

# Environmental Justice

Assembled by Val Toops & Caucus Staff

The impacts of environmental and climate-related degradation are disproportionately felt by vulnerable populations.<sup>1</sup> This includes the elderly and young, low-income communities, and many communities of color. This global trend is unfortunately the case in Michigan. For example, the Michigan county that experiences the highest rate<sup>2</sup> of overall food insecurity<sup>3</sup> is also home to five of the most polluted zip codes<sup>4</sup> in the state. This Michigan county is also one of the most food insecure counties in the United States (US).<sup>5</sup>

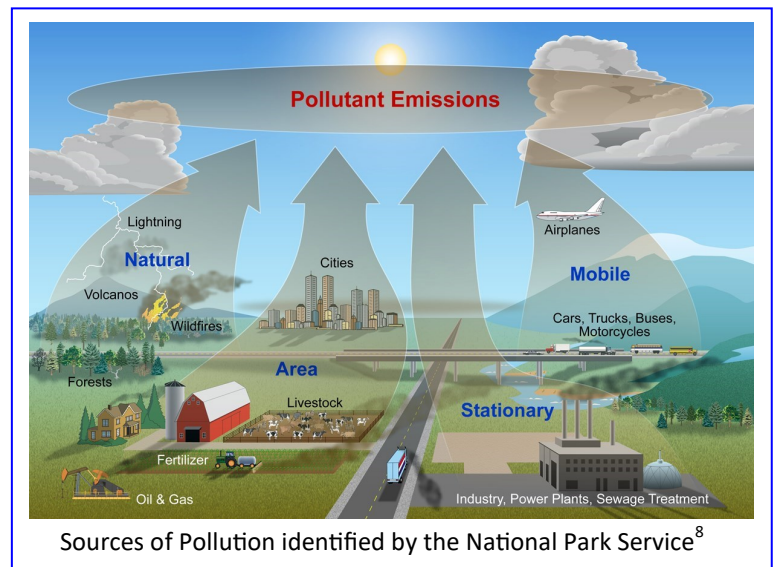
As it is the aggregate of all environmental degradation that produces disproportionate/unjust consequences for vulnerable communities, **all environmental issues are issues of environmental justice (EJ)**. From water quality to sustainable transit, climate change and renewable energy, every issue is an issue of environmental justice. In the words of former US Labor Secretary Robert Reich, "Climate change and widening inequality are not two separate issues. They're intimately connected."<sup>7</sup>

EJ fights inequity through positive environmental action, education, and activism. This action is intentionally focused to support healthy, thriving ecosystems, especially for individuals and ecosystems disproportionately impacted by environmental degradation. EJ recognizes the interdependence of all species, and champions the right to live free from environmental and ecological devastation.

## Pollution

Many EJ issues are traced to environmental quality and pollution. Dangerous contaminants enter the ecosystem through a variety of sources such as:

- ◆ Vehicles.<sup>8</sup>
- ◆ Agriculture:<sup>8</sup>
  - ◆ Fertilizer.<sup>9</sup>
- ◆ Animal waste.<sup>9</sup>
- ◆ Industrial and production facilities including:<sup>8</sup>
  - ◆ Oil refineries.<sup>8</sup>
  - ◆ Factories.<sup>8</sup>
  - ◆ Power plants:<sup>8</sup>
    - ◆ Coal-burning.<sup>9</sup>
    - ◆ Nuclear.<sup>10</sup>
- ◆ Dust and pollen.<sup>8</sup>
- ◆ Fire:<sup>8</sup>
  - ◆ Man-made.<sup>8</sup>
  - ◆ Naturally-occurring.<sup>8</sup>



Pollutants may then follow a path through air, soil, water, and/or the food chain to people.<sup>11</sup> When this pathway leads to people, it is called a human contamination pathway.<sup>12</sup> Regardless of its destination, contamination has innumerable consequences for the ecosystem, and the path often leads to hazardous and/or toxic conditions for those people who are most vulnerable. Please view the Summary of Common Pollutants table to learn more about common pollutants.

# Underrepresentation and Marginalization

Many communities are absent or under-represented in places of power. In this absence, issues important or central to these groups may go unaddressed, and/or become marginalized. Many face additional forms of marginalization, discrimination, or oppression, as well.

Underrepresentation and marginalization can lead to inequity, which may be damaging to public health<sup>13</sup> in itself. It also contributes to the situation that allows our most vulnerable to be disproportionately disadvantaged by environmental degradation. **Empowering underrepresented and marginalized groups is one essential step to mitigate environmental injustice.**

Not only does environmental degradation aggregate. The impacts of underrepresentation and marginalization also aggregate. For this reason, underrepresented and marginalized groups in the state of Michigan face challenges such as:<sup>14</sup>

- ◆ Workplace discrimination and/or harassment.<sup>14</sup>
- ◆ Low income.<sup>14</sup>
- ◆ Limited housing options.<sup>14</sup>
- ◆ Food insecurity, including lack of access to healthy food through living in:<sup>15</sup>
  - ◆ Food swamps: locations that only offer access to unhealthy food.<sup>15</sup>
  - ◆ Food deserts: locations that do not offer access to healthy, affordable food.<sup>15</sup>
- ◆ Living, working, or recreating in areas that are contaminated with environmental pollutants/toxins.<sup>16</sup>
- ◆ Chronic illness.<sup>14, 17</sup>

The many risk factors for underrepresentation and marginalization include:

- ◆ Low Income.<sup>14</sup>
- ◆ Black or Brown Skin Color.<sup>14, 18</sup>
- ◆ Cultural Heritage, including the Culture of the Indigenous People of Michigan.<sup>19, 20</sup>
- ◆ Religious Beliefs.<sup>14</sup>
- ◆ Gender Identity<sup>14, 21</sup> (including women and transgender individuals).
- ◆ Sexual Identity.<sup>22</sup>
- ◆ Age.<sup>23</sup>
- ◆ Special Needs.<sup>14</sup>
- ◆ Overweight or Obesity.<sup>24</sup>
- ◆ Migration/Citizenship Status/Spoken Language.<sup>14</sup>
- ◆ Membership in a Single-Parent Household.<sup>25</sup>
- ◆ Employment status/Unemployment/Underemployment (including engaging in unpaid labor such as caregiving).<sup>26</sup>

Environmental Justice affirms the need for urban and rural ecological policies to clean up and rebuild our cities and rural areas in balance with nature, honoring the cultural integrity of all our communities, and provided fair access for all to the full range of resources. It mandates the right to ethical, balanced and responsible uses of land and renewable resources in the interest of a sustainable planet for humans and other living things.

# Economy

## Green Opportunities:

- ◆ Regional Transit in Southeast Michigan:
  - ◆ Is identified in the Detroit Regional Chamber's State of the Region<sup>27</sup> as an area of focus that is in need of serious improvement for the sake of commerce and citizens.
  - ◆ Is an area of priority<sup>28</sup> for the new Oakland County Executive, David Coulter.
  - ◆ Ranks at or near the bottom<sup>29</sup> of nationally ranked regional transit systems.
- ◆ In the field of Electric Power Generation, solar and wind energy employ more than three times as many people as coal, oil, and gas combined.<sup>30</sup>
- ◆ Solar Photovoltaic (solar panel) Installers<sup>31</sup> and Wind Turbine Technicians<sup>32</sup> are the two fastest growing occupations in the US,<sup>33</sup> and each has a median income over \$42,000 per year.

Uncontrolled disease from pollution is fundamentally wrong. It is also devastating to economic prosperity. Medical expenses are substantially greater in areas with greater pollution. Detroit area code 48217 is an excellent example:

- ◆ Area code 48217 is the most polluted zip code in the state.<sup>4</sup>
- ◆ Asthma hospitalization rates in this area are almost triple the state average, and are paired with higher than average cancer rates.<sup>34</sup>

Tourism spending in Michigan reached \$25.7 billion in 2018.<sup>35</sup>

- ◆ This industry has grown consistently, and added almost 12 million visitors in the last 5 years.<sup>35</sup>
- ◆ Since 2012, the Michigan Tourism Strategic Plan<sup>36</sup> has recognized the essential nature of environmental quality in supporting the tourism industry. One of the 8 goals identified in this plan is: "Resources and Environment: Be internationally recognized for our stewardship of - and rich opportunities to experience - our natural, cultural, and heritage resources."
- ◆ At the national level, the National Park Service (NPS) states:<sup>37</sup>
  - ◆ "Economic benefits from visiting parks depend on protection of park natural resources, including air quality and valuing ecosystems as natural resources.<sup>37</sup>
  - ◆ Visitor spending in communities around national park sites was estimated at 11.9 billion dollars in 2009."<sup>37</sup>
- ◆ Environmental degradation threatens tourism in many ways including:
  - ◆ Loss of biodiversity due to environmental damage.<sup>38</sup>
  - ◆ Park damage due to severe weather.<sup>39</sup>
  - ◆ Poor environmental quality<sup>40, 41</sup> and more extreme conditions associated with climate change<sup>42</sup> can limit the visitors who are good candidates to enjoy outdoor activity.

# Public Health

Pollutants travel through different aspects of ecosystems; air, soil, water, plant/animal life, including the food system.<sup>11</sup> This contamination often leads to people.<sup>12</sup> Examples include:

- ◆ Air:
  - ◆ Common sources of air contamination include: industrial emissions,<sup>66</sup> vehicle emissions,<sup>66</sup> burning fossil fuels,<sup>9</sup> concentrated animal feeding operations (CAFOs),<sup>67</sup> pesticides.<sup>63</sup>
  - ◆ Contaminants that commonly collect and travel in the air include: ground-level ozone,<sup>45</sup> acids,<sup>40</sup> organic chemicals,<sup>40</sup> metals.<sup>40</sup>
- ◆ Water:
  - ◆ Common sources of water contamination include: power plants/ factories,<sup>9</sup> CAFOs,<sup>68</sup> crop fertilizer,<sup>9</sup> animal waste.<sup>9</sup>
  - ◆ Contaminants that commonly collect and travel in water include: mercury,<sup>63</sup> lead,<sup>69</sup> pesticides,<sup>63</sup> PCBs,<sup>63</sup> flame retardants,<sup>63</sup> PFOS and PFOAS.<sup>70</sup>
- ◆ Soil:<sup>71</sup>
  - ◆ Common sources of soil contamination include: paint, traffic, pesticides, petroleum.<sup>12</sup>
  - ◆ Contaminants that commonly collect in the soil include: lead, dioxins, sulfur, benzene, mercury.<sup>12</sup>
- ◆ Aggregated environmental degradation due to pollution has many effects toxic to public health. These effects include:
  - ◆ Irritation of the: skin, eyes, nose, throat, lungs.<sup>72</sup>
  - ◆ Reduced lung function,<sup>66</sup> including increased susceptibility to: infection,<sup>66</sup> allergens,<sup>66</sup> other air pollutants,<sup>66</sup> asthma attacks,<sup>40</sup> acute or chronic bronchitis.<sup>40</sup>
  - ◆ Heart attack (for those with heart disease).<sup>40</sup>
  - ◆ Toxic compounds can accumulate in the food chain, as food sources collect these toxins in one or more source of the environment.<sup>73</sup>
  - ◆ Harmful effects on public health include negative impact on: behavior, neurology, reproduction.<sup>73</sup> Soil acidification can make it difficult or impossible to grow food crops, as plants are not able to absorb nutrients in the soil to live and thrive.<sup>58</sup>
  - ◆ Algal blooms, such as those that occur in Lake Erie, can expose humans to toxins through: (1) consuming contaminated drinking water and seafood; (2) direct exposure (such as swimming in contaminated water); (3) breathing contaminated air.<sup>74</sup>
  - ◆ Impacts of algal blooms include: gastrointestinal illness, liver damage, and death.<sup>75</sup>
- ◆ Aggregated environmental degradation due to climate change has many effects toxic to human health.
  - ◆ Climate change affects the social and environmental determinants of human health through factors such as : clean air, safe drinking water, and secure shelter.<sup>41</sup> It also impacts the availability of sufficient food.<sup>41</sup> Here, food insecurity is impacted by climate change in a variety of ways: (1) heating and cooling costs are linked to increased food insecurity.<sup>76</sup> As extreme temperatures absorb financial resources, those who are struggling financially have even fewer resources available to purchase food; (2) impacts on the food system from extreme weather<sup>77</sup> are already creating negative changes in the capacity to grow, process, and distribute food, and those impacts are expected to continue and increase.
  - ◆ Additional observed impacts include:
    - ◆ Extreme weather/natural disasters:<sup>41, 78</sup> (1) extreme heat,<sup>41, 78</sup> including death from cardiovascular and respiratory disease;<sup>41</sup> (2) respiratory distress (including asthma) from raised ozone and increased pollen;<sup>41</sup> (3) intensified precipitation and flooding;<sup>78</sup> (4) increased storm activity including more frequent and intense hurricanes, winter storms, tornadoes, and thunderstorms;<sup>78</sup> (5) infectious disease.<sup>41</sup>
  - ◆ Climate change is a danger to all people. Factors that increase risk include: (1) location (where increased risk is seen by coastal regions (including and especially small island states), developing states, states with weak infrastructure, large cities, mountains, and polar regions; (2) age (young and old); (3) pre-existing conditions.<sup>41</sup>

# Energy

Energy generation from fossil fuels is consistently identified as a powerful source of pollution<sup>9, 66, 79</sup> with terrible consequences for the environment.<sup>38, 58, 60</sup>

- ◆ For example, almost 40% of the carbon dioxide pollution produced in the US comes from fossil fuel-burning power plants.<sup>80</sup>
- ◆ Shifting that power generation to renewable energy could potentially take that number to or near zero.<sup>80</sup>

Approximately 50% of Fortune 500 companies have at least one green energy target; seeing economic advantage in green energy.<sup>81</sup>

Independent of larger initiatives, individual municipalities have successfully transitioned to 100% renewable energy through the purchase of Renewable Energy Certificates. This transition has:<sup>82</sup>

- ◆ Saved 90 Illinois towns millions of dollars.<sup>82</sup>
- ◆ Saved the pollution equivalent of removing 1 million cars from the road.<sup>82</sup>
- ◆ Increased the demand for green energy.<sup>83</sup>

Fossil fuels currently comprise the largest energy source in the US. The infrastructure is in place to drill, produce, transport, and deliver this energy. However, it comes with an unimaginable price. This price is the individual and collective impacts of that drilling, production, transportation, delivery, and use. The individual and collective impacts include:

- ◆ Climate change.<sup>84</sup>
- ◆ Ocean acidification.<sup>84</sup>
- ◆ Oil and natural gas spills.<sup>84</sup>
- ◆ Threats of groundwater contamination.<sup>84</sup>
- ◆ Earthquakes.<sup>84</sup>
- ◆ Reduced air quality.<sup>84</sup>

These impacts too often fall on those who are the most vulnerable in our global, regional, and local communities.

# Natural Resources

## Air

- ◆ Clean air is essential for life.
- ◆ According to the United States Environmental Protection Agency (US EPA), “Outdoor air - the air outside buildings, from ground level to several miles above the Earth’s surface - is a valuable resource for current and future generations because it provides essential gases to sustain life and it shields the Earth from harmful radiation.”<sup>43</sup>
- ◆ Air is a complex resource, with intricate currents.<sup>44</sup> It contains components such as ozone that protects the earth from ultraviolet rays in the upper atmosphere, but that also do resounding damage to life at the surface level.<sup>45</sup> Air holds, carries, and delivers many pollutants within ecosystems.

## Water

- ◆ The EPA states “The extent of water resources (their amount and distribution) and their current condition (physical, chemical, and biological attributes) are critical to ecosystems, human uses, and the overall function and sustainability of the hydrologic cycle.”<sup>46</sup>
- ◆ Water resource health:
  - ◆ Extent: The extent of water resources includes contamination by pollutants (as discussed throughout this article).
  - ◆ Condition: The condition of water refers to additional attributes that include the amount of water contained in resources such as subsurface aquifers. Condition attributes associated with the amount of water can be damaged by depleting water resources. Examples of this damage are seen in the lowering of the water table.<sup>47</sup> Condition damage can also occur through pumping too much water into the system, as is sometimes seen in oil and gas extraction. Both depletion and pumping too much water into groundwater is damaging to the water system, and the underlying ecosystems.<sup>47, 48</sup>
- ◆ The extent and condition of ground water supplies can be negatively impacted by factors such as: changes in precipitation,<sup>48</sup> overuse/depletion,<sup>48, 49</sup> pumping water into a source,<sup>48</sup> and nitrate and pesticide use,<sup>48, 50</sup>
- ◆ The US EPA tracks indicators across different water-related resources<sup>46</sup> including: fresh surface waters,<sup>51</sup> ground water,<sup>48</sup> wetlands,<sup>52</sup> coastal waters,<sup>53</sup> drinking water,<sup>54</sup> recreational waters,<sup>55</sup> water-based food resources.<sup>56</sup>

## Soil

- ◆ The US Department of Agriculture (USDA) asks, “Did you know ... (1) “That soil quality directly affects water quality, biodiversity, wildlife habitat, plant growth, and crop production?” (2) “That virtually all fresh water falls on soils and travels over them, percolates through them, evaporates from them, is stored in them, or interacts with them to drive several chemical, physical, and biological processes?”<sup>57</sup>
- ◆ Soil quality is complex, and includes considerations from the presence of micro-organisms to the acidity<sup>57</sup> of the soil. These considerations, and numerous more are seriously altered by the presence of pollutants. At higher levels, this damage may become irreparable.<sup>58, 59</sup>

Aggregated environmental degradation due to pollution has many effects toxic to natural resources. These effects include:

- ◆ Decreased biodiversity.<sup>60</sup> The US Environmental Protection Agency (EPA) states that “The health of an ecological system can often be judged by its biological diversity and balance.”<sup>61</sup> As pollution aggregates, an ecosystems’ ability to sustain/balance itself and support biological diversity is increasingly compromised.
- ◆ Increase in ecosystems’ susceptibility to: fire, insects, disease, algal blooms.<sup>60</sup> Each of these factors can contribute to substantial/catastrophic ecosystem damage.
- ◆ Impaired Wildlife Health, including: respiratory distress,<sup>62</sup> behavioral abnormalities,<sup>63</sup> neurological abnormalities,<sup>63</sup> reproductive abnormalities,<sup>63</sup> growth and development abnormalities,<sup>63</sup> decreased immune response.<sup>63</sup>
- ◆ Corrosion.<sup>64</sup>
- ◆ Damage to vegetation.<sup>45</sup>

For more information regarding the impact of pollution on natural resources, please view the Summary of Common Pollutants table.

Aggregated environmental degradation due to climate change has many effects toxic to natural resources.

- ◆ Effects observed to date include: change in migratory patterns,<sup>65</sup> species migration north,<sup>65</sup> change in the location, abundance, and timing of food sources,<sup>65</sup> increased extreme heat,<sup>41</sup> increased natural disasters,<sup>41</sup> increased infectious disease,<sup>41</sup>
- ◆ Effects anticipated by 2100 include: (1) almost half the plant communities on Earth’s surface will be modified, (2) almost 40 percent of land-based ecosystems will shift type (e.g., forest, tundra), (3) further reduction of biodiversity, (4) the Great Lakes region is considered an ecologically sensitive “hotspot,” and is projected to have among the highest amount of species turnover, internationally.<sup>38</sup>

## Existing Solutions

Some progress is in motion, but it requires sustained will and skilled support. The City of Detroit has recently taken steps toward a more sustainable future. In July, 2019, Detroit City Council passed legislation to reduce GHG emissions; with a goal of 30% reduction by 2025.<sup>85</sup> Detroit's Office of Sustainability also released the Sustainability Action Agenda,<sup>86</sup> which was researched in part through community engagement data collection sessions. Detroit is an important example, as environmental injustice is exemplified by many historic and ongoing inequities, including unequal access to clean air.<sup>17</sup>

## Community Choices

Community Choice Aggregation (CCA, or municipal aggregation) is an energy model in which local municipalities choose to transition to green energy. This model has been used successfully in 90 towns in Illinois, through the purchase of Renewable Energy Certificates (RECs).<sup>82</sup> RECs have many names, including Renewable Energy Credits,<sup>82</sup> Green Tags,<sup>87</sup> and Tradable Renewable Energy Certificates.<sup>88</sup> RECs are issued to green energy producers for each one megawatt-hour (MWh) of green energy produced. They are then made available for purchase to represent each MWh of green energy that is desired by the consumer.<sup>89</sup> Legislation making it easy for municipalities to purchase RECs can support EJ by encouraging the use of energy with far fewer environmental consequences.

In 2019, water purification stations were provided<sup>90</sup> to public schools in Oakland County in order to encourage environmentally responsible, hydration with safely filtered water. These stations were provided to all interested communities in Oakland County. They address water quality for every community in an environmentally responsible and economically viable solution.

## Models to Support Environmental Justice

There is both official federal and state support for EJ. Through Executive Order, President Clinton established a federal EJ program. The Environmental Protection Agency (EPA) also has an Office of Environmental Justice (OEJ).<sup>91</sup> California was the first state to put EJ into code. It has several structured methods to address EJ. California offers code designed to advocate for and fund interventions to remedy the impacts of environmental degradation on vulnerable communities. Here, priority is given to including members of these communities in EJ project planning. Grant funding is also available to eligible 501.c.3 nonprofits for projects that address EJ issues. CalEPA also has an Environmental Justice Task Force that works to identify new opportunities to address environmental issues in the communities where the most impact is needed.<sup>92</sup>

## Opportunities

Environmental Justice is essential to sustainability and regeneration. As aggregated environmental degradation most impacts those who can least bear it, every environmental issue is an issue of environmental justice. However, opportunities to empower disenfranchised populations and regenerate ecosystems can and do benefit greatly from the adaptation, drafting, or strengthening of legislation.

## Irrigation

Legislation and regulation surrounding irrigation well permits should be revisited. This should include items such as the number of permits authorized, the gallons per hour rate allowed, location and proximity to public water sources.

## CAFOS

CAFOs are large industrial factory farms which are permitted, regulated, and subsidized. Animals are confined, and no vegetation grows in the animal housing facility. In 2017, Michigan was home to over 270 CAFOs. In 2016, these CAFOs housed over 20,000,000 animals, and produced over 3,000,000,000 gallons of animal waste.<sup>93</sup>

This waste is typically held in storage to be applied to farm fields as fertilizer.<sup>93</sup> Overapplication of this waste is a problem that is known to lead to runoff.<sup>94</sup> Winter application is specifically problematic, as frozen ground behaves similarly to oversaturated ground, and leads to runoff. In the watersheds of Michigan, including the Great Lakes, this runoff has been linked to toxic algal blooms.<sup>93</sup> For this reason, organizations such as the Sierra Club of Michigan vigorously support strengthening CAFO permits to accomplish goals such as curbing the use of waste, and carefully monitoring the health of the impacted water and soil.<sup>95</sup>

## Water Safety

Let the Flint water crisis teach us an essential lesson. It is imperative that we treat water safety with the care it deserves.<sup>16</sup> Addressing issues such as lead access lines can protect to some extent, but this is only a partial solution. We must view the situation from the perspective of the whole path of all water through air, soil, food sources, piping, fixtures, ...<sup>57</sup> Water safety standards should be revisited for toxins such as lead and PFAs.<sup>16</sup> We must also revisit substances such as PFAS to determine if safe application and use is possible. If it is not, we must author legislation accordingly, or run the risk of organizations simply moving facilities to locations with less stringent regulations.<sup>96</sup>

## Rights

Michigan voters must be allowed to, at the very minimum, have the opportunity to choose the leaders who represent them in free and fair elections. Emergency management does not fit that description. Dr. Mona Hanna-Attisha points out that,

“By 2013, half of all African American citizens in Michigan were living under an emergency manager, compared with 2 percent of white residents. In other words, half of the African-American population in Michigan did not have elected representatives running their cities-the cities had been effectively colonized by the state.”<sup>16</sup>

For those who are survivors of environmental injustice, all legal means must be leveraged to repair the situation. This must include items such as health and medical care, safe shelter, prosecutions for those responsible, and the opportunity to seek financial damages. While governmental leaders have a responsibility to be fiscally accountable, they must first and foremost be responsible to the moral imperative of fair and ethical treatment, especially for those among us who are the most vulnerable. In fact, for the most vulnerable among us, we must all hold ourselves to a much higher standard.

While communities disproportionately impacted by environmental degradation will benefit from all environmental action, focused attention to those communities with the worst environmental impacts is essential to combat historic and current injustices. Identifying, naming, and remedying these injustices is crucial.

Dr. Mona Hanna-Attisha did just that when she famously made the lead crisis in the Flint water system public in 2015. She was the perfect candidate to do so. She has her roots in EJ herself, and is arguably an international leader in environmental justice. Dr. Hanna-Attisha characterizes EJ as a movement that looks at environmental and health issues “through the lens of place, race, and poverty.”<sup>16</sup> If environmental injustices abound at the intersection of environmental degradation, place, race, and poverty, EJ must also combat this through education. We must show the world the existing environmental injustices in order to change the perception that these horrific injustices are acceptable.

Dr. Hanna-Attisha is also an example of the success environmental education can produce. As a successful doctor and leader in EJ, she still discusses her early experiences with EJ in her formative years. She was educated, encouraged, and mentored as her focus on EJ and all justice unfolded and solidified.<sup>16</sup> It is imperative that we foster and encourage this kind of leadership as it develops and evolves in all stages of life.

In that spirit, EJ calls for the education of present and future generations to emphasize social and environmental issues; combining science-based environmental education with a sincere appreciation of the diverse cultural perspectives of others. This education should promote understanding of issues associated with EJ. It should also promote economic alternatives that contribute to environmentally safe livelihoods.

Policy that strengthens the environment through the lens of place, race, and poverty is also vital to EJ. That policy must be based on mutual respect and justice for all, free from discrimination or bias. However, policy is not enough. EJ also requires leaders who are educated to act with resolve to enforce, strengthen, adapt, and expand the essential policies of environmental justice.



## Key Resources

Organizations fighting for Environmental Justice include:

<a href="#">Sierra Club Michigan Chapter</a> <sup>97</sup>	<a href="http://www.sierraclub.org/michigan/environmental-justice">www.sierraclub.org/michigan/environmental-justice</a>
<a href="#">Detroitters Working for Environmental Justice</a> <sup>98</sup>	<a href="http://www.detroitenvironmentaljustice.org">www.detroitenvironmentaljustice.org</a>
<a href="#">East Michigan Environmental Action Council</a> <sup>99</sup>	<a href="http://www.emecac.org">www.emecac.org</a>
<a href="#">Indigenous Environmental Network</a> <sup>100</sup>	<a href="http://www.ienearth.org">www.ienearth.org</a>
<a href="#">Flint Child Health and Development Fund</a> <sup>101</sup>	<a href="http://www.cfgf.org">www.cfgf.org</a>
<a href="#">Oil &amp; Water Don't Mix, and its Affiliates</a> <sup>102</sup>	<a href="http://www.oilandwaterdontmix.org">www.oilandwaterdontmix.org</a>
<a href="#">Climate Justice Alliance</a> <sup>103</sup>	<a href="http://www.climatejusticealliance.org">www.climatejusticealliance.org</a>
<a href="#">Sierra Club</a> <sup>104</sup>	<a href="http://www.sierraclub.org">www.sierraclub.org</a>
<a href="#">Bioneers</a> <sup>105</sup>	<a href="http://www.bioneers.org/category/justice/">www.bioneers.org/category/justice/</a>
<a href="#">Seeding Sovereignty</a> <sup>106</sup>	<a href="http://www.seedingsovereignty.org">www.seedingsovereignty.org</a>
<a href="#">Indigenous Climate Action</a> <sup>107</sup>	<a href="http://www.indigenousclimateaction.com">www.indigenousclimateaction.com</a>
<a href="#">United Nations Intergovernmental Panel on Climate Change</a> <sup>108</sup>	<a href="http://www.ipcc.ch">www.ipcc.ch</a>
<a href="#">United Nations Food and Agriculture Organization</a> <sup>109</sup>	<a href="http://www.fao.org">www.fao.org</a>

(1) United States Global Change Research Program (2018). Fourth National Climate Assessment: Summary Findings. Retrieved on 1 December 2019 from [https://nca2018.globalchange.gov/downloads/NCA4\\_2018\\_FullReport.pdf](https://nca2018.globalchange.gov/downloads/NCA4_2018_FullReport.pdf).

(2) Feeding America. (2019). Food insecurity in Wayne County. Retrieved 1 December 2019 from <https://map.feedingamerica.org/county/2017/overall/michigan/county/wayne>.

(3) Feeding America. (2019). What is food insecurity? Retrieved 12 November 2019 from <https://www.feedingamerica.org/hunger-in-america/food-insecurity>.

(4) Detroit Environmental Agenda. (2013). Every four years, we can elect leaders who take action for a cleaner, safer, healthier Detroit: it's time to act. Get informed. Retrieved 1 December 2019 from <https://detroitenvironmentaljustice.org/wp-content/uploads/2017/07/DETROIT-ENVIRONMENTAL-AGENDA.pdf>.

(5) Feeding America. (2018). Map the meal gap 2018: a report on county and congressional district food insecurity and county food cost in the United States in 2016. Retrieved on 1 December 2019 from <https://www.feedingamerica.org/sites/default/files/research/map-the-meal-gap/2016/2016-map-the-meal-gap-full.pdf>.

(7) Reich, R. (2019). The case for environmental justice. Retrieved 1 December 2019 from <https://robertreich.org/post/184391298100>.

(8) US NPS. (2018). Where does air pollution come from? Retrieved 21 December 2019 from <https://www.nps.gov/subjects/air/sources.htm>.

(9) US NPS. (2018). What is air pollution? Retrieved 21 December 2019 from <https://www.nps.gov/subjects/air/pollutants.htm>.

(10) US Energy Information Administration (US EIA). (2019). Nuclear explained: nuclear power and the environment. Retrieved 25 December 2019 from <https://www.eia.gov/energyexplained/nuclear/nuclear-power-and-the-environment.php>.

(11) National Research Council (US) Committee on Health Effects of Waste Incineration. (2000). Environmental transport and exposure pathways of substances emitted from incineration facilities. Book Chapter from [Waste Incineration & Public Health](#). National Academies Press (US). Retrieved 4 December 2019 from <https://www.ncbi.nlm.nih.gov/books/NBK233615/figure/mmm00006/?report=objectonly>.

(12) US EPA. (2011). Reusing potentially contaminated landscapes: growing gardens in urban soils. Retrieved 23 December 2019 from [https://www.epa.gov/sites/production/files/2014-03/documents/urban\\_gardening\\_fina\\_fact\\_sheet.pdf](https://www.epa.gov/sites/production/files/2014-03/documents/urban_gardening_fina_fact_sheet.pdf).

(13) [California Newsreel](#), [Vital Pictures, Inc.](#), [National Minority Consortia of Public Television](#), [Joint Center Health Policy Institute](#), and the [National Association of County and City Health Officials](#). (2008). Unnatural causes: is inequality making us sick? Retrieved 4 December 2019 from <https://unnaturalcauses.org/>.

(14) United Nations (UN). (unknown). Vulnerable people. Retrieved 27 December 2019 from <https://www.un.org/en/letsfight racism/poor.shtml>.

(15) Detroit Food Policy Council (2017). Food metrics report. Retrieved 27 December 2019 from <https://www.dropbox.com/s/10yhmcym2lm68ap/DFMR17%20Report%20120717%20FINAL.pdf?dl=0>.

(16) Hanna-Attisha, M. (2018). [What the eyes don't see](#), page 196. Random House, New York.

- (17) Martenies, S., Milando, C., Williams, G., & Batterman, S. (2017). Disease and health inequalities attributable to air pollutant exposure in Detroit, Michigan. *International Journal of Environmental Research and Public Health*, 14. Retrieved 27 December 2019 from <https://www.mdpi.com/1660-4601/14/10/1243/htm>.
- (18) Weiner-Bronner, D. (2017). Soon, there will be just 3 black Fortune 500 CEOs. Retrieved 27 December 2019 from <https://money.cnn.com/2017/10/19/news/companies/black-ceos-fortune-500/index.html>.
- (19) UN. (2017). Protecting indigenous peoples' rights' is protecting everyone's rights' - UN. Retrieved 27 December 2019 from <https://news.un.org/en/story/2017/08/563032-protecting-indigenous-peoples-rights-protecting-everyones-rights-un>.
- (20) UN. (2017). Rights of indigenous peoples 'not in a very good state,' UN expert says. Retrieved 27 December 2019 from <https://news.un.org/en/story/2017/05/556352-rights-indigenous-peoples-not-very-good-state-un-expert-says>.
- (21) Abadi, M. (2018). There are only 25 women CEOs in the Fortune 500 - here's the full list. *Business Insider*. Retrieved 27 December 2019 from <https://www.businessinsider.com/fortune-500-companies-women-ceos-2018-8>.
- (22) Abadi, M. (2018). New Land O'Lakes CEO Beth Ford just became the first openly gay woman to lead a Fortune 500 company - take a look at her career so far. *Business Insider*. Retrieved 27 December 2019 from <https://www.businessinsider.com/beth-ford-land-o-lakes-ceo-2018-7>.
- (23) Wilkie, D. (2019). 50 years after age discrimination became illegal, it persists. Retrieved 27 December 2019 from <https://www.shrm.org/resourcesandtools/hr-topics/employee-relations/pages/age-discrimination-in-the-workplace.aspx>.
- (24) Gassam, J. (2019). The discrimination no one talks about: weight discrimination. Retrieved 27 December 2019 from <https://www.forbes.com/sites/janicegassam/2019/01/31/the-discrimination-no-one-talks-about-weight-discrimination/#1a0938993e5f>.
- (25) Stutzman, J., & Mendes, E. (2013). In US, single-parent households struggle more to buy food. Retrieved 27 December 2019 from <https://news.gallup.com/poll/163544/single-parent-households-struggle-buy-food.aspx>.
- (26) National Conference of State Legislatures (NCLS). (2011). Discrimination against the unemployed. Retrieved 27 December 2019 from <http://www.ncsl.org/research/labor-and-employment/discrimination-against-the-unemployed.aspx>.
- (27) Detroit Regional Chamber. (2019). State of the region 2019-2020. Retrieved 6 December 2019 from <http://www.detroitchamber.com/sor/>.
- (28) Hall, C. (2019). New Oakland County exec won't pitch same old idea for regional transit: here's his plan, *Detroit Free Press*. Retrieved 6 December 2019 from <https://www.freep.com/story/news/local/michigan/oakland/2019/09/05/oakland-county-executive-david-coulter-regional-mass-transit-2020-ballot/2209171001/>.
- (29) Austin, D. (2015). How metro Detroit transit went from best to worst, *Detroit Free Press*. Retrieved 6 December, 2019 from <https://www.freep.com/story/news/local/2015/02/06/michigan-detroit-public-transit/22926133/>.
- (30) US Department of Energy. (2017). U.S. energy and employment report. Retrieved on 1 December 2019 from [https://www.energy.gov/sites/prod/files/2017/01/f34/2017%20US%20Energy%20and%20Jobs%20Report\\_0.pdf](https://www.energy.gov/sites/prod/files/2017/01/f34/2017%20US%20Energy%20and%20Jobs%20Report_0.pdf).
- (31) US Department of Labor: Bureau of Labor Statistics. (2019). Occupational outlook handbook: solar photovoltaic installers. Retrieved 1 December 2019 from <https://www.bls.gov/ooh/construction-and-extraction/solar-photovoltaic-installers.htm>.
- (32) US Department of Labor: Bureau of Labor Statistics. (2019). Occupational outlook handbook: wind turbine technicians. Retrieved 1 December 2019 from <https://www.bls.gov/ooh/installation-maintenance-and-repair/wind-turbine-technicians.htm>.
- (33) US Department of Labor: Bureau of Labor Statistics. (2019). Occupational outlook handbook: fastest growing occupations. Retrieved 1 December 2019 from <https://www.bls.gov/ooh/fastest-growing.htm>.
- (34) Detroit Journalism Cooperative. (2019). Pollution and southwest Detroit. Retrieved 2 December 2019 from <https://www.detroitjournalism.org/2018/02/09/pollution-southwest-detroit/>.
- (35) Tourism Economics (2019). Economic impact of tourism in Michigan, 2018. Retrieved 21 December 2019 from <https://medc.app.box.com/s/oheae29I9u5204v6myfviuhph5ax5btp>.
- (36) Nicholls, S. (2012). The 2012-2017 Michigan tourism strategic plan. Retrieved 21 December 2019 from <https://www.michigan.org/industry/michigan-tourism-strategic-plan>.
- (37) US NPS. (2019). Economic effects of air pollution. Retrieved 22 December 2019 from <https://www.nps.gov/subjects/air/economy.htm>.
- (38) NASA. (2011). Climate change may bring big ecosystem changes. Retrieved 22 December 2019 from <https://climate.nasa.gov/news/645/climate-change-may-bring-big-ecosystem-changes/>.
- (39) USDA. (2018). Sustain our nation's forests and grasslands: in the aftermath of hurricane Maria - Part 3: El Yunque National Forest. Retrieved 26 December 2019 from <https://www.fs.usda.gov/inside-fs/delivering-mission/sustain/aftermath-hurricane-maria-part-3-el-yunque-national-forest>.

- (40) US NPS. (2018). Particulate matter (PM) effects on health. Retrieved 21 December 2019 from <https://www.nps.gov/subjects/air/humanhealth-pm.htm>.
- (41) World Health Organization (WHO). (2018). Climate change and health. Retrieved 26 December from <https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health>.
- (42) US NPS. (unknown). Drawing connections: summer safety in national parks. Retrieved 28 December 2019 from <https://www.nps.gov/media/video/view.htm?id=EA87B4FD-BAC9-6B7E-7344FF848BE15031>.
- (43) US EPA. (2018). Report on the environment: outdoor air quality. Retrieved 21 December 2019 from <https://www.epa.gov/report-environment/outdoor-air-quality#categories>.
- (44) University Corporation for Atmospheric Research. (2019). A global look at moving air: atmospheric circulation. Retrieved 22 December 2019 from <https://scied.ucar.edu/learning-zone/how-weather-works/global-air-atmospheric-circulation>.
- (45) US NPS. (2018). Ozone effects on plants. Retrieved 21 December 2019 from <https://www.nps.gov/subjects/air/nature-ozone.htm>.
- (46) US EPA. (2018). Report on the environment: water. Retrieved 25 December 2019 from <https://www.epa.gov/report-environment/water>.
- (47) US Geological Survey (USGS). (unknown). Groundwater decline and depletion. Retrieved 26 December 2019 from [https://www.usgs.gov/special-topic/water-science-school/science/groundwater-decline-and-depletion?qt-science\\_center\\_objects=0#qt-science\\_center\\_objects](https://www.usgs.gov/special-topic/water-science-school/science/groundwater-decline-and-depletion?qt-science_center_objects=0#qt-science_center_objects).
- (48) US EPA. (2018). Report on the environment: Ground Water. Retrieved 28 December 2019 from <https://www.epa.gov/report-environment/ground-water>.
- (49) Dimick, D. (2014). If you think the water crisis can't get worse, wait until the aquifers are drained. National Geographic. Retrieved 28 December 2019 from <https://www.nationalgeographic.com/news/2014/8/140819-groundwater-california-drought-aquifers-hidden-crisis/>.
- (50) USGS. (unknown). Pesticides in groundwater. Retrieved 26 December 2019 from [https://www.usgs.gov/special-topic/water-science-school/science/pesticides-groundwater?qt-science\\_center\\_objects=0#qt-science\\_center\\_objects](https://www.usgs.gov/special-topic/water-science-school/science/pesticides-groundwater?qt-science_center_objects=0#qt-science_center_objects).
- (51) US EPA. (2018). Report on the environment: fresh surface water. Retrieved 25 December 2019 from <https://www.epa.gov/report-environment/fresh-surface-water>.
- (52) US EPA. (2018). Report on the environment: wetlands. Retrieved 25 December 2019 from <https://www.epa.gov/report-environment/wetlands>.
- (53) US EPA. (2018). Report on the environment: coastal waters. Retrieved 25 December 2019 from <https://www.epa.gov/report-environment/coastal-waters>.
- (54) US EPA. (2018). Report on the environment: drinking water. Retrieved 25 December 2019 from <https://www.epa.gov/report-environment/drinking-water>.
- (55) US EPA. (2018). Report on the environment: recreational waters. Retrieved 25 December 2019 from <https://www.epa.gov/report-environment/recreational-waters>.
- (56) US EPA. (2019). Report on the environment: consumable fish and shellfish. Retrieved 25 December 2019 from <https://www.epa.gov/report-environment/consumable-fish-and-shellfish>.
- (57) USDA. (1995). Soil Quality: RCA Issue Brief #5 November 1995. Retrieved 25 December 2019 from [https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/rca/?cid=nrcs143\\_014198](https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/rca/?cid=nrcs143_014198).
- (58) Gazey, P. (2019). Soil acidity. Retrieved 25 December 2019 from <http://soilquality.org.au/factsheets/soil-acidity>.
- (59) Donkova, R., & Kaloyanova, N. (2008). The impact of soil pollutants on soil microbial activity. In *Soil Chemical Pollution, Risk Assessment, Remediation and Security*, Simoenov, L., & Sargsyan, V. (eds). Springer Science + Business Media B.V.
- (60) US NPS. (2018). Nitrogen and sulfur pollution in parks. Retrieved 21 December 2019 from <https://www.nps.gov/subjects/air/nature-nitrogensulfur.htm>.
- (61) US EPA. (2018). Diversity and biological balance. Retrieved 28 December 2019 from <https://www.epa.gov/report-environment/diversity-and-biological-balance#note1>.
- (62) US EPA. (2019). Particle pollution and respiratory effects. Retrieved 22 December 2019 from <https://www.epa.gov/particle-pollution-and-your-patients-health/health-effects-pm-patients-lung-disease>.
- (63) US NPS. (2018). Mercury and toxics in nature. Retrieved 21 December 2019 from <https://www.nps.gov/subjects/air/nature-toxics.htm>.

- (64) Ontario Ministry of the Environment, Conservation and Parks (2012). Fine particulate matter. Retrieved 22 December 2019 from <http://www.airqualityontario.com/science/pollutants/particulates.php>.
- (65) US EPA. (2016). Climate impacts on ecosystems. Retrieved 22 December 2019 from <https://19january2017snapshot.epa.gov/climate-impacts/climate-impacts-ecosystems.html>.
- (66) US NPS. (2018). Ozone effects on human health. Retrieved 21 December 2019 from <https://www.nps.gov/subjects/air/humanhealth-ozone.htm>.
- (67) Heederik, D., Sigsgaard, T., Thorne, P., Kline, J., Avery, R., Bonlokke, J., Chrischilles, E., Dosman, J., Duchaine, C., Kirkhorn, S., Kulhankova, K., & Merchant, J. (2007). Health effects of airborne exposures from concentrated animal feeding operations. *Environmental Health Perspectives*, 115(2). Retrieved 26 December 2019 from <https://ehp.niehs.nih.gov/doi/10.1289/ehp.8835>.
- (68) Burkholder, J., Libra, B., Weyer, P., Heathcote, S., Kolpin, D., Thorne, P., & Wichman, M. (2007). Impacts of waste from concentrated animal feeding operations on water quality. *Environmental Health Perspectives*, 115(2), 308-312. Retrieved 26 December 2019 from <https://ehp.niehs.nih.gov/doi/full/10.1289/ehp.8839>.
- (69) US EPA. (2019). Lead regulations. Retrieved 21 December 2019 from <https://www.epa.gov/lead/lead-regulations>.
- (70) US EPA. (2017). Technical fact sheet - perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA). Retrieved 21 December 2019 from [https://www.epa.gov/sites/production/files/2017-12/documents/ffrofactsheet\\_contaminants\\_pfos\\_pfoa\\_11-20-17\\_508\\_0.pdf](https://www.epa.gov/sites/production/files/2017-12/documents/ffrofactsheet_contaminants_pfos_pfoa_11-20-17_508_0.pdf).
- (71) US EPA. (2018). Report on the environment: contaminated land. Retrieved 26 December 2019 from <https://www.epa.gov/report-environment/contaminated-land>.
- (72) US NPS. (2018). Sulfur dioxide effects on health. Retrieved 22 December 2019 from <https://www.nps.gov/subjects/air/humanhealth-sulfur.htm>.
- (73) US NPS. (2018). Air toxics effects on human health. Retrieved 21 December 2019 from <https://www.nps.gov/subjects/air/humanhealth-toxics.htm>.
- (74) National Institute of Environmental Health Sciences (2018). Harmful algal blooms. Retrieved 22 December 2019 from <https://www.niehs.nih.gov/health/topics/agents/algal-blooms/index.cfm>.
- (75) Erdner, D.L., Dyble, J., Parsons, M.L., Stevens, R. C., Hubbard, K. A., Wrabel, M. L., Moore, S. K., Lefebvre, K. A., Anderson, D. M., Bienfang, P.I., Bidigare, R. R., Parker, M. S., Moeller, P., Brand, L. E., and Trainer, V. L. (2008). Centers for oceans and human health: a unified approach to the challenge of harmful algal blooms, *Environmental Health*, 7(Suppl 2):S2, 1-17. Retrieved 28 December 2019 from <https://ehjournal.biomedcentral.com/track/pdf/10.1186/1476-069X-7-S2-S2>.
- (76) Nord, M., & Kantor, L. (2006). Seasonal variation in food insecurity is associated with heating and cooling costs among low-income elderly Americans. *The Journal of Nutrition*, 136 (11), 2949-2944. Retrieved 6 December from <https://academic.oup.com/jn/article/136/11/2939/4664280>.
- (77) Food and Agriculture Organization of the United Nations (UNFAO). (2008). Climate change and food security: a framework document. Retrieved 6 December, 2019 from <http://www.fao.org/3/k2595e/k2595e00.pdf>.
- (78) National Climate Assessment US Global Change Research Program (2014). Extreme weather. Retrieved 26 December 2019 from <https://nca2014.globalchange.gov/highlights/report-findings/extreme-weather>.
- (79) US EPA. (2019). Sources of greenhouse gas emissions. Retrieved 22 December 2019 from <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions#t1fn1>.
- (80) World Wildlife Fund (WWF). (2015). Importance of renewable energy in the fight against climate change. Retrieved 26 December 2019 from <https://www.worldwildlife.org/magazine/issues/summer-2015/articles/importance-of-renewable-energy-in-the-fight-against-climate-change--3>.
- (81) WWF, Calvert Investments, CDP, & Ceres. (2017). Power forward 3.0: How the largest US companies are capturing business value while addressing climate change. Retrieved 26 December 2019 from <https://www.worldwildlife.org/publications/power-forward-3-0-how-the-largest-us-companies-are-capturing-business-value-while-addressing-climate-change>.
- (82) WWF, Environmental Law & Policy Center, Sierra Club of Illinois, ISEA, LEAN Energy, GW Solar Institute, & [www.gocleangolocal.org](http://www.gocleangolocal.org). (2014). Leading from the middle: how Illinois communities unleashed renewable energy. Retrieved 26 December 2019 from <https://www.worldwildlife.org/publications/leading-from-the-middle-how-illinois-communities-unleashed-renewable-energy>.
- (83) Energy Sage. (2019). Where is community choice aggregation available? Retrieved 26 December 2019 from <https://www.energysage.com/other-clean-options/community-choice-aggregation/where-are-ccas-available>.
- (84) Allison, E., & Mandler, B. (2018). Petroleum and the environment. American Geosciences Institute. Retrieved 27 December 2019 from <https://www.americangeosciences.org/critical-issues/petroleum-environment>.

- (85) Nagl, K. (2019). Detroit tasked with cutting greenhouse gas emissions by 30 percent. Crain's Detroit Business. Retrieved 27 December 2019 from <https://www.craigslist.com/environment/detroit-tasked-cutting-greenhouse-gas-emissions-30-percent-under-new-ordinance>.
- (86) Detroit Office of Sustainability. (2019). Detroit sustainability action agenda. Retrieved 27 December 2019 from <https://detroitmi.gov/government/mayors-office/office-sustainability/sustainability-action-agenda>.
- (87) Recycle Nation. (2019). Green Tags. Retrieved 27 December 2019 from <https://recyclenation.com/green-glossary/green-tag/>.
- (88) Clean Energy Solutions Center. (unknown). Tradable renewable energy certificates. Retrieved 27 December 2019 from <https://cleanenergysolutions.org/instruments/tradable-renewable-energy-certificates>.
- (89) US EPA. (2019). Renewable energy certificates (RECs). Retrieved 28 December 2019 from <https://www.epa.gov/greenpower/renewable-energy-certificates-recs>.
- (90) The Oakland Press (2019). Water bottle filling stations coming to 29 Oakland County school districts. Retrieved on 30 November 2019 from [https://www.theoaklandpress.com/news/nation-world-news/water-bottle-filling-stations-coming-to-oakland-county-school-districts/article\\_98b106ef-fc41-5473-9bd6-67ab68ef46de.html](https://www.theoaklandpress.com/news/nation-world-news/water-bottle-filling-stations-coming-to-oakland-county-school-districts/article_98b106ef-fc41-5473-9bd6-67ab68ef46de.html).
- (91) EPA OEJ. (unknown). Office of Environmental Justice in Action. Retrieved 28 December 2019 from [https://www.epa.gov/sites/production/files/2017-09/documents/epa\\_office\\_of\\_environmental\\_justice\\_factsheet.pdf](https://www.epa.gov/sites/production/files/2017-09/documents/epa_office_of_environmental_justice_factsheet.pdf).
- (92) CalEPA. (2019). Environmental justice program. Retrieved 28 December 2019 from <https://calepa.ca.gov/envjustice/>.
- (93) Environmentally Concerned Citizens of South Central Michigan, The Socially Responsible Agricultural Project, and University of Michigan-Dearborn student James Campbell on behalf of the members of Less=More, a diverse coalition of organizations seeking to create a fair playing field for sustainable farms in Michigan. Special thanks goes to Environmentally Concerned Citizens of South Central Michigan for its comprehensive data on CAFOs in Lenawee and Hillsdale Counties. Less=More Steering Committee members include: Center for Food Safety, Crane Dance Farm, LLC, East Lansing Food Coop, Environmentally Concerned Citizens of South Central Michigan, Food & Water Watch, Greater Grand Rapids Food Systems Council, Groundswell Farm, Humane Society of the United States, Michigan Voices for Good Food Policy, Michigan Young Farmers Coalition, Sierra Club Michigan Chapter and The Socially Responsible Agricultural Project. (2017). A watershed moment: Michigan CAFO mapping report. Retrieved 27 December 2019 from <https://drive.google.com/file/d/0B9i1r38NLgy9Z3RreHJiNndMd00/view>.
- (94) Burkholder, J., Libra, B., Weyer, P., Heathcote, S., Koplín, D., Thorne, P., & Wichman, M. (2007). Impacts of waste from concentrated animal feeding operations on water quality. Environmental Health Perspectives, 115(2), 308-312. Retrieved 27 December 2019 from <https://ehp.niehs.nih.gov/doi/full/10.1289/ehp.8839>.
- (95) AddUp. (2019). Protect the Great Lakes from factory farm pollution. Retrieved 28 December 2019 from <https://addup.sierraclub.org/campaigns/protect-the-great-lakes-from-factory-farm-pollution>.
- (96) Ellison, G. (2019). Wolverine shoes still coated in PFAS, product testing shows. Retrieved 28 December 2019 from <https://www.mlive.com/news/2019/11/wolverine-shoes-still-coated-in-pfas-product-testing-shows.html>.
- (97) Sierra Club Michigan Chapter. (2019). Environmental Justice. Retrieved on 30 November 2019 from <https://www.sierraclub.org/michigan/environmental-justice>.
- (98) Detroiters Working for Environmental Justice. (2019). Detroiters Working for Environmental Justice Works for You. Retrieved on 30 November 2019 from <https://detroitenvironmentaljustice.org/>.
- (99) East Michigan Environmental Action Council. (2019). Home. Retrieved on 30 November 2019 from <http://www.emecac.org/2013/05/environment-land-and-ecology.html>.
- (100) Indigenous Environmental Network. (2019). Home. Retrieved on 30 November 2019 from <https://www.ienearth.org/>.
- (101) Flint Child Health and Development Fund (2019). Flint kids fund. Retrieved on 17 December 2019 from <https://www.cfgf.org/Our-Work-Impact/Current-Initiatives/Flint-Kids-Fund>.
- (102) Oil & Water Don't Mix (unknown). Organizational supporters. Retrieved 26 December 2019 from <https://www.oilandwaterdontmix.org/organizational-supporters>.
- (103) Climate Justice Alliance. (2019). Home. Retrieved on 30 November 2019 from <https://climatejusticealliance.org/>.
- (104) Sierra Club. (2019). Explore Issues. Retrieved on 30 November 2019 from <https://www.sierraclub.org/explore-issues>.
- (105) Bioneers. (2019). Justice. Retrieved on 30 November 2019 from <https://bioneers.org/category/justice/>.
- (106) Seeding Sovereignty. (2019). Home. Retrieved on 30 November 2019 from [https://seedingsovereignty.org/?mc\\_cid=3e549493ed&mc\\_eid=af574b66e7](https://seedingsovereignty.org/?mc_cid=3e549493ed&mc_eid=af574b66e7).

- (107) Indigenous Climate Action. (2019). An Indigenous-Led Climate Change Initiative. Retrieved on 30 November 2019 from [https://www.indigenousclimateaction.com/?mc\\_cid=3e549493ed&mc\\_eid=af574b66e7](https://www.indigenousclimateaction.com/?mc_cid=3e549493ed&mc_eid=af574b66e7).
- (108) United Nations Intergovernmental Panel on Climate Change (2019). Menu. Retrieved on 30 November 2019 from <https://www.ipcc.ch/#>.
- (109) United Nations Food and Agriculture Organization. (2019). English. Retrieved on 30 November 2019 from <http://www.fao.org/home/en/>.
- (110) British Lung Foundation (2019). Types of air pollution. Retrieved 22 December 2019 from <https://www.blf.org.uk/support-for-you/air-pollution/types>.
- (111) Wolters, C. (2019). Toxic waste, explained: hazardous waste has many sources, and a long history of dangerous pollution. Here's what you need to know. National Geographic. Retrieved 25 December 2019 from <https://www.nationalgeographic.com/environment/global-warming/toxic-waste/>.
- (112) Government of Canada. (2012). Air pollution: effects on wild animals. Retrieved 22 December 2019 from <https://www.canada.ca/en/environment-climate-change/services/air-pollution/quality-environment-economy/ecosystem/wild-animals.html>.
- (113) Intergovernmental Panel on Climate Change (IPCC). (2007). Climate Change 2007: the physical science basis. Solomon, S., Qin, D., Manning, M., Marquis, M., Averyt, K., Tignor, M., Miller H., Editors. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Published for the Intergovernmental Panel on Climate Change. Cambridge University Press, New York. Retrieved 22 December 2019 from [https://www.ipcc.ch/site/assets/uploads/2018/05/ar4\\_wg1\\_full\\_report-1.pdf](https://www.ipcc.ch/site/assets/uploads/2018/05/ar4_wg1_full_report-1.pdf).
- (114) US EPA. (2019). Inventory of U.S. greenhouse gas emissions and sinks. Retrieved 22 December 2019 from <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks>.
- (115) National Resource Defense Council. (2012). Wasted: how America is losing up to 40 percent of its food from farm to fork to landfill. Retrieved on 6 September 2019 from <https://www.nrdc.org/sites/default/files/wasted-food-IP.pdf>.