Post-Civil Rights Period," PhD diss., University of North Carolina Chapel Hill, 2009, <https://search.proquest.com/docview/304958593>.
11. Clean Water for North Carolina, "Clean Currents, Spring 2014", 2014, https://cwfn.org/documents/Spring-2014_Newsletter-Final.pdf.
12. Dogwood Alliance. "Rising Up With Richmond County to Stop a Proposed Enviva Pellet Mill." News release, June 15, 2017. Dogwoodalliance.org. <https://www.dogwoodalliance.org/2017/06/press-release-rising-up-with-richmond-county-to-stop-a-proposed-enviva-pellet-mill/>
13. Zucchini, Emily. "North Carolinians Speak out Against Enviva's Proposed Expansion." Dogwood Alliance. November 15, 2018. Accessed November 28, 2018. <https://www.dogwoodalliance.org/2018/10/richmond-county-public-hearing/>.
14. Rodgers, Cary, interview by Shom Tiwari, June 21, 2018.
15. Gavin Stone, "Map counters activists' claims: 3 Richmond County commissioners live close to Enviva plant," *Richmond County Daily Journal*, September 29, 2017, <https://www.yourdailyjournal.com/news/76080/map-counters-activists-claims-3-richmond-county-commissioners-live-close-to-enviva-plant>.
16. Zucchini, Emily. "North Carolinians Speak out Against Enviva's Proposed Expansion." Dogwood Alliance. November 15, 2018. Accessed November 28, 2018. <https://www.dogwoodalliance.org/2018/10/richmond-county-public-hearing/>.
17. Sherry O'Daniell, July 2018, Boat Trip down Cape Fear River
18. Smart, Ben. "Environmental Advocates Discuss Wood Pellet Industry's Impact on Humans and the Environment." WECT TV6. July 14, 2018. Accessed November 28, 2018. <http://www.wect.com/story/38639360/environmental-advocates-discuss-wood-pellet-industrys-impact-on-humans-and-the-environment/>.
19. "2018 Election Primary Results." Richmond County Board Of Commissioners. <http://152.28.194.177/election2018primary.htm>.

20. "A Mandate for Coming Back." Richmond County Daily Journal. June 17, 2015. Accessed November 28, 2018. <https://www.yourdailyjournal.com/top-stories/1092/a-mandate-for-coming-back>.
21. Stone, Gavin. "State Holds Public Hearing on Modified Enviva Permit, County Leaders and Activists Make Their Case." Richmond County Daily Journal. November 10, 2018. Accessed November 28, 2018. <https://www.yourdailyjournal.com/news/83728/state-holds-public-hearing-on-modified-enviva-permit-county-leaders-and-activists-make-their-case>.
22. "Issues," Roy Cooper for North Carolina, accessed August 1, 2018, <https://www.roycooper.com/issues/>.
23. Lisa Sorg, "DEQ announces members of new Environmental Justice & Equity Board", *NC Policy Watch*, May 2, 2018, <http://pulse.ncpolicywatch.org/2018/05/02/deq-announces-members-of-new-environmental-justice-equity-board/>.
24. "Governor Cooper Commits to Clean Energy Economy for NC to Combat Climate Change, Create Jobs." NC Governor Roy Cooper. October 29, 2018. Accessed November 28, 2018. <https://governor.nc.gov/news/governor-cooper-commits-clean-energy-economy-nc-combat-climate-change-create-jobs>.
25. "DEQ Sign On Letter," Dogwood Alliance, accessed August 1, 2018, <https://www.dogwoodalliance.org/wp-content/uploads/2017/07/DEQ-Sign-On-Letter-Orgs-for-print.pdf>.
26. "Scientist Letter to Governor Cooper," Dogwood Alliance, accessed August 1, 2018, <https://www.dogwoodalliance.org/wp-content/uploads/2017/11/Scientist-Letter-to-Governor-Cooper-11-15-2017.pdf>.
27. "Clean Air Carolina Calls on Governor Cooper to Stop Enviva", *Clean Air Carolina*, June 20, 2017, <https://cleanaircarolina.org/2017/07/clean-air-carolina-calls-governor-cooper-stop-enviva/>.
28. Danna Smith, "Gov. Cooper should block another wood-pellet mill", *The News & Observer*, October 25, 2017, <https://www.newsobserver.com/opinion/op-ed/article180690461.html>.
29. Norman Christensen and William Schlesinger, "N.C. forests are under assault; Gov. Cooper should help", *The Charlotte Observer*, November 14, 2017, <https://www.charlotteobserver.com/opinion/op-ed/article184561713.html>.
30. "Governor Cooper: North Carolina Forests Demand Action," Dogwood Alliance, accessed August 1, 2018, <https://www.dogwoodalliance.org/actions/cooper-nc-forests-demand-action/>.
31. Seward, Chris. "Gov. Roy Cooper." Digital image. Wikimedia Commons. March 15, 2016. https://commons.wikimedia.org/wiki/File:Gov._Roy_Cooper.jpg.
32. Beyond My Ken. "Solar Array, Guilford, Vermont." Digital image. Wikimedia Commons. May 26, 2016. https://commons.wikimedia.org/wiki/File:Solar_array,_Guilford,_Vermont.jpg.
33. Bostic, Tavares, interview by Shom Tiwari, July 11, 2018.
34. Aldina, Robin, Daniel Parker, Brian Seo, Lauren Masatsugu, Samantha Childress, and Matilda Odera. "North Carolina Solar and Agriculture." NC Sustainable Energy Association. April 2017. https://energync.org/wp-content/uploads/2017/08/NCSEA_NC_Solar_and_Agriculture_7_27.pdf.
35. "EIA - Independent Statistics and Analysis-Biomass." Energy Information Administration. Accessed November 28, 2018. <https://www.eia.gov/electricity/data/browser/#/topic/0?agg=1,0,2&fuel=0008&geo=vvvvvvvvvvvo&sec=o3g&linechart=ELEC.GEN.BIO-NC-99.M&columnchart=ELEC.GEN.BIO-US-99.M&map=ELEC.GEN.BIO-US-99.M&freq=M&start=200101&end=201808&ctype=linechart<yype=pin&rttype=s&pin=&rse=0&maptype=0>
36. "EIA - Independent Statistics and Analysis-Solar." Energy Information Administration. Accessed November 28, 2018. <https://www.eia.gov/electricity/data/browser/#/topic/0?agg=1,0,2&fuel=004&geo=qnifi05c03j78&sec=o3g&linechart=ELEC.GEN.SUN-NC-99.M&columnchart=ELEC.GEN.SUN-US-99.M~ELEC.GEN.SUN-NV-99.M~ELEC.GEN.SUN-CA-99.M&map=ELEC.GEN.SUN-US-99.M&freq=M&start=200101&end=201808&ctype=linechart<ype=pin&rttype=s&pin=&rse=0&maptype=0>
37. "Top 10 Solar States." SEIA. Accessed November 28, 2018. <https://www.seia.org/research-resources/top-10-solar-states-0>.

Graphics

1. Fanous, Jamie, and William R. Moomaw. "A Critical Look at Forest Bioenergy: Exposing a High Carbon "climate Solution"." *International Journal of Sustainability in Higher Education* 2, no. 3 (2001): 288-89. doi:10.1108/ijshe.2001.2.3.288.7.
2. AEBIOM. "Statistical Report 2015." *European Biomass Association*. 2015. <http://www.aebiom.org/library/statistical-reports/statistical-report-2015/>
3. Alford, Mac H. "Bottomland Hardwood Forest Amite River." Digital image. Wikimedia Commons. March 17, 2018. https://commons.wikimedia.org/wiki/File:Bottomland_hardwood_forest_amite_river.jpg.
4. U.S. Fish and Wildlife Service Northeast Region. "Swainson's Warbler." Digital image. Flickr.com. April 14, 2012. <https://www.flickr.com/photos/usfwsnortheast/11800770306>.
5. Werner22bridgitte. "Black Bear." Digital image. Pixabay. <https://pixabay.com/en/black-bear-animal-black-canim-lake-50293/>
6. Cooper, Justin. "Neonympha Mitchellii Francisci Pair." Digital image. Wikipedia.org. October 29, 2010. https://en.m.wikipedia.org/wiki/File:Neonympha_mitchellii_francisci_pair.jpg.
7. U.S. Fish and Wildlife Service Southeast Region. "An Insect on the Lip of a Mountain Sweet Pitcher Plant." Digital image. Flickr.com. August 2, 2013. <https://www.flickr.com/photos/usfwssoutheast/9663322189>.
8. Free-Photos. "Farmland Meadow Border." Digital image. Pixabay. <https://pixabay.com/en/farmland-meadow-field-border-sharp-801817/>.
9. https://commons.wikimedia.org/wiki/File:North_Atlantic_Ocean_laea_relief_location_map.jpg
10. Dederling, Uwe. "North Atlantic Ocean." Digital image. Wikimedia Commons. December 4, 2010. https://commons.wikimedia.org/wiki/File:North_Atlantic_Ocean_laea_relief_location_map.jpg.
11. "County Data" Data USA. <https://datausa.io/>
12. U.S. Census Bureau, "Quick Facts: Northampton County, North Carolina," accessed July 30, <https://www.census.gov/quickfacts/fact/table/northamptoncountynorthcarolina/PST045217>.
13. "North Carolina Rankings Data." County Health Rankings & Roadmaps. Accessed November 28, 2018. <http://www.countyhealthrankings.org/rankings/data/NC>.
14. NC Forest Service. "2017 Biennial Report." NC Department of Agriculture and Consumer Services. 2017. <https://www.ncforestservice.gov/publications/2017BiennialReport.pdf>
15. National Institute on Money in Politics, and The Campaign Finance Institute. FollowTheMoney.org. Accessed November 30, 2018. <http://www.followthemoney.org/>
16. "NC: Alternative energy producer to invest \$60M in Northeastern N.C.," Trade & Industry Development, August 5, 2011, <http://www.tradeandindustrydev.com/region/north-carolina/news/nc-alternative-energy-producer-invest-60m-northeast-5472>
17. "John C. Kepler," Salary.com, accessed July 26, 2018, <https://www1.salary.com/John-K-Keppler-Salary-Bonus-Stock-Options-for-ENVIVA-PARTNERS-LP.html>
18. Rachel Carson Council

Glossary

1. Farrell, Caroline. A Just Transition: Lessons Learned from the Environmental Justice Movement. Duke Forum For Law and Social Change Vol 4:45, 2012. <https://scholarship.law.duke.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1026&context=dfslsc>
2. Movement Generation. From Banks and Tanks to Cooperation and Caring. 2016. http://movementgeneration.org/wp-content/uploads/2016/11/JT_booklet_English_SPREADs_web.pdf

The Rachel Carson Council is the national environmental organization envisioned by Rachel Carson and founded in 1965 to carry on her work after her death. We promote Carson's ecological ethic that combines scientific concern for the environment and human health with a sense of wonder and reverence for all forms of life in order to build a sustainable, just, and peaceful future.

The Rachel Carson Campus Network (RCCN) links students, faculty, staff, and administrators at campuses nationwide to the Rachel Carson Council to provide and share information and resources, recruit environmental leaders, and work on and off campus to create lasting changes in policy and practice for a sustainable future.



Rachel Carson Council
8600 Irvington Avenue
Bethesda, MD 20817
www.rachelcarsoncouncil.org
(301) 214-2400
Facebook.com/RachelCarsonCouncil
Twitter: @RachelCarsonDC
Instagram: @RachelCarsonDC