The Impact of Hambach Mine

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Abstract

Like many countries across the globe, both developed and developing, Germany has had a historical reliance on coal. Sitting on a massive amount of lignite (also known as “brown coal”) reserves, Germany has encouraged continued coal extraction and consumption in order to ensure its energy independence. This policy has led to a number of massive open-pit mines across the northwest of the country. One such mine, Hambach mine, stands at the site of a once proud and ancient forest of the same name. As the lignite sat under the forest, the mine continually consumed it in order to access the fuel beneath. Since the mining began in the late 1970s, the forest has been reduced by 90% and at a great cost. As the forest has been logged, biodiversity has been threatened along with the fragile and unique ecosystem it contains. The mine has also been responsible for a decrease in air quality and has overseen a rise in respiratory issues as far as France. The mine has been detrimental to its surroundings as well, consuming a number of villages, all while the parent company, RWE, offers their condolences. The major impacts of the mine have not gone unnoticed and many have protested, aiming to protect what remains of the ancient forest as well as the nearby towns. Despite resistance to the mine, RWE, partnered with the German government has persisted with its mining operations even as coal becomes less desirable fuel in the face of climate change.

Keywords

Geography- the study of the physical features of the Earth, and of human activity as it affects and is affected by it.

Energiewende - an ongoing transition by Germany to a low-carbon, environmentally friendly energy supply.

Lignite- a soft brown coal that shows traces of plant structure, between hard coal and peat.
Introduction

Coal is an important tool, it was the first heavily used fossil fuel and has been responsible for an explosion of progress and industrialization across the world. Hambach mine, which contains lignite, is a huge open-pit mine in Northwestern Germany. Lignite is also known as “brown coal” which means it is a low quality, low grade fuel as opposed to “hard coal” like Anthracite, which is the black, soot covered fuel everyone knows so well. It is a mixture halfway between peat and coal. Peat is condensed organic matter, young coal that is not yet useful as a fuel\(^1\). The mine is operated by the energy company, RWE which runs multiple mines and coal power plants across the region, powering cities like Cologne (Hambach mine is responsible for 40% of the energy used by Cologne). The region's dependence on the mine and its vital production has continually clashed with issues brought on by the mine.

As Germany begins its shift toward renewable energy, the idea is that phasing out both coal and nuclear energy will make renewables more economically viable. However, developed, Western countries like Germany are much more hesitant to change their energy sources. Since 1989, Germany has been investing in wind power which led to a so-called “boom” in the 1990s setting the stage for a possible transition. As such, Germany gets about 40% of its energy from renewables\(^2\). Although Germany has a past of renewable energy and uses it for a large share of their power, they still rely heavily on fossil fuels. A study from *the Journal of Environment & Development* found that despite a high potential for renewable energy, high-income states like Germany are more reluctant to convert their energy sources to renewables\(^3\). Places like Germany have the easiest ability to switch energy sources due to their history of environmentalism and

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1 USGS, "What are the types of coal?"
2 Wurster, "Expansion of Renewable Energy in Federal Settings: Austria, Germany and Belgium in Comparison", 150.
abundant wealth, but yet they do not. Wealthy countries do not want to interrupt their growth and profit with a disruptive upheaval of their energy, they find the risk too great. Because of this, mines like Hambach continue to operate and the transition to renewables is slow.

Coal in Germany

Following the Industrial Revolution, coal became the most popular fuel choice across the world. Because coal was the first fossil fuel discovered, it has become of great importance to many places and is often the first fuel developing nations utilize. Germany was no different from any other country in the world, coal was an important source of fuel as industry began to grow and modernize. It became dependent on the fuel, like so many others until new sources of fossil fuels like oil and gas were discovered. In recent years, Germany has transitioned from coal into renewable and gas energy as the need for climate action has grown. This coal phaseout has encouraged environmentalists but left many questions unanswered. For instance, many question why the Hambach Mine continues to grow as coal disappears across the country.

Following World War Two, the occupying Allied forces seized elements of the West German coal industry and began to redistribute them (with supervision) in order to encourage economic growth. For the most part, the Allied tactic was to liquidate companies and form nearly identical ones while only introducing supervision. In 1947, using what was called Law No. 75, the US-UK Coal Control Group established the German Coal Mines Administration (DKBL). The DKBL than served as an Allied appointed commission for overseeing coal mines and the use of coal across West Germany. Using this commission the primary goals of the Allies were twofold, to encourage free market economic growth and to prevent coal being used in further

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4 M.G., “The West German Coal and Steel Industries since the War”, 110.
5 M.G., “The West German”, 114.
aggression. Although coal production suffered in the chaos of the transitional, post-war period, it quickly rebounded and became a vital energy source for a rebuilding Germany in the second half of the twentieth century.

As the decades wore on, despite oil usurping coal as the dominant fuel in West Germany, they continued to expand coal research and use as an energy source. Private companies began the switch to oil first. Chemical companies such as BASF and Hoechst began the transition and focused on petroleum production as a cheaper and more widely available alternative to coal\(^6\). Despite this, the West German government encouraged coal production and sought alternatives because of a large domestic supply of coal. West Germany considered many programs such as coal liquefaction but trial after trial proved it was ineffective and not cost efficient\(^7\). Despite numerous oil crises throughout the 1970s, petroleum continued to outpace coal. However, the West German government embraced coal, even going so far as to approve a permit for the Hambach Mine in the 1970s.

Opened in 1978 by a German Company, RWE, the Hambach Surface Mine produces coal in huge quantities and encompasses a massive area, stretching as far as the eye can see. Ironically, the mine came at a time of decreasing coal dependence. Immediately, large portions of the forest were cleared and mining operations began immediately to harvest the “brown” coal beneath the forest\(^8\). The mine is a massive operation. Stretching over 4,300 hectares (~17 sq miles). It produces 40 million tons of coal per year, mostly for nearby Cologne. Mining began in the early 1980s and at 40 million tons a year, over a billion tons have been produced. According to RWE there are billions more and “mining is scheduled to continue there until the middle of

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\(^6\) Marx, Failed Solutions to the Energy Crises: Nuclear Power, Coal Conversion and the Chemical Industry in West Germany since the 1960s”, 267.
\(^7\) Marx, “Failed Solutions”, 262.
\(^8\) Hambach Forest.org, “The Occupations”
this century”. Germany is not alone in its coal usage, many other countries both across Europe and the world have massive coal reserves and commitments, it is a systemic issue.

Across the European Union, coal persists as a common fuel which is still frequently produced and burned. Across 21 countries there are 207 coal power plants using a combination of hard coal and lignite (the coal from Hambach Forest). Of these 207 plants, a quarter are in Germany (53). Meanwhile, these plants operate at an incredibly inefficient level, the average efficiency is a mere 35%. Coal being that inefficient only makes the horrors of Hambach Forest worse. The forest has been reduced by approximately 20 sq miles, meaning that only 7 sq miles produced actual energy and the other 13 sq miles were sacrificed to scrape a meager amount of energy for Cologne. Similarly, Germany is the largest producer of coal in the European Union, producing a massive 37% of all coal used (Figure 1). This outpaces the second largest producer, Poland, by over 10%. It’s worth noting that Figure 1 shows the incredible inefficiency of lignite. Although Germany produces significantly more coal than Poland, the energy produced is less (which is represented by the bars). Despite a fall in coal use, it is clearly entrenched in Germany. Mines like the Hambach mine have led to the continuation of a toxic fuel that chokes the air and fouls the water. The German government, recognizing the importance of being coal free, has pledged to phase out hard coal (but not lignite) by 2038.

Recently, the German government unveiled an energy transition plan to move away from coal and free Germany of it completely. Germany’s energy transition, called Energiewende (energy transition), has been planned for 40 years. A policy analysis describes it as a, “...bottom-up initiatives by people and companies promoting renewable energy sources”. This

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9 RWE, “Hambach Mine: Facts and Figures”.
11 Dias, “EU Coal Regions”, 10.
12 Dias, “EU Coal Regions”, 11-12.
was driven by a political upheaval when the Green party burst onto the scene in the 1980s. It led to a rise in environmentalism that was for many years the gold standard for Europe and the World. In recent years, goals to decrease coal consumption has been driven by the ratification of international agreements. Agreements like the 2015 Paris Climate Accords put increased pressure on countries to meet goals and reduce emissions\textsuperscript{15}. In 2020, the German cabinet approved plans to phase out nuclear by 2022, coal by 2038 and cut emissions 55\% (from 1990 levels) by 2030. The Environmental Minister called the plan, “...not just an exit from coal, it’s an entry into renewable energy”\textsuperscript{16}. This policy which is an extension of the previous Energiewende policy, seeks to return Germany to its green roots as the transition has slowed in recent years.

The impact of Germany's energy transition has been huge. Whenever a country seeks to upend and rework it’s entire energy system, massive ramifications will be felt in all aspects of life. The first step was to shift away from hard coal, a process that began in 1950 and is still an ongoing process as of 2018. This now 70+ year process was a long and painful one, unemployment rates remained low for coal workers but those in related industries suffered and 15\% became unemployed\textsuperscript{17}. In the Ruhr and Saarland regions (where coal is produced), Pao-Yu Oei advises that a “just and in-time transition” would have been better. He found that Germany has been dragging out the transition. In doing so, it is helping keep the doomed coal industry afloat, which hurt those who became dependent on it because it has been inefficient in its elimination of hard coal\textsuperscript{18}. Unfortunately for Hambach Forest, it does not contain hard coal, but rather lignite. Hopefully, when Germany attempts to phase-out fossil fuels entirely, it will be able

\textsuperscript{15} Oei, Pao-Yu, “Coal Phase-out in Germany”, 4.
\textsuperscript{16} Wacket, Markus, “Aiming to go green, German cabinet backs coal exit by 2038”.
\textsuperscript{17} Oei, Pao-Yu, “Lessons from Germany’s hard coal mining phase-out: policies and transition from 1950 to 2018”, 968.
\textsuperscript{18} Oei, Pao-Yu, “Lessons from Germany’s hard coal mining phase-out”, 972.
to learn from its previous energy phase-out blunders. Learning from past mistakes helps to create a more effective and efficient way of switching to renewables as the need for action grows.

Despite Germany’s promise to end hard coal in 2038, progress has been slow, full of criticism and the future will require significant reductions in emissions. In order to meet its energy goals, the country needs to engage in a quick and efficient transition away from coal. Similar to how hard coal would have benefited from a quicker phase-out, lignite would also need to be phased out quickly and effectively to be the most beneficial. Transitioning from an entrenched energy will always be difficult; people will lose jobs and money will be lost in the short term. A comprehensive plan must be put in place, from switching generators to switching industries, everything must be accounted for and done well. As Oei says, “Negative effects of the structural change will become apparent earlier in the event of an early phase-out. In this case, however, a quicker recovery can counteract the negative effects in following periods”\textsuperscript{20}. It is important to be decisive. Germany has committed to a goal and too often do world leaders, countries, and intergovernmental bodies are slow to change and adopt reforms. However, it is clear an effective transition would be one that is fast and efficient. Like tearing off a band-aid, it is better to get it over with. Unfortunately, that may not be the case. Despite Germany’s pledge to phase out coal, Hambach Mine still has plans to expand and harvest even more coal. As previously quoted, RWE plans to extract coal “until the middle of the century”\textsuperscript{21} which is much further past 2038 when hard coal is supposed to be eliminated in Germany. The signals are mixed and the way forward is unclear. A quick transition requires coal plants and mines to shut down, not to extend operations. Hopefully Germany will learn from its past experiences with hard coal and make the correct decision for its other fossil fuels.

\textsuperscript{19} Oei, Pao-Yu, “Coal phase-out in Germany”, 1.
\textsuperscript{20} Oei, Pao-Yu, “Coal phase-out in Germany”, 11.
\textsuperscript{21} RWE, “Hambach Mine: Facts and Figures”.
Like most of the world, coal has been incredibly important to the expansion, growth and development of both Europe and Germany. Unlike most places in the world, Germany already has experience phasing out some types of fossil fuels and has a long history of pledging energy policy. However, the government is characteristically slow and inefficient. The desperate nature of the impact of the mine and climate change on a larger scale requires fast and efficient action, there is no time to waste. Studies similarly have found that a quick phase-out is the most efficient way to switch fuel sources as it allows for a quicker recovery. As Hambach Mine continues to expand, Germany has tried to reclaim its mantle of being an environmental leader but has failed to totally commit. The history of coal in Germany is clear. Hopefully they, and the rest of the world can learn from past mistakes and switch to renewable energy in an appropriate way.

Environmental Impacts

Similar to many forms of industry, the Hambach mine is responsible for untold amounts of environmental devastation. As RWE, the mining company, annihilated trees and tore open the ground the forest once stood on. they began the long and drawn out process of putting the ecological health of Hambach forest at risk. Mining not only creates destruction through the act of digging but brings increased damages along with it. From the toxic fumes spilt into the air by the burning of coal to heavy metals and other slag discarded by the mining process, untold risk is created for the life of all nearby organisms. Chemicals released in the mining process can create acid rain and groundwater which cause great harm to any creature. Meanwhile, simply creating the Hambach mine has eliminated large swaths of the forest, all while threatening biodiversity in the region, damaging water resources and continually risking the health of those nearby.

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22 Oei, Pao-Yu, “Coal phase-out in Germany”, 11.
The most upfront and obvious environmental impact of the mine is the rapidly shrinking size of Hambach forest. Hambach Forest is an ancient forest. It is old growth and has persisted for millenia with its unique ecology. Originally spanning 13,590 acres (22 sq miles), the forest has been reduced to a mere 10% of its original size. This means that over the past 30 to 40 years that the mine has been operational, 20 square miles of forest have been destroyed. The remaining forest meanwhile, is dwarfed by the massive pit it sits next to, becoming a shell of itself (Figure 2). As mining operations continue, RWE seeks to further expand the mine. This will come at the cost of more forest, the mine will slowly expand to consume the entire forest. As of 2017, the mine was set to expand, predictions put the size at anywhere from 43.8 sq km (~27 sq miles) to 85 sq km (~56 sq miles). If the mine reaches that size, it will eat more than just the forest. Hambach forest has little land left to give, meaning that along with wiping out the forest, the mine will move into farms and villages. The forest will be forgotten but so will so much more.

Hambach mine’s impacts extend far past the edge of the mine, as air pollution and pose a wide variety of health risks to people across Western Europe. Last Gasp, an anti-coal initiative by Beyond Coal in Europe has even gone as far as to label the Hambach mine the most toxic in Europe. Meanwhile, the parent company, RWE is of course the most toxic company in Europe as well. According to Last Gasp, RWE’s coal production led to 1,880 premature deaths in 2016. Similarly, 1,320 people were hospitalized as a direct result of this pollution. Because of these health issues, it cost an estimated 5.4 billion euros in 2016. The effects of mining and then burning this coal are so severe because of the small particle size. Measured at PM 2.5, the

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24 Smith-Spark, "Hambach Forest Clearance Halted by German Court".
26 Lazarus, "Hambach Forest Coal Firm 'Most Toxic' In Europe - Report"
27 Last Gasp, "The Coal Companies Making Europe Sick"
particles are deadly because they are so small, coming in at 2.5 microns or less (about 30 times smaller than a strand of hair which is 70 microns)\textsuperscript{28}. These particles infect anything and everything in the body, organs, tissue, and even fetuses. As Christian Doering, a pedicitrian for \textit{Last Gasp} says, “During pregnancy, even three months before pregnancy, the pollutants inhaled by the mother are decisive, and the newborn baby carries a burden of disease throughout its life”\textsuperscript{29}. As demonstrated, the pollution is far reaching and has a severe impact on the lives of Europeans. Although the coal mined in Hambach is used to power the homes and lives of the people being damaged by the pollution, you have to ask yourself if it is worth it.

Another environmental risk that comes with creating a massive, open pit in the middle of a forest is landslides. Although the landslides are more of a threat to mining operations than the surrounding environment, they are still an environmental impact that is worth considering. As machinery upends the earth and removes vegetation from the soil it lives in, the ground becomes unstable. With no roots or previous support structure (ie, other dirt) to hold it in place, collapses are common. Like other pit mines, Hambach mine is incredibly deep, the deepest in the world compared to sea level\textsuperscript{30}. Because it is so deep, the walls are high which makes them unstable as they are less supported. Studies have shown that Hambach mine, like any mine, is prone to these risks. Not only is the mine at risk, the ground can become unstable past the extent of the mine, which threatens the stability of the surrounding area. Although, the risk is not larger than normal, it still exists and there have been previous instances of geological occurrences\textsuperscript{31}. In the event of a collapse, the surrounding area could be threatened. The collapse of the rim could destroy both the forest and surrounding villages if large enough.

\textsuperscript{28} Lazarus, “Hambach Forest Coal Firm ‘Most Toxic’ In Europe - Report”
\textsuperscript{29} Last Gasp, “The Coal Companies Making Europe Sick”
\textsuperscript{30} Dong, “Combined methodology for three-dimensional slope stability analysis coupled with time effect”
\textsuperscript{31} Arca, “Landslide susceptibility mapping in an area”
The ecology of Hambach forest is unique. From animals, to plants, to microbiota, these organisms operate within this ancient forest in a unique way which is continually threatened by the expansion of the mine. The trees in Hambach are mostly deciduous oak and beech while some are also coniferous\(^{32}\). These trees are important for Hambach forest because they have special characteristics that influence their interaction with the soil and serve as homes for many animals. Both types of trees within the forest have an important role impacting the amount of carbon and other important elements within the soil. Deciduous trees tend to have a lower amount of molecules such as carbon, nitrogen and sulfur while coniferous ones have a higher stock of these same chemicals\(^{33}\). These soil conditions within Hambach are fragile. Any sort of mining operations that seek to dig up the soil or cut down the trees will damage this soil beyond repair. Soil is a unique and important ecosystem that takes decades to develop. Any environmental destruction for the sake of the Hambach mine will destroy these conditions within one of Europe’s oldest forests. For many aspects of the environment, from wildlife habitats to the soil, to the trees, once you destroy them, there is no going back.

Being one of the oldest forests in Europe, Hambach is home to over one hundred species of fauna, fourteen of which are endangered. Despite the rarity of these animals and the continued erosion of their territory across Europe, the mine continues to threaten the forest and their existence. One such species is the middle-spotted woodpecker that depends on the old, deciduous oaks that exist in the forest for food. According to Hambach activists, when the mine first opened, the forest “accommodated the only significant population of the middle-spotted woodpecker”\(^{34}\). As oak tree populations have decreased 20% in the past 25 years, the

\(^{32}\) Lorenz, “Tree Species Affect SOM stocks”, 44.
\(^{33}\) Lorenz, “Tree Species”, 36.
\(^{34}\) Hambachforest.org, “Importance of the Hambacher Forest as a habitat for the middle-spotted woodpecker”
woodpecker's territory has shrunk as well. The mine continues to threaten the environment and lives of many unique species that depend on it.

The most talked about and popular casualty of the Hambach mine is Bechstein’s bat. The bat which is a critically endangered species, makes homes in and relies on the oaks of Hambach forest just like the woodpecker. Because the bat is endangered, it is protected by annex II and annex IV of the European Union’s Fauna Flora Habitats directive. The directive says that for species like the bat, “a strict protection regime must be applied across their entire natural range within the EU”35. According to the NGO, BUND (Friends of the Earth Germany), the only organization to do a study on Bechstein’s bat, Hambach forest is one of only two locations in the Lower Rhine area where the bat lives. The other habitat will also be affected by mining and infrastructure improvements36. Bechstein’s bat used to stretch across Europe. It’s natural range is from southern England to Greece, from Portugal to Poland. Now, its range has been massively reduced and RWE wants to make it even smaller. There are many other species, such as the yellow-bellied toad and common dormouse which also rely on Hambach forest. As the forest shrinks, so does the homes of these organisms, along with biodiversity and their chances of survival.

Our greatest environmental risk in the modern day is climate change. As Hambach is a lignite mine, it mines an incredibly inefficient and terrible fossil fuel. RWE’s coal plants in Europe which are fed by mines like Hambach, emit 75 million tons of CO$_2$ per year37. One such plant, the Bergheim-Niederaußem which is powered directly by Hambach, emits over one-third of that amount at 29.5 million tons per year making it the 10th largest emitter of greenhouse gases in the world. Due to the massive amounts of emissions, it has been labeled a “climate

35 Hambachforest.org, “Endangered Animals”
37 Buchsbaum, “Dead lakes, dry holes”.
killer” by BUND. As lignite power plants continually pump carbon dioxide into the atmosphere, they are expected to contribute in a big way to rising temperatures. By 2046, a mere 6 years after the mine is scheduled to close, warming would reach an average of ~2°C across the region.

To RWE’s credit, they have attempted to at least act like they care about the social, environmental and biodiversity impacts of the mine. In a report published by RWE, they begin by acknowledging the impacts of mining and the importance of biodiversity, Their plan is a decade long process with acts of environmentalism that on the surface at least, appear to combat the effects of the mine. In the 1980s, they began a “recultivation” initiative where they planted trees on a slag heap that they had turned into a park known as the Sophienhöhe. They even plan to flood the mine when operations are complete using Rhine river water. This would make it the second largest lake in Germany and a massive new addition to the landscape. They even insist on plans that try to reintroduce flora destroyed by the mine across the region. However, the biodiversity and environmental policies of RWE and Hambach mine have come under extreme criticism. The Sophienhöhe is seen as an excuse, a hill with some trees cannot replace an ancient and vitally important forest. Meanwhile, filling the hole would be a massive undertaking, diverting a large part of the Rhine would be required to fill the 20 mile wide hole. Further fears of runoff from the Sophienhöhe, a slag heap, has the potential to acidify the new lake which would destroy the chances of life for decades to come. Furthermore, any renewable energy sources like hydro or wind that could be placed at the site would be impossible. The loose ground from years of mining and upheaval would make infrastructure unstable. RWE has

38 Jansen, “Energy production versus natural heritage - how lignite destroys an entire region”
40 Imboden, “Risks and opportunities in biodiversity management”, 3.
41 Buchsbaum, “Dead lakes, dry holes”.
42 Imboden, “Risks and opportunities in biodiversity management”, 17.
43 Buchsbaum, “Dead lakes, dry holes”.
attempted to save face by implementing “sustainable” procedures as they tear the land apart. Unfortunately, for many people and the forest, it is too little, too late.

Any time a pit mine is created, untold destruction and disruption in the environment will follow. The massive size of the Hambach mine only serves to amplify the impacts felt by any sort of industry or ore extraction. As machines consumed the old and important Hambach forest, unique ecosystems disappeared as organisms and the environment collapsed. Because the mine was built in the 1970s, an environmental impact statement was never done as it was not a requirement at the time. Therefore, with no clear baseline the destruction can never be accurately quantified. Although we may never know the exact cost of extracting this lignite, the air pollution, water pollution and the destruction of the forest make it clear the cost of powering Cologne is too great as the ends do not justify the means.

Social Impact

As the mine has expanded to feed the growing energy needs of Cologne, the people within the area of Hambach forest have suffered as a result. The expanding mine has negatively influenced the surrounding villages. In order to make way for the expansion of the pit mine, numerous villages have been destroyed and abandoned with more to follow. These villages have become a sacrifice for the dirty fuel. While the mine has harmed the people living near the mine, RWE has undergone an extensive rebranding process aiming to hide the truth of their operations and to be seen as environmentally responsible.

In an initiative driven by the German government, dozens of historical villages have been wiped off the map by the ever consuming chasm. In the time the mine has been operating, four entire villages have been evicted. Although they claimed the removal was “for the public good”,
they forced evictions onto the residents with little regard for family history or what was important to the citizens of these towns\textsuperscript{44}. Although four towns have been removed so far, two more are scheduled for demolition but it may reach as high as four to six more villages\textsuperscript{45}. Hambach mine is not alone in this destruction either; another nearby lignite pit mine called Garzweiler II threatens communities as well. One such town near Garzweiler II called Immerath has been marked for death by the German government\textsuperscript{46}. The story was similar to those near Hambach mine, the citizens were forcefully evicted from their homes and there was nothing they could do about it.

When facing the destruction of their lives and ancestral homes, many Germans were willing to put up a fight. A non-profit organization called \textit{ Alle Dörfer Bleiben!} (All Villages Stay) has emerged to fight for villages threatened by pit mines in Germany. Like many organizations tied to protesting the Hambach mine, it is also an environmental organization and advocates for renewable energy alternatives. They have criticized the German government for their policy especially since coal as an energy source is on life support. Germany is planning to phase out other types of coal within the next decade and yet they plan to expand the mine and destroy a number of villages. On their website they say, “As a united, diverse movement, we are stronger than the corporate powers and have broad support from the population”\textsuperscript{47}. In doing so they effectively highlight the struggle against the mines, a corporation taking what it wants. Many people are seeing their homes destroyed while they have no say and so collectively, they hope to make a difference.

RWE has attempted to address the issue of removal and they are not without some

\textsuperscript{44} Hadj-Hamdi, “The Battle for Villages and Forests in Germany’s Coal Country”
\textsuperscript{45} Jager, “Germany’s Sluggish Coal Phase Out Sparks Anger”
\textsuperscript{46} Schauenberg, “As Germany phase out coal, villages still forced to make way for mining”
\textsuperscript{47} Alle Dörfer Bleiben!, “Aufruf”
support for the expansion of the mine. In their 2015 impact report, RWE only acknowledged the possibility of “stress” and “trauma” brought on by relocation and removal from ancestral lands. Despite this acknowledgement, RWE admits to nothing. They end the section by concluding that further studies are needed to truly understand and confirm the mental trauma of removal. They do however acknowledge that “If the negative impacts are confirmed, RWE should consider if resettled villagers could be partly compensated through… the establishment of a social fund”\textsuperscript{48}. They have also tried to rebrand themselves, studies show that RWE has been trying to control the narrative. Through lobbying and political entrenchment they have attempted to create the narrative that mining is “part of the ‘green economy’ and made ‘sustainable’”\textsuperscript{49}. RWE is not without local support either. North Rhine-Westphalia, the state where Hambach is located, has a history of industry and mining. This means they’ve employed many locals for decades, including those from villages that are threatened by the mines’ very existence. One resident, when sharing her opinion on the mine said, “I don't like every aspect of it, especially concerning the environment - but they do something about it with their recultivation, and in a wider sense the mine ensures a lot of jobs. I'm not against it … on the contrary; my brothers also work in the mine”\textsuperscript{50}. The coal industry and mine have been important to the economy of the area for decades. They have been a source of labor and advancement for many locals. Removing this source of employment will not come without consequences. Although the consequences would be detrimental to those employed, the fleeting aspect of the coal means the mine is already scheduled to close within the next decade or two.

Hambach mine and those similar to it, have torn a hole in the landscape of the surrounding area, but also the fabric of society that held it together. Although the mine has

\textsuperscript{48} Imboden, “Risks and opportunities in biodiversity management”, 17.  
\textsuperscript{49} Brock, “Normalising corporate counterinsurgency”, 2.  
\textsuperscript{50} Hadj-Hamdi, “The Battle for Villages and Forests in Germany’s Coal Country”
provided employment for a few locals to extract the lignite, the consequences have been severe. In partnership with the German government, villages have been razed to make way for the expanding maw that is Hambach mine and many other pit mines in the region. These homes can never be replaced and communities can never be restored. Just like lignite, their futures are fleeting.

The Protest Movement

The construction of the Hambach pit mine has not gone without controversy throughout its construction over the years. As the mine has slowly consumed the forest, locals and environmentalists from across Germany have become increasingly alarmed by the amount of forest being destroyed. For years environmental activists from across Europe have looked to the forest as a symbol of the environmental struggle. Because the scenario is an ancient forest up against the greed of humans looking for more toxic fossil fuels, the fight for Hambach forest is emblematic of the fight of environmentalists everywhere. Across the world, environmentalists are looking to drive humanity toward a carbon free world, one that can protect our ancient forests from further destruction.

The first activism to touch the forest was in 2012 and set the stage for a hard fought decade of protests. As a form of protests, in order to stop the forest from being logged and therefore, removed protestors began to construct treehouses. After building these treehouses, the protesters began to squat in them. By living in these treehouses, the protesters are able to use their presence to stop a tree from being cut down. As the protests expanded their treehouses they formed “villages” high above the forest floor that enabled them to live year round in the forest.

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52 Connor, “Protesters raise spirits of treehouse dwellers”
According to activists, the purpose of the treehouses is two fold. One, the presence of protesters keeps a tree standing and secondly, being high in the canopy makes eviction incredibly difficult\(^{53}\). Although protests began in 2012, they have only continued. As hambachforest.org says “It is important to keep them squatted 365 days a year”.

Protesting in Hambach forest involves more than a permit and people thrusting signs into the air. The “Hambach Forest Defenders” as they call themselves engage in “battle” on a frequent basis with the mining company (“German electric company shitheads” as the Defenders describe them) as they attempt to tear down the forest\(^{54}\). Battles are fought over meters of land, each side refusing to give an inch. The high point is in the winter, November to February which is the logging season. Protesters utilize barricades, sometimes flaming, sometimes not, to discourage both police and loggers from entering the forsaken forest\(^{55}\). The Defenders engage in other tactics as well, including vandalism, encouraging animals to return (loggers cannot harm endangered species), and lawsuits.\(^{56}\) One such lawsuit, by BUND aimed to halt the clearing of Hambach. Unfortunately it was rejected in 2019 but numerous other lawsuits have persisted and demonstrated the numerous ways activists can fight back\(^{57}\).

As the protesters continued their struggle against the mining company, they began to gain recognition across Europe, becoming a symbol of environmentalism. Hambach Forest in part is an important battleground for Europe’s environmental future because of the coal it sits on. Because the lignite coal is used for power plants in Cologne, Germany which are the largest emitters of CO\(_2\) in the European Union\(^{58}\). The forest also became a symbol across Europe because of the environmentalists inhabiting it. Many live in the forest for years and their

\(^{53}\) Hambach Forest .Org “The Occupations”
\(^{55}\) Jus, “An Update from Hambach Forest Defenders”, 11.
\(^{56}\) Anonymous, “An Update From Germany’s Hambach Forest”, 19.
\(^{57}\) Whermann, “Court Rejects Lawsuit Aiming to Protect Hambach Forest”
\(^{58}\) Jager, “Germany’s Sluggish Coal Phase Out Sparks Anger”
continued dedication from 2012 up into present day shows the importance of perseverance\textsuperscript{59}. One activist echoed the determination of the protests, “There are lots of people dying because of global climate change, which is caused here, so I think I have to use my privileges to stand against that. I have to do it because I can do it.”\textsuperscript{60} For the protesters, it is not just about the forest but the larger environmental struggle Hambi (the pet name given to the forest by locals) represents. Their determination has continually generated press attention, only furthering their cause by gaining notoriety and led to them receiving visits from climate leaders like Greta Thunberg. Early in the protests, Hambach Forest became a symbol bigger than itself. It began representing a larger struggle for the environmental future of not only Europe, but the world.

After 2012, as protests and squatting in the forest continued, the challenges faced by the protesters mounted. Occupation continued mostly uninterrupted until 2018 when the police stepped up their confrontational tactics. They began by raiding and attempting to clear the forest of protesters and barricades as the mining company sought to further expand the mine deeper into the forest\textsuperscript{61}. Despite removing many squatters and clearing the forest for further logging, massive protests formed in nearby cities. Thousands of protesters descended on the forest and began disrupting mining and police operations. Some blocked coal trains, some attempted to access the mine and others stormed the forest\textsuperscript{62}. Hundreds of people were arrested but the message was clear, Hambi wasn’t going down without a fight. As a result, the previously mentioned BUND lawsuit led to a halt in logging operations, with the protests weighing heavily on the decision\textsuperscript{63}. Although the lawsuit was rejected a year later, the pause reinvigorated the fight and allowed protesters to improve their defenses, showing the non-stop dedication required.

\textsuperscript{59} Douglas, “Police tackle anti-coal activists’ eight-year blockade”
\textsuperscript{60} Connor, “Protesters raise spirits of treehouse dwellers”
\textsuperscript{61} CBS News, ‘Cops Swarm ancient forest as activists fight coal mine plans”
\textsuperscript{62} “Thousands protest to save Hambach Forest”
\textsuperscript{63} “Thousands of Anti-Coal Protesters Celebrate German Forest’s Reprieve”
Hambach Forest has been reduced to one-tenth its original size. It is a small forest, only about 1,300 acres remain (about 2 square miles) and yet as it reaches across Europe, its political impact is that of an area much larger. The activism in Hambach forest has brought together not only a town, but a country and a continent. Environmentalists everywhere are heeding the call of protest because they understand the greater symbolism of the forest and what its survival means. Not only does Hambach Forest symbolize the greater environmentalist movement in Europe, but it has inspired further action. From cement companies in Switzerland, to high rises in Sweden to a forest in the foothills of the Carpathians, activists have seen the success of Hambach Forest’s Defenders and are taking a stand in their home countries. The fight for environmentalism around the world continues to grow as people rise up against climate change and other industrial driven threats to the world's health and well being. Fortunately, with activists like the Defenders of Hambach Forest, the battle is in good hands.

**Conclusion**

In 2020 the German federal government in collaboration with the four leading “coal states” (North Rhine-Westphalia, Saxony, Saxony-Anhalt and Brandenburg) agreed to phase out hard coal by 2038. Although this does not cover “brown coal” or the lignite mined within Hambach forest, the agreement was sure to leave it out. The agreement aimed to “ensure” the preservation of Hambach Forest which has become an international environmentalist symbol. Although both policies need to be officially ratified into law, the fight for Hambach forest has (hopefully) been won. However, coal in Germany is still a persistent issue. For one, coal will continue past 2038. They will still use low grade coal for power, especially as the country shifts away from nuclear energy at an incredibly fast rate (the energy priorities are also controversial).

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64Hambachforest.org, “The Occupations”
Lignite is needed to make up the gap left by the reduction of nuclear and other energy sources. Germany is planning to invest in yet another coal power plant, sending unclear signals on its priorities and goals. Although activists may have won the battle, they have not won the war.

65 Stam, “Germany agrees to pay-out to states and companies in coal phase-out deal”
Images

Figure 1.

Coal in Europe 2019
ignite production, hard coal production & imports

EU-28 million tonnes
- Lignite 308
- Hard coal 67
- Imports 134

Source: EURACOAL members – * 2018 data
Note: bars show million tonnes of coal equivalent (Mtco) while figures at top of bars show millions of physical tonnes (Mt)
Figure 2.

Lignite mining in Hambach Forest

- Coal excavation pit (as of June 2018)
- Already cleared land
- Hambach Forest
- Possible cleared area from October 2018
- Edge of mined area in 2020 if mining continues
- Mining rate of 120 meters per year

Source: RWE, BUND  © DW
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