Interactive Qualifying Project Title

Environmental Justice and EPA's 2 year Draft Plan

By
Isaac N. Silva

Environmental Justice and EPA's 2 year Draft Plan

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by
Isaac N. Silva

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Professors Krueger, Robert and Looft, Fred J
Worcester Polytechnic Institute

ABSTRACT

This IQP report brings a brief description of the Environmental Justice movement and its history in US and some examples on how it sparked a worldwide concern on Environmental Racism. This report will also describe the many problems society has to face due to that injustice, its causes and consequences as well as some programs that help minimize the damages. Here I will mainly focus on a two year program the U.S. Environmental protection Agency developed to turn contaminated land into areas with renewable energy installations and how that program links to disadvantages communities that suffer with the environmental injustice.

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CHAPTER 1: Introduction

The goal of this project is to have an understanding of the Environmental Justice movement and EPA's two year project plan called "RE-Powering America's Land Initiative Management Plan". Here I will try to expose a link between the two and how disadvantage communities could be affected by this EPA program.

The Environmental Justice movement began in the United States in early 1980s sparked by questions of various groups about why low-income and minority groups were exposed more often to hazardous waste than whites and the wealthy society.

Environmental Justice has many concepts and it has being shaped more and more along these 30 years of existence, but the basic word that describe Environmental Justice here summarized as EJ is "equality". EJ is the fair treatment and share of environment benefits among all. Despite race, culture, ethnicity, class, income, gender, deprivation, age, disability or educational level; everyone deserves a fair environmental treatment enforced by environmental laws, regulations and policies.

This project will show some examples of the many environmental problems minority groups are exposed to. Problems such as landfills, air pollution, toxic and hazardous waste, contaminated land, noise, water of poor quality and emissions. What are these environmental problem root causes and what are the consequences and impacts of these issues to the communities subjected to them for a long period of time.

Since the EJ movement many projects were developed to help the communities that suffer with such called environmental racism. EPA's draft plan is a project that encourages the development of renewable energy exploration in contaminated sites. Since a lot of contaminated sites are located among disadvantage communities, we will explore how that program can affect these groups; if this program is being beneficial or not to these communities or it is only another form of Environmental Injustice.

CHAPTER 2: Examining Environmental Justice

"Environmental Justice is the idea that everyone has the right to a decent environment and a fair share of the earth's resource." (*Friends of the Earth Scotland 1999*)

This concept of Environmental justice seems clear and fair, unfortunately I find it to be not enough and just too broad. We all should be able to have access to a healthy environment; not only speaking about clean air or clean rivers but a larger concept. Handicaps and elderly should have easy access to buildings, transports, people have the right to sanitation, and nice parks and recreation projects should be for everyone not only on high value areas.

EPA describes EJ as:

"Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. "

-EPA

EPA describes EJ as a subject which can be organized and controlled by the system and organizations.

The Environmental Justice subject is directly related to the different distribution of the environmental benefits and the "bad Habits" of the environmental legislation and policies, as well as the environmental problems among various social groups; which means that, vulnerable groups of a given community, such as the low income population and minorities, racial or ethnic groups, among others, became over the years targets and disproportionately were affected by a negative effect of the environmental legislation. These social minorities are the most affected by these problems that we will describe further on.

Social Minority groups could be listed as for:

- Race and Ethnicity
- Nationality
- Class
- Income
- Deprivation
- Gender
- Single parent families
- Older People
- Children
- Indigenous people
- Disability or Special Needs

In some third world countries such as Brazil; this discussion is based on the premise that all state laws and acts related to the implementation of policies in the public interest have a distributive effect, affecting the transference of benefits and costs among different social groups. Sometimes the

costs and benefits are simply financial resources, as occur with the social benefit concession to determined group such as, elderly and handicapped or the installation of public equipment in certain areas such as a park or a school. These advantages, beneficial to specific groups, are financed by the tax collection of contributors that a lot of times are not part of the benefited groups. However, the distributive effect of environmental public policies are not limited to the financial aspects, they can also expose groups to environmental favorable conditions and to disfavor others harming some areas excessively. *(EJ Brazil)*

The practical of placing installations of sewers and landfills in areas habited by minorities such as the low income worker population and the ethnic minorities as black and foreign; are not from 30 years ago to today, having been exactly observed since the antiquity. It is certain however that the movement of Environmental Justice born in the United States in the 80's definitely contributed to expose worldwide correlations of environmental degradation and social injustice.

2.1. Environmental Justice History

The USA Environmental Justice Movement was born from social, territorial, environmental and civil rights fights.

At the end of 60's, the concept of "environment" was redefined in terms of striking against the inadequate conditions of sanitation, of chemical contamination in places of habitation and work and improper disposal of toxic and hazardous waste. During the civil rights movement the notion of geographic equality was set in motion, as "referring to the space and location configuration of communities in its proximity to the dangerous sources of environmental contamination.

Environmental contamination Sources and problems such as:

- "dirty industry" installations
- Oil drilling and mineral extraction
- Abandoned Toxic garbage deposits
- Stations of sewer treatment
- Refineries and paper factories
- Emissions
- Accidental Hazardous releases
- Waste; landfills; incinerators
- Contaminated Land
- Brownfield Land
- Lead in paint and pipes
- Noise
- Poor water quality
- Poor air quality
- Transport
- Forest fires
- Greenspace
- Nuclear power stations
- Climate change (discussed very often in the past years)

Most of these will be discussed further in the report.

In the 70's, unions worried about occupational health, environmentalist groups and organizations of ethnic minorities got together to elaborate in its respective guidelines what they understood for "environmental urban topics". Some studies showed already the different distribution of the pollution and race exposed to it. In 1976 to 77, diverse negotiations had been carried through trying to combat the toxic and dangerous garbage localization in areas of residential concentration of black population community.

In 1978 a case of chemical contamination in *Love Canal, Niagara, State of New York*, people from a middle low class community discovered that their houses were built next to a canal that had been land filled with chemical, industrial and military waste about 25 years before. Birth defects and a disturbing high rate of miscarriages were some of the consequences that the community of the Love Canal area suffered with the long exposition to these chemicals.

Stringfellow Hazardous Waste Site in California was another disaster in late 1970s early 1980s uncovered. The location had a dumping toxic waste site which leaked to the groundwater for over 20 years due to land contamination, spills and rivers overflowing with heavy rain. In early 1970s residents started to complain of healthy problems and starting blaming the toxic dump site. In 1978 a heavy rainstorm, flooded the pits and estimated close to 1 million gallons of liquid waste were running through Glen Avon. Children in nearby schools and neighborhoods, not knowing what the brown water had, played in the toxic wastes stomping in the puddles and pools, making beards out of the foam.

Shortly afterwards, in 1982, people of the black community of *Warren County*, North Carolina, had also discovered that one landfill of contaminated by PCB (polychlorinated biphenyls) was about to be installed in its neighborhood. This would be a historical date as it turned to be the first national protest made by the African-Americans against what they had called "Environmental racism". From this date on, the black movement touched congress and the General US Accounting Office lead a research that it showed that the distribution of the deposits of hazardous/dangerous chemical residues, as well as the localization of industries that produces a lot of pollution had nothing of random: they overlapped and followed the territorial distribution of the minorities in the United States. Sixty-nine percent of his community was non-white and about twenty percent of the residents had incomes below the federal poverty level.

In 1983 an official research from the GAO - United States General Accounting Office - found four landfills of hazardous waste in Region 4 of EPA (Environmental Protection Agency), which is Alabama, Florida, Georgia, Kentucky, Mississippi, South and North Carolinas and Tennessee. Three of these four landfills were located in African-American communities, even though the black community consists to be only one fifth of the population of the region.

The North American citizens started to organize in national coalitions. People of Love Canal they established first the Clearinghouse for Hazardous Waste, Inc. (CCHW), and then the Center for Health, Environment and Justice (CHEJ), that today it operates in the support of the communities that face similar problems. The black movement created Citizens against Nuclear Trash (CANT), among others; in 1987 the United Church of Christ Commission for Racial Justice ordered a research in a national level study on hazardous waste and race

The Commission of Racial Justice of United Church of Christ research was the start of the Environmental Justice Revolution, that it showed that the racial composition of a community is the biggest variable to explain the existence or inexistence of deposits of commercial/industrial hazardous waste. It was then proved that the ratio of residents that belong to ethnic minorities in communities that shelter deposits of dangerous residues are twice of the ratio of minorities in the communities unexposed of such installations. The 'variable' race showed to have a stronger correlation with the location distribution of the hazardous waste than the 'variable' of low income. Therefore, even so the factors of race and social class have shown a strong link, the race showed a more powerful indicator of the "coincidence" between the places where the people live and those where the toxic waste are deposited.

Based on this research that reverend Benjamin Chavis expressed "Environmental Racism" defining it to be "the disproportionate imposition - intentional or not - of hazardous waste to the color communities". Among the clear facts, they had been listed as the inexpensive land availability in minorities communities and its neighborhoods, the lack of opposition of the local population because of a weak organization and lack of typical political resources of the communities of "minorities", the lack of mobility of the "minorities" in reason of residential discrimination and the lack of people of the "minorities" in the governmental agencies responsible for decisions of waste location. It turned out to become evident that market and discriminatory practices of the governmental agencies concurred together for the production of the environmental inequalities. Also that the discriminatory distribution of the risks meets in the supposed weak political force of the social groups in the areas of destination of the dangerous installations, said these communities "lack of knowledge", "no environmental concerns" or "easy to manipulate"

From 1987, few organizations had started to strongly argue the links between race, poverty and pollution and researchers had initiated studies on the links between environmental problems and social inequality, looking to elaborate tools of an "Environmental Equity Evaluation" that it has a goal of introducing social variables in the traditional studies and researches to understand better who were getting affected by environmental inequalities. In this new type of evaluation, the research would involve, as co-producers of the knowledge, the people from the bad affected environmental social groups, making possible an appropriate analytical integration between biophysics and social processes. The goal was to gather the information that the ethnic groups, workers, and communities know about their environment and disclose to them that that knowledge must be seen and used as base for development of non discriminatory environmental policies.

Changes were required at State level. Pressured by Congressional Black Caucus, in 1990, Environmental Protection Agency of the government of U.S.A. (EPA) created a work group to study the environmental risk in low income communities. Two years later, this group would conclude that it had lack of data to discuss the relation and links between equity and environment and recognized that the available data pointed disturbing trends, suggesting, for this reason, greater participation of the low income communities and minorities in relation to the power to decide process and environmental policies.

In the south of Louisiana, in a region known as the Cancer Alley, and also in the black community of Alabama, it was found a large concentration of incinerators and deposits of hazardous waste. The largest landfill of toxic waste of the United States is located in the city of Emelle, in Alabama, where the black community is 90% of the population and 75% of the residents of the Sumter County. The southeastern of Chicago, where they have a population of one hundred

fifty thousand people, 70% are blacks and 11% are Latinos, had in 1991 according to Greenpeace, fifty landfills of toxic waste, one hundred plants (of which 7 chemical industries and 5 steel metallurgies) and one hundred and three abandoned toxic waste deposits in their community.

"Environmental justice is defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies. Fair treatment means that no group of people, including racial, ethnic or socio-economic groups should bear a disproportionate share of negative environmental consequences resulting from industrial, municipal and commercial operations or the execution of federal, state, local and tribal programs and policies." Bullard, 2000

The black communities are not the only target of the practice of locating "strategically" the deposits of dangerous residues and incinerators: according to Bullard. California, the Latin occupation of the east of Los Angeles and Kettleman (an agricultural community of about one thousand and five hundred people, of which 95% are Latin) also are target of these waste location choices. The same it is said of the Native Americans: more than 36 Native American reserves had been targets of the location of landfills and incinerators: In 1991, the Choctaws of the Mississippi defeated a project to place one major landfill of 466 acres among their land. In that very same year, a Rosebud reserve in the South Dakota was threatened by a company of Connecticut that was considering constructing a landfill of 6 thousand acres.

In 1991, the 600 delegates at the First National People of Color Environmental Leadership Summit had approved the "17 Principles of Environmental Justice", establishing a national agenda to redesign the environmental policies of USA in order to incorporate the guidelines of the "minorities", Native Americans, Latinos, African-Americans and Asian communities, trying to change the axle of gravity of the Environmental activity in USA. The Environmental Justice movement had a major influence of the American legislation, such as, for example, the one that says respect to the procedures for clean-ups (decontamination), the legislation on the right to the information on what exists or will exist in one given neighborhood ("Right you know Act") and the creation of funds directed to the affected communities, giving financial resources to them to contract technical and legal services.

2.2. Environmental Racism / Environmental Injustice

The movement of Environmental justice was consolidated as a national multicultural and multiracial network, and more recently an international network bringing together various groups, such as, civil rights groups, community groups, worker organizations, churches and intellectuals/academics in the confrontation of "Environmental racism" as one form of institutional racism. Once was to cast civil rights and environmental concerns in one and only agenda, being surpassed twenty years of suspicion between environmentalists and black movement.

The fight for the recognition of the "Environmental injustice" in USA gave important steps for the plea of the proper model of development that dictates the space distribution of the activities. The movement says hazardous waste for nobody and not simply to cause a space displacement of the pollution, exporting the environmental injustice to the countries where the workers are less organized. Was thus treated to argue the guidelines of the call "just transition", in order that the fight against the pollution inequality did not destroy the jobs of the workers of the pollutant industries or penalize the populations of the less industrialized countries for where the large companies would tend to transfer their "dirty plants". The movement of environmental justice

looked for a way; to self internationalize developing a global resistance to the world-wide dimensions of the space reorganization of the pollution.

If, on one hand, it is known that the market works in the direction of the production of the environmental inequality; the lowest costs of location of installations with toxic waste point with respect to the areas where the minorities live. The speech of the movements does not consider, on the other hand, disclosing the omission of the public policies favoring the perverse action of the market. The experience of the environmental Justice movement looked to organize the populations to demand public policies capable to forbid that the environment show determinative discrepancies of the social and racial inequality.

2.3. Environmental Problems

The most common environmental problems that communities are affected and subjected to are:

- Toxic pollution
- Transportation
- Landfills

The next pages we will show what causes them and how people are affected by; its risks and its consequences.

2.3.1 Toxic pollution

Toxic pollution is one of the most common problems of Environmental injustice suffered by the communities and the most harmful one to the human being and the environment subjected to it for a long period of time. At the beginning of the EJ movement most of the issues were directly related to toxic waste dumps and to this day is still a huge problem despite EPA, various other organizations and the system apply many regulations and policies to better control the problem.

Toxic waste same as hazardous waste, is a dangerous material that can contaminate air, earth and water and is harmful to living organisms. These materials as most chemicals are not easily recyclable and are usually abandoned and disposed in dedicated hazardous waste centers, landfills and incinerators. The effects of toxic waste can be very harmful to people health and the environment. The consequences of poorly disposed toxic waste can impact the environment long after its effect on individuals. Examples of these after effects were mentioned here earlier as the case of the Love Canal which increased highly the rate of birth defects and miscarriages over 20 years of the community being exposed to the hazardous covered landfill and the tragedy occurred in *Stringfellow Hazardous Waste* in California

The Toxic Wastes and Race at twenty 1987-2007 report from the United Church of Christ is a follow-up study to the landmark study *Toxic Waste and race in the united states* also from the United church of Christ released in 1997 finding a clear racial pattern where dangerous waste sites are located in locations inhabited by people of color and placing EJ for the world to see. The 2007 report shows that after 20 years the environmental racism continues to happen and the minority communities are targets of these dangerous waste sites.

Figure 1
The Toxic Wastes and Race at twenty 1987-2007 report

Most toxic pollution is caused by heavy industries, manufacturing sites, Steel mills, Chemical plants, abandoned industrial sites and coal-fired plants. These facilities can have a negative impact on the values of nearby properties which are attractive for lower income population and also for the hazardous waste companies to buy land to dump its waste.

Air quality is another major problem of toxic pollution. The *clean air task force* released a report on 2002 about how harmful are the coal fired power plants to the health of the communities surrounding them and also link the location of these plants to the population that leave nearby them.

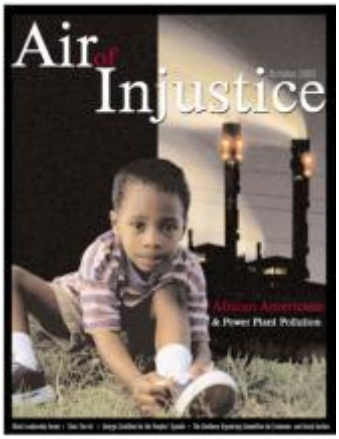

Figure 2

In this report the numbers are alarming on how bad the situation is and the correlation between power plant pollution and African-Americans. In 2002, 71% of African Americans live breathing air below federal pollution standards, compared to 58% of the white population. 68% of African Americans live within 30 miles of a coal-fired power plant.

Asthma is one of the most common healthy problems caused by poor air quality and African Americans account for a rate of 3 to 1 of whites going to an emergency room due to asthma.

Coal-fired power plants release millions of pounds of a various chemicals to the air, water and landfills. Pollutants such as:

- Sulfur dioxide
- Particulate matter
- Mercury
- nitrogen oxides
- carbon dioxide

Toxic waste is associated with carcinogens. These substances can cause mutations in the body, which can also lead to cancer. Toxins buried below ground level can contaminate underground water streams, which are usually empty out into nearby water sources. These pollutants also affect surrounding wildlife.

The Environmental Protection Agency is responsible for dealing with toxic waste. The agency has a program called Superfund, which is designed to clean up abandoned and illegally dumped hazardous waste sites.

Figure 3

"Shipping toxic waste to communities of color is not green. It's mean and it's unjust and some of us think it should be illegal."

Bullard

The EPA Superfund program has successfully cleaned or organized isolation of various contaminated sites. Some examples of successful clean-ups are:

The Mohawk Tannery Site in Nashua, NH; the tannery for more than 60 years contaminated the Nashua River and various lagoons nearby.

The Atlas Tack facility is located in Fairhaven, MA; had contaminated water and soil with various harmful chemicals such as pesticides, PCBs and cyanide.

2.3.2 Transportation

It is not news that cars pollute and it is not new that the most polluted air due to transport are in fact in urban areas. Our everyday commute car to suit our lifestyle, public transport and mostly the big engines which transport goods between factories, supermarkets, landfills and incinerators due to diesel engines tons of pollutants are thrown into the air. The most toxic pollutants due to diesel engines are Particulate matter and oxides of nitrogen.

Particulate Matter (PM) is solid particles sometimes referred as 'black soot'. PM is often highly visible due to its size and has raised the public's awareness of diesel engine emissions along the years. PM are linked to health problems such as eye and nose irritation, coughing, decreased lung function, increased respiratory illness and premature mortality. Small PMs are even more dangerous as they are easily inhalable, PM can cause other harmful toxins condense. These toxins have been shown in studies to cause the types of cellular changes that can lead to cancer. In August 1998, after 10 years of review, the *CARB identified diesel PM emissions* to be a Toxic Air Contaminant, based on its potential to cause cancer and other harmful health effects.

Oxides of Nitrogen (NOx) are invisible toxic gases that cause acid rain. Inhalation of NOx results in decreased lung function, shortness of breath, chest pain, wheezing, coughing and irritation of the eyes, nose and throat. According to EPA, a study published in November of 2004, followed up on deaths over a 14-year period, increases in ozone levels were linked with spikes in the number of deaths in 95 urban areas around the US.

Diesel legislation is growing and applying heavy fines to help reduce the diesel problems. Catalytic converters, catalytic mufflers, diesel particulate filters are among some of the equipments the technology today is helping us in this emissions reduction.

The *Environmental Massachusetts Organization* blames diesel pollution to be (annually) responsible for:

- 450 premature deaths
- 700 non-fatal heart attacks
- 9,900 asthma attacks
- 13,000 respirator symptoms in children
- 60,000 work loss days

Transportation is not only responsible for air pollution but it also brings noise pollution and traffic. There is no easy solution for the problem. *Philadelphia* and many other cities have some programs to reduce transport problems, such as incentive for people to use alternates healthy transport to work, like cycling programs; incentive people to share commute auto rides to work. And some places are giving incentives and creating deadlines so in a few years a percentage our average fossil fuel cars are substitutes with electric cars. The electric technology among with biodiesel and some other alternates are still evolving and have a long way to go.

2.3.3 Landfills

The whole world generates waste. We are all causes of creating trash on a daily basis. EPA says an average of 4.50 pounds of trash is the amount of a person's solid waste created every day. The statistics of an average city (*EPA source data 2008*); the city waste is determined to be fifty five to sixty five percent generated by the residents and the rest is from commercial and institutional locations, such as schools, hospitals, and businesses. All these tons of material are collected and transported to recycle centers, incinerators and the so called Landfills. Recycle is an alternative clean option of waste disposal that is growing more and more in the human conscience. In 2008 the US recycled about 83 million tons of waste avoiding about 182 million metric tons of CO_2 being released due to incineration and emissions.

EJ and Landfills

It is a fact and many studies shown that neighborhoods inhabited by minorities are target location to receive installations such as sewer treatment plants, garbage dumps, incinerators and landfills. Communities of color are mainly hit by this environmental racism.

> "Why do some communities get dumped on while others do not? Although waste generation correlates directly with per capita income, few garbage dumps and toxic waste facilities are actually built in the suburbs. Following the NIMBY principle - "Not In My Backyard" - white homeowners have repeatedly mobilized against and defeated proposed sittings of so-called "locally unwanted land uses" (LULUs) -- such as garbage dumps, landfills, incinerators, sewer treatment plants, garbage transfer stations, and recycling centers -- in their neighborhoods. Many have used the same approach to defeat proposed sittings of prisons, drug treatment units, low-income public housing, and homeless shelters in their communities. By contrast, it has been difficult for millions of African Americans in segregated neighborhoods to say "not in my backyard" when they do not even own backyards. Whereas two-thirds of all Americans own their own homes, only about 44% of African Americans do."
>
> Bullard, "Race and Environmental Justice in the United States"

Landfills problems

Landfills bring many problems with them wherever they are installed. They cause Visual Pollution, dust, strong odor and noise due to various transports; which are also causes to other problems further discussed in this report. They also lower the Property value in the areas installed in consequence of the many problems associated with the landfill.

The biggest problem caused by the landfill are emissions; to atmosphere, land and water. Gases from landfills contain toxic pollutants that can cause cancer, asthma, and other serious health effects. Many studies conducted in landfill areas link living near landfills with cancer, where gases emitted to the atmosphere will typically carry toxic chemicals such as paint thinner, solvents, pesticides, and other hazardous compounds.

Most landfills also leak toxic leachate; even the most advanced “state-of-the-art” landfills will eventually leak and pollute nearby groundwater.

Landfills are also due to the so called “greenhouse effect”, a significant source of methane emissions. Methane is a toxic climate-changing gas that is 25 to 72 times more potent than carbon dioxide.

Greater Detroit Resource Recovery Authority is the largest incinerator of its kind in the United States. According to the *Ecology Center*, the incinerator burns more than 700,000 tons of waste per year, about 3,000 tons per day, 60 percent comes from Detroit, the rest from its neighbors. The City spends about $77 million per year to burn and landfill its trash, nearly ten times the amount paid per ton by its suburban neighbors.

The giant incinerator is legally allowed to release more than 25 tons of hazardous air pollutants and more than 1,800 tons of other pollutants, including sulfur dioxide, nitrous oxide, particulate matter, mercury, and lead, every year. The incinerator is located in a low-income

neighborhood that is affected with various causes of health problems due mostly to the air contamination. The neighborhoods surrounding the facility have one of the highest rates of elevated blood lead levels in the city.

The following table links the health effects caused by some air pollutants and their most common sources which were here described as Toxic waste, landfills and transport (diesel).

Table 1

POLLUTANT	SOURCES	HEALTH EFFECTS
Particulate Matter (PM)	Wood burning, motor vehicles, industry, outdoor burning, windblown dust, construction, mining, unpaved roads, diesel	Eye and nose irritation, airway irritation, cough, decreased lung function, increased respiratory illness, premature mortality
Carbon Monoxide (CO)	Motor vehicles, wood burning, open burning	Headache, dizziness, nausea, unconsciousness, death, interference with blood's ability to carry oxygen to the brain and other tissues
Ozone (O_3)	Secondary pollutant, main component of smog, formed when hydrocarbons combine with nitrogen oxides in sunlight. Sources: auto emissions, gas stations, solvents, paints, industry	Decreased lung function; shortness of breath; chest pain on deep inspiration; wheezing and coughing; irritation of eyes, nose and throat
Sulfur Dioxide (SO_2)	Burning of sulfur-containing fuel, coal-fired power plants, smelters, pulp and paper mills, diesel engines	Increased symptoms in people with asthma, asthma attacks, shortness of breath and wheezing
Lead (Pb)	Leaded gasoline, lead smelting, battery manufacturing and recycling, lead-containing paint	Motor function and learning affected; damage to the central nervous system, kidneys, and brain. Children are especially at risk.
Nitrogen Dioxide (NO_2)	Burning of fuel in power plants and motor vehicles, fertilizer manufacturing	Irritated bronchial and respiratory systems, asthma attacks, increased infections

In addition to releasing significant greenhouse gases; EPA states that for every ton of municipal trash wasted, more than 70 tons of manufacturing, mining, oil and gas exploration, agricultural, coal combustion, and other discards are produced.

Some landfills have systems that attempt to capture the toxic gases they create, as some of them can be used to generate energy for the installation itself. That practice has to be incentive to other landfills minimizing the emissions to atmosphere and increasing the perceptual of re-newable energy production.

-

Environmental Injustice is out there, almost everywhere there is a disadvantage community, and they do suffer somehow by one of the many EJ problems. Lack of political force and access to people of influence that decide where to place some types of facilities, low cost of land and people easier to manipulate, lack of access to strong tools like media. All these are some of the many reasons that unfortunately make these communities easy target for Environmental Injustice.

CHAPTER 3: Repowering America

In this chapter we will overview the EPA's two year project plan, policies and goals. Here we will describe most cases listed by EPA as "success stories" and we will discuss later on how successful they really are and for whom they might be successful.

Re-powering America's Land - EPA's draft of Land initiative management plan proposes reuse of contaminated sites, landfills and mining sites for conversion to renewable energy facilities. Green energy such as wind, solar (PVs), landfill gas energy projects, on contaminated land and mine sites, usually the green energy sources are more commonly known as.

- Solar
- Wind
- Biomass
- Geothermal facilities

RE-Powering America's Land draft has a two year project plan. That plan has a goal of decreasing wasted or not well used green space, reduce greenhouse gas emissions, and help improving economic benefits to local communities not necessarily but specially the low income communities. These benefits could include cheaper energy, job opportunities, a healthier environment, etc, with federal help. Various groups are included into the two year plan, such as state and local governmental agencies as many licenses and studies are necessary, renewable energy companies for sponsorship and guidance if possible, banks, gas and energy suppliers, the owners of the lands, volunteers and community groups, groups such as the SWAT team or to help with the site clean-up, etc.

The draft plan is divided into 2 major goals, 5 objectives and 20 actions that will be described next.

Goal 1 – provide incentives and technical assistance for sitting renewable energy on contaminated land.

Objective 1 – Provide effective technical assistance and identify incentives

Action 1 – Would be to create a team of experts in the management plan, policies, and technical data. This team would be called SWAT and shall be responsible for educating new members and staff, point of contact for information for the Google earth tool and the main responsibility of being the technical support of the project.

As technical support, the group would be responsible for generating FAQs and clarify and answer questions about the plan and its policies to developers, the communities affected, land owners, agencies involved, clean-up groups as well as help solving issues and concerns about environmental laws and regulations.

Action 2 – a group called CPA working together with the EPA coordinators have to create guidelines and policies on sitting renewable energy. This group would help to guide and better organize the site installations schedule, guiding the group if the energy installations could be seated while the contaminated site clean-up is complete or only after the site clean-up is fully complete.

Action 3 – coordinate, guide and organize with technical, legal and environmental information the necessary steps to site renewable energy on closed landfills. These sites are greatly suited for PV systems as most of them are close to roads and power-lines. CPA, ORCR and OSRTI are responsible for that coordination and to write guidelines on how to achieve that, together with the states and the EPA team.

Action 4 – RPS – renewable portfolio standard – policy that requires a minimum percentage by certain date of the electricity provided to be renewable energy. RECs – renewable energy credits – tradable certificates from electricity generated from renewable resources, two certificates are the most valuable, one is the electricity produced and sold to consumers or else and the other is the emissions avoided by that practice.

The states and EPA team has to organize and propose the plan in a way to fit the contaminated land renewable energy site into the state's RPS, getting benefits from the incentives and explore the opportunity of the RECs market.

Objective 2 – assisting communities in identifying and reusing sites for renewable energy.

Action 5 – CPA have to work with EPA and NREL in identifying new sites and request feasibility studies for installation of renewable energy in new contaminated sites such as Brownfield, petroleum-contaminated properties, gas stations and mining sites. These new projects proposals could include community input and statistic data such as grid capacity and community consumption.

Action 6 – agencies with the EPA team will develop a plan to train personnel from the contaminated site communities in the program. The main goal here is that people from the community where the renewable energy site will be installed can benefit somehow of the new installation, in this case with employment. Bringing together most of the project involved parties such as, the community group, job training orgs, investors, developers, etc.

Action 7 – CAP with the EPA team have to organize documents, portfolio and presentations specially from successful projects to better display and show to tribes, state, organizations and communities what is involved in getting it done. With specific information and data of successful history of contaminated sites converted in useful renewable energy installations. With that amount of information easily accessed by these parties, is going to be very helpful and easier to get the community, tribes, developers, land owners and groups involved on a 'new project to be'.

Action 8 – this action is a great tool as to share the information of contaminated site locations across the country. CPA, OSRTI and EPA team will drive initiatives to gather information about the location of various contaminated sites and disclose that information incorporating them to Google earth tool.

Goal 2 – create unified federal approach to promote sitting of renewable energy on contaminated land.

Objective 3 – enhance coordination and collaboration among federal agencies

Action 9 – CPA with EPA's team experience and information on showing the parties involved the benefits and challenges of sitting renewable energy on contaminated land have to

partner with federal agencies to help the community with benefits of the program, so the group can benefit from the employment created and other things such as tax incentives.

Action 10 – FFRRO, CPA and EPA team to work with federal land owners on sitting renewable energy on federal contaminated sites. Some federal contaminated land have already been used to such purpose so it would be good to share information, discuss new technologies and plans in implementing renewable energy projects together in federal lands or lands that can be with federal partnership.

Goal 3 – Improve Communication and Sharing of Data on sitting Renewable Energy on Contaminated Land to Enable Stakeholders to Successfully Reuse Sites for Renewable Energy

Objective 4 - Improve How We Deliver Information

Action 11 – develop case studies as well as disclose information on projects that have been successful and overcame barriers raised by stakeholders and unusual problems and how these barriers links to determine contaminated land.

Action 12 – CPA with EPA's team to study and document the real advantages of using contaminated sites to site renewable energy instead of greenspace and disclose that information to the groups involved, helping landowners, communities, developers and investors to understand the advantages of the program see it as a good beneficial option.

Action 13 - CPA with EPA's team to improve the toolbox with a list and information of the major issues and questions involved on sitting renewable energy on contaminated land.

Action 14 - CPA with EPA's team to improve the communication tools with better information availability, access and more interesting, like DVD's, webinars, presentations and such. These are to make the available information more attractive and to make easier the reach to stakeholders and groups out of EPA's usual reach circle.

Action 15 - OSWER with EPA's team to create a bridge with the financial industry and developers dragging their attention with a good material showing them the various advantages of the project.

Objective 5 - Clarify Liability to Address Perceived Barriers

Action 16 - OSRE with EPA's to create, improve and clarify liability tools and information involved in the sitting of renewable energy on contaminated land sites and educate the parties involved in these liability concerns.

Action 17 – CPA and OSRE with EPA's to develop guidelines and explanatory documents to potential lessees with information about liability, case studies and facts.

Objective 6 - Evaluate, Measure and Report on the Effectiveness of the RE-Powering America's Land Activities

Action 18 - CPA with EPA's team to create a list of useful information and data to gather from the sites after they have been settled with the renewable energy installations. These data would be beneficial to the program showing the economic and environmental benefits of these projects.

Action 19 - CPA with EPA's team to measure and report the progress of the program.

Action 20 - CPA with EPA's team to monitor and evaluate the re-powering land initiative 2 year program, and its goal accomplishments with periodic meetings and program evaluations looking at program improvements recommendations.

EPA Re-powering America's land initiative has the main goal of using contaminated sites as renewable energy facilities. EPA has listed through-out the USA more than 11,000 sites, a total of 15 million acres which could be used as solar, wind, biomass and geothermal facilities. This a very good initiative as the demand for renewable energy is increasing in US together with many state and federal policies and incentives. Though; as we learned earlier in this report, due to the Environmental Injustice, a lot of these sites are in communities of minorities. Here we are going try to explain how the EPA project can impact EJ and if it has a positive, negative or no effect to the communities in the surrounding areas where the projects are installed. Who are the beneficiaries of this plan?

There are several federal and state funding and tax incentives to attract developers to green projects like that. Several State and Federal grants, incentives, funds, loans, tax deductions and abatements companies can apply on their Green projects.

Due to attractive incentives, opportunities and an organized plan, EPA had achieved with many companies *successful green installations and clean-ups*. We are going to review most of the Successful stories listed by EPA and try to have an understanding if this plan is really beneficial to the communities affected or if it is only another case of environmental injustice.

Some o the projects that fit into this EPA initiative are Renewable Energy Electricity Generation Facilities installed in contaminated sites, landfills and abandoned refineries.

3.1. Casper Winds Wind Facility, Wyoming

The *Chevron Casper Wind facility* became operational in December 2009, providing 16.5 megawatts of electricity for the local grid. The wind farm was installed at Texaco Casper refinery, which operated for almost 60 years, and was decommissioned in 1982. The power generated from the facility will be sold to and distributed by PacifiCorp under a multi-year power purchase agreement. Approximately 4,400 average size homes could be powered by the 16.5 MW facility. The project did receive some resistance from the local community but Chevron was able to get the installation license. Chevron was responsible for costs with equipment and installation and the land clean-up, which did not need to be at a higher level due to the type of installation and the location of the installation was at a portion of the land that was not as contaminated as the overall area.

On *Casper wind power project FAQ* Chevron tries to answer some questions about the installations environmental concerns and benefits. Visual and noise impacts from the wind farm are considered minimum. Who benefits from the farm is the tricky question. During the installation of the farm it was open jobs to local contractors that did had right skills. Chevron was clear that all

power generated was going to be sold to the local utility provider and cannot answer for a reduced electrical bills to the community and how it will impact the real state property value around the area.

3.2. Fort Carson Solar Array, Colorado

The Army's Largest Solar Array was installed over a 15 acre decommissioned Landfill (operational from 1965 to 19732) at Fort Carson. Re-use of landfills are limited as they need costly covering, excavation and extensive clean-up for residential or business installations.

Installing PV systems at a contaminated land like that did not need much clean-up, as it mostly had only inert construction debris, 2 feet of soil was enough to cover the landfill and have the surface ready for the PV installation. The system generates about 3.2 MW, 2.3% of Fort Carson's energy consumption, which is enough to power 450 homes.

The installation will buy power from Colorado Springs Utilities (provider of Fort Carson's electricity) and sell the renewable energy credits (RECs) to Denver's utility company and Xcel Energy. The Colorado RPS requires the state to get 10 percent of its energy from renewable sources by 2015 and 20 percent by 2020.

3.3. Bethlehem Steel Winds Project, New York

Located in Lackawanna, NY the Bethlehem Steel mill was closed in the early 1970's and it used to employ about 20,000 people. After the mill closed, around 30% of the population of the city left due to the downward economy, and the site was abandoned for almost 30years. With the high contamination of the soil (steel slag and industrial waste) not much could be done to the place due to expensive and extensive clean-up necessary but as power lines, service roads and bases were already set, this site was considered ideal for renewable energy installation.

A wind turbine farm was installed on the 30 acre site generating over 50million KW/h, enough energy to power 9,000 New York homes. Traditional generation sources can generate that amount emitting greenhouse gases (GHG) consisting of nearly 23,000 tons of carbon dioxide (CO_2) and 29 tons of nitrogen oxide (NO_x).

The City of Lackawanna teaming up BQ Energy and UPC wind organized the project in a way to include the community. Two local construction firms were included in the project and during the construction and operation about 35 jobs for the local community were created, between construction, operation and maintenance jobs.

Figure 4

The generated power is sold as renewable energy certificates to Constellation New Energy, which provides power to homes and businesses and the city get $100,000 a year for the next 15years.

3.4. Nellis Air Force Base, Nevada

Located northeastern of Las Vegas, Nellis Air Force Base used 140acres of land to install a solar PV system powerful enough to provide 25% of the Air Force base electricity. 33 acres from this 140, was a former landfill operational from 1958 to 1966 that contaminated the soil and water with Polychlorethene (PVC) and Trichlorethene. The landfill was caped in 1996.

Figure 5

As not much could be done with the land without an extensive clean-up, this portion became part of the PV project. The $100 million PV system installed is capable of generating 14.2MW, enough energy to power 2,350 homes. All the power is sold at a fixed rate to Nellis AFB and the RECs to NV Energy.

3.5. West Contra Costa County Wastewater District, California

Located outside Richmond, California, near San Pablo Bay and San Francisco Bay a waste water treatment facility provides wastewater collection and treatment for communities and local facilities. They installed, over the unstable soil, with a clever concrete platforms solution a 1 MW, 10 acre PV system that will be capable of supplying 30% of the urban wastewater treatment facility's electricity needs. The installations were over an unstable soil used as a sludge-drying pond. No clean-up was done or tracked by EPA, but it is known the site is highly contaminated with wastewater sludge.

3.6. Philadelphia Navy Yard, Pennsylvania

Philadelphia naval yard was a former navy base with over 1,000 buildings and today is home to many businesses. A seven acre Brownfield (former incinerator and landfill) is the site for a 1.5MW PV System capable of powering 1,800 Homes. The electricity is sold to Exelon generation in exchange for RECs. There are more than 1,300 solar projects in Pennsylvania today, which once

completed, it will bring the state's total solar capacity to nearly 60MW, the largest solar PV facility within a major U.S. city is being built on a former Brownfield.

Some other projects from EPA are Renewable Energy Powering Remediation, which uses green energy to power landfills, recycle centers, incinerators and clean-up facilities.

3.7. Apache Powder, Arizona

Apache Powder, now Apache Nitrogen Products (ANP), manufacturer of dynamite began in 1922 and within a year the plant was producing nearly a million pounds a month. Over the years products produced included nitroglycerin, nitric acid, solid and liquid ammonium nitrate, ammonium nitrate-based fertilizers, nitric acid and aqua ammonia. At the time, these type of factory produced both liquid and solid wastes that were disposed of on the plant property contaminating the soil on the facility and groundwater not only underneath the plant's operations area, but also in the nearby San Pedro River. Principal contaminants are nitrate and perchlorate.

In August 1990 the site was placed on the National Priorities List of Superfund sites because of water and soil contamination and 18 years later in September 2008 EPA signed a Preliminary Closeout Report stating that all construction activities related to the cleanup were complete. Currently the only requirements are long term cleanup and monitoring of ground water.

The site is using Solar PV and wind energy, to power the water clean-ups. It is estimated that the cleanup costs have been reduced from the initial $25 million to approximately $2.5 million over the estimated 30 year groundwater cleanup time.

3.8. Frontier Fertilizer, California

Located at Davis, California, former farmland, fertilizer and pesticide storage, the Frontier Fertilizer contaminated the soil and groundwater through irregular disposal of pesticides and VOCs over the years. Today, the site is a ground water treatment facility near a light business/industrial park and some residential units. Over one of the remaining site buildings they installed a 5.7 kW photovoltaic system to power ground water treatment system; which is saving them about $1,500 a year in energy costs.

3.9. Lawrence Livermore National Laboratory, California

Located near Livermore, California, used as a high-explosives and material testing, due to spills, leaking pipes and leaching a former non-nuclear explosives test facility did get the ground water contaminated with solvents, VOCs, tritium, uranium-238, nitrate and perchlorate.

An aquifer close by provide water to state employees, ranch houses, fire stations and about 350 people that work in the area. The DOE owner and responsible for the site in order to reduce clean-up costs installed a 800Watt PV solar system to power the ground water pump and treatment facilities, which run for about 17 hours during the summer and about 10hours on winter days.

3.10. Operating Industries Landfill, California

Located 10 miles east of LA, California, the landfill was open in 1948 and after the years became a symbol of bad odor, visual pollution and air pollution for the communities nearby, about

20,000 people leave within 3milles. Being the source of vinyl chloride air pollution the landfill closed in 1984.

Due to a highly contaminated soil and necessary clean-up, a leachate treatment plant was installed at the landfill. Because a lot of the waste was municipal solid waste, a Biomass energy solution was a good fit as source of energy. Six 70kW microturbines were installed on the property capturing the landfill gas and converting it into energy, powering 80% of its leachate treatment plant and reducing emissions to the air.

3.11. Pemaco, California

Located on the banks of the Los Angeles River, in a mixed industrial and residential neighborhood in Maywood, California, a former Chemical mixer company from late 1940's until 1988, along the years contaminated the soil and ground water with volatile organic compounds (VOCs) as well as perchloroethylene (PCE), trichloroethylene (TCE), trichloroethane (TCA), dichloroethane (DCA) and vinyl chloride (VC).

Today the city of Maywood owns the site; with EPA help an onsite treatment plant was installed in 1998 finishing construction in 2006. In order to reduce clean-up costs in 2007 a 6KWatt PV system was installed to power the soil and water treatment facilities saving the city $3,000 yearly in energy cost and reducing 3.3 tons yearly in greenhouse gas emissions.

EPA plan also applies to Renewable Energy Powering Brownfields Redevelopment as the next example.

3.12. *Belmar Mixed Use Development, Colorado*

A former Indoor Shopping center at Colorado covering 47.5 acres and about 10 minutes from downtown center; opened in 1966 and closed in mid 90's, its soil got contaminated throughout the years with perchloroethylene (PCE) due to two dry cleaning business on its basement.

The developer, Colorado coalition, with help of state funds and EPA grants demolished the mall, cleaned the soil and water and built the first walkable downtown area of Lakewood, a mix of shops, restaurants, entertainment and homes. Over three parking garages Sun-Power installed a 1.7MW solar PV system, enough to power the parking garages, 5% of the commercial center (equivalent to 350 homes), all parking meters are solar-powered and the lighting posts are powered by wind turbines.

The fourth type of re-powering program that fits into EPA' repowering America's land plan is Retooling Brownfields for Green Manufacturing. Converting old dirty closed factories into green factory plants.

3.13. Former Maytag Appliance Factory, Iowa

A Maytag appliance plant in Newton, Iowa; was closed by the new buyer Whirlpool in 2006, leaving 1,800 people out of work in a town of 16,000 people. This occurred in the beginning of U.S. recession. The abandoned plant was 154 acres and its soil and groundwater contaminated with chromium and chemical solvents. The city with the co-owner of the site, IRG acquisitions began marketing to attract renewable energy investors after some clean-up of the soil and ground water.

With incentives from the city of Newton and State of Iowa today a wind turbine blade manufacturer (TPI Composites) and a steel and concrete wind turbine tower manufacturer (Trinity Structural Towers) are installed and operational in the site creating about 640 green jobs. These plants will generate over $500 millions in local taxes over the next 10 years and about 100 million for the landowners.

3.14. Keystone Port Industrial Complex, Pennsylvania

At Fairless Hills, Pennsylvania by the Delaware River, KIPC, a former U.S. steel plant also became house of a coke plant and chemical plant; the complex mostly closed around 1991 and the majority of the structure demolished by 1995 but a small portion where houses a U.S. steel sheet and tin facility with about 100 workers. After the years the soil and groundwater became highly contaminated by heavy metals and TCE. Because of the infrastructure, access to roads, rail and water transport the location is a great fit for industrial redevelopment.

Today the KIPC was re-developed to house green energy plants, such as Gamesa (a wind turbine company) and AE polysilicon (a producer of material for PV solar panels), creating about 600 jobs and millions in tax revenues for the city.

CHAPTER 4: Discussion

In early chapters we discussed what Environmental Justice is. The commonwealth of Massachusetts describes it as:

> "*Environmental justice is the equal protection and meaningful involvement of all people with respect to the development, implementation and enforcement of environmental laws, regulations and policies and equitable distribution of environmental benefits*"
>
> Commonwealth of Massachusetts

EPA is the authority for enforcing the laws written by the congress writing environmental regulations and policies.

EPA's Re-powering America's land plan is helping increase the US green energy power indeed as well as reducing emissions along the way. But at what cost it is being beneficial to the communities living in the surrounding areas? EPA display with fact sheets about 16 successful stories of its plan implementation. All of them did achieve EPA's plan goal of increasing green energy power and the various reasons for the installations. But where does the community fits into these plans? Their policy does not include necessarily participation of the community nearby the installation site and these communities are overall politically powerless in the event that large corporations and companies want to apply these plans. The Bethlehem Steel mill case, is a separate case were *First Wind* did contact the community, explained the plant benefits, such as producing energy pollution free and did include them into the plan in some way, with creation of jobs and yearly contribution to the city general fund, which not necessarily is going to be spend towards the community mostly affected. The site owner and partners such as the city, utility supplier company and REC's buyers are more likely the only beneficiaries of the plan.

People around these sites suffered along the years with the contamination of the soil, water and air. Unfortunately, most of these types of green energy systems do not need to be installed in a higher level clean environment. These installations require low clean-up or no clean-up at all and that land is mostly unworthy due to the higher cost of clean-ups to recover these sites for residential or business use. For that reason they are very suitable for these green energy installations. The sites were EPA is taking actions are not being cleaned nor the landfills, incinerators and dirty plants being allocated. Everything is either being transformed with new 'green' installations or the dirty sites are being re-powered with green energy. EPA says their mission is:

> *The mission of EPA is to protect human health and the environment.*

Where is the environmental protection for the community that has being subjected to these injustices for so many years? Where is the fair treatment? Only a few benefits from this plan and once more are the ones that do not have to live among these locations. EPA is so proud of themselves with EJ awards, tough policies and programs but create a plan that contributes to only aggravate the Environmental Injustice.

CHAPTER 5: Conclusion and recommendations

At a higher point of view this plan is good as it increases US green energy sources. Looking at a community level it is like "sweeping dirt under the carpet". The abandoned contaminated site seizes to exist as it now has a green energy installation (carpet) to cover the dirty contaminated land and underground water. After a while people will forget the dirt there.

How the EPA plan can turn around and aid communities with justice? A lot in the EPA's plan objectives, actions and goals mention including the community of the area affected in the organization of the project. The used word "could" include the community must be converted to "Shall" include the community. EPA has to enforce the companies to think about and communicate with the people most affected by these installations, not in a way to only give jobs or economical aid as only a few will benefit but on improving the environment for these affected communities.

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