

MURKY WATERS

Environmental and human rights impacts of natural rubber processing in Liberia.

Report #100



Swedwatch is an independent not-for-profit organisation that conducts in-depth research on the impacts of businesses on human rights and the environment. The aim of the organisation is to contribute towards reduced poverty and sustainable social and environmental development through research, encouraging best practice, knowledge-sharing and dialogue. Swedwatch has six member organisations: Afrikagrupperna, ACT Church of Sweden, Diakonia, Fair Action, Solidarity Sweden-Latin America, and the Swedish Society for Nature Conservation (SSNC). This report, which can be downloaded at www.swedwatch.org, is authored by Swedwatch.

Green Advocates International (GAI) is a Liberian-based non-profit, public interest law, environmental and human rights organisation. GAI works to advance a wide range of rights-based issues through legal aid, consultation and support for the victims of environmental and human rights violations, including support for business-affected communities to participate in decision-making processes in the management of Liberia's natural resources and its economy as well as the promotion of transparency and accountability in governmental activities and assistance in the strengthening and enforcement of existing environmental and human rights standards.

Source International is an international organisation composed of scientists and lawyers who work with communities to provide evidence of pollution and human rights abuses. Source International collects scientific evidence on the environmental and health impacts of company operations and enables local communities to engage governments and companies into negotiations or legal actions. Source International works in more than 30 countries all over the world in close partnership with local communities and other international organisations including the United Nations Development Programme, the Swedish Environmental Protection Agency, Swedwatch, Both Ends, Project PODER, EKOTON and others.



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Executive summary

Natural rubber is used in a wide range of products, from car tyres and medical devices to clothes and toys. Although it provides a livelihood for millions of people in low- and middle-income countries, the industrial production and processing of natural rubber has been associated with wide-ranging negative human rights impacts, including child labour and land grabbing. As one of the world's worst water-polluting industries, rubber production also has been linked to environmental degradation.¹

This report focuses on local concerns about pollution related to natural rubber processing by Firestone Liberia, which operates the world's largest natural rubber plantation in Harbel, 50km west of the capital Monrovia. Firestone Liberia is an indirect subsidiary of Bridgestone Corporation, one of the world's largest tyre companies. It has been in Liberia for nearly a century and is the largest private employer in the country, operating on nearly ten percent of the arable land. Swedwatch has worked with the Liberian rights group Green Advocates International (GAI) for several years and undertook this research in partnership with GAI and Source International, an organisation working with communities to collect scientific evidence of pollution and human rights abuses.

Swedwatch's findings from individual interviews and community meetings, with over 100 local residents in total, add to extensive documentation by national and international civil society groups on how communities living near Firestone's factory in Harbel have suffered health problems including infections, rashes and nausea. They also report the depletion of fish stocks and food shortages in the area due to polluted water. In interviews with Swedwatch, community members reported falling ill after consuming local water supplies. Some described the smell from the factory as so intense that it causes headaches and nosebleeds. However, in their dialogue with Swedwatch, Firestone Liberia and its parent company Bridgestone Americas said they were unaware of any current negative impact of its rubber processing operations on the communities surrounding its operations.

In order to quantitatively assess the complaints of local communities, Source International collected water and air samples around the Firestone processing site in 2020. Analysis results suggested that the company's wetland wastewater treatment system had not been working adequately and that high levels of harmful and toxic pollutants including heavy metals, phosphate, and nitrogen constitute a risk to the health and livelihoods of local people. Similarly, air quality analysis and testimonies from community members suggested that the use of industry-standard air scrubber technology to improve air quality was not sufficient. At the time of publication in February 2021, local communities described the situation as outlined above as unchanged from when interviews were conducted in February 2020.

In Swedwatch's interviews, community members also highlighted a lack of access to information: community leaders and human rights defenders have long called for transparency regarding the severity of water pollution, as well as an objective assessment of the overall pollution levels. In dialogue with Swedwatch, Firestone

acknowledged that certain nutrient constituents in the wastewater have, on multiple occasions, exceeded permitted standards but according to community members, such information has not been readily available to local communities.

The environmental contamination described above interferes with the local community members' human rights to life, health, and food as well as their right to a healthy environment, including access to clean water and air. Interviews with affected community members indicate that procedural environmental rights, such as access to information and public participation in environmental decision-making, are also being breached. The environmental pollution reported by rights holders further contradicts the vision of a fair, equitable and environmentally sound natural rubber value chain and principles of safe water management agreed upon by Global Platform for Sustainable Natural Rubber (GPSNR) members, including Bridgestone Corporation.² This reported lack of access to information is not in line with the company's commitments under the GPSNR Policy Framework or with international guidelines, such as the United Nations Guiding Principles for Business and Human Rights (UNGPs) and the OECD Guidelines for Multinational Enterprises.

Swedwatch, Source International and Green Advocates call on Bridgestone Corporation to use its leading role as one of the world's largest tyre and rubber companies for the advancement of the industry's contribution to the fulfilment of the UN Sustainable Development Goals, including goal 12 on sustainable production patterns. This includes urgently conducting ongoing, conflict and gender sensitive human rights due diligence and Human Rights and Environmental Impact Assessments, proactively sharing all results with affected communities and delivering on all other aspects of its commitments under the GPSNR as well as its own Sustainability Policy.

Doing so would allow local communities to take part in the benefits that could come from large-scale land concessions and enjoy the full set of human rights to which they are entitled. It would also set a much-needed example of responsible business conduct for the entire natural rubber sector, which could improve the lives of millions of people and the environment across the globe.

Recommendations

Recommendations to Bridgestone Americas and its subsidiary Firestone Liberia

- In line with the UNGPs, urgently conduct Human Rights Due Diligence (HRDD) to identify risks and address any impacts the business may have caused or contributed to, and actively seek to publicly disclose the results. The HRDD should include environmental impacts and be conducted with a gender and conflict perspective in accordance with the OECD Due Diligence Guidance for Responsible Business Conduct or an equally recognized guidance. Any gaps identified should be addressed, based on consultation with impacted communities and in cooperation with organisations or other actors that are true representatives of affected rights holders.
- As part of HRDD and in line with the UNGPs, take appropriate action and engage in continuous Human Rights and Environmental Impact Assessments (HREIA) of business operations, including ongoing monitoring of air and water quality. The results of these assessments should be publicly shared, including active outreach with relevant stakeholders such as the EPA, Ministry of Health, Ministry of Mine and Energy, CSOs and local communities, in accordance with the OECD Due Diligence Guidance for Responsible Business Conduct and the GPSNR Policy Framework.
- In line with the UNGPs, provide adequate, effective, and timely access to remedies for affected communities, including an effective grievance or complaint mechanism and outlining a detailed plan of concrete actions. The implementation of this access-to-remedy mechanism should be assessed by an independent third party.
- Apply innovative technologies to contain and/or prevent environmental pollution. This includes improving the wastewater treatment system and air scrubber technology and committing to constant maintenance to reduce the levels of environmental pollution caused by business operations as well as ensuring access to drinkable water for all affected communities. This process should recognise that deeper wells can be affected by salinity intrusions.
- Include a commitment in the Bridgestone Group Global Human Rights Policy to respect human rights defenders and to avoid obstructing their work during company operations and investments, including by pledging not to use criminal proceedings against human rights defenders even where they may oppose a project or operation.
- Monitor workers' exposure to toxic substances including harmful gases, such as ammonia and hydrogen sulphide, in the workplace and actively provide information and training to workers about the potential health risks of their work, in line with UN principles on human rights and the protection of workers from exposure to toxic substances.

Recommendations to the Liberian government

- Mandate Liberia's EPA to establish national regulations on water and air quality specific to the rubber industry to ensure respect for citizens' human rights to life, health, food and clean water in line with the International Covenant on Economic, Social and Cultural Rights and the International Covenant on Civil and Political Rights, both of which Liberia has ratified.
- Require Liberia's EPA or other relevant government agencies to undertake immediate Human Rights and Environmental Impact Assessments of rubber production and processing in the country and providing the EPA with any required technical assistance. These assessments should be gender sensitive to ensure that impacts on women, men, girls and boys are identified and can be addressed. They should include testing the quality of water, air and soil as well as independent longitudinal health impact assessments in areas affected by environmental pollution. The assessments should follow international best practice, such as the UNECE Aarhus Convention on Access to Information, Public Participation in Decision-Making, and Access to Justice in Environmental Matters.
- Adopt legislation on mandatory HRDD to ensure that companies conduct gender- and conflict-sensitive HRDD on their operations, supply chains and investments in accordance with the UNGPs and OECD Due Diligence Guidance for Responsible Business Conduct or an equally recognized guidance.

Recommendations to investors holding positions in Bridgestone Americas, the owner of Firestone Liberia

- Require and support Bridgestone Americas and Firestone Liberia to conduct HRDD processes and HREIA on the impacts of its operations and value chain in Liberia. HRDD and HREIA activities should be conducted with a gender perspective and should follow the Organisation for Economic Co-operation and Development Due Diligence Guidance for Responsible Business Conduct or an equally recognised guidance.
- Require and support Bridgestone Americas and Firestone Liberia to undertake investments in environmental technology and management systems, aligned with best practices and international standards, throughout its operations and supply chain.
- Consider conducting independent due diligence on the environmental and human rights impacts of Firestone Liberia and other investments in the natural rubber sector, including meaningful stakeholder consultation with the representatives of affected communities.

Recommendations to Global Platform for Sustainable Natural Rubber (GPSNR)

- Ensure that the GPSNR grievance mechanism currently under development is inclusive, gender sensitive and effective at holding companies that violate GPSNR principles, codes and policies to account.
- Devise an effective system to monitor the sustainability performance of GPSNR members.
- Work towards binding, fair, effective regulation that creates a level playing field across the natural rubber industry.

Methodology

This report presents findings from research jointly conducted by Swedwatch, Source International and Green Advocates International on the environmental and human rights impacts associated with the business operations of Firestone Liberia Inc. (referred to hereafter as Firestone Liberia).³ The analysis aimed to assess, by means of qualitative and quantitative research, claims by human rights defenders and communities living adjacent to the Firestone Liberia rubber processing facilities that business operations had negatively impacted the water quality of neighbouring waterways, rivers and creeks as well as air quality, and thus their enjoyment of basic human rights. The research built on previous joint work by Green Advocates International and Swedwatch on the the impacts on local communities from rubber extraction and processing in Liberia.⁴ Given the length of time during which the same complaints by affected communities have been brought forward in dialogue with Green Advocates International, and in order to quantitatively assess these complaints, Swedwatch commissioned Source International to conduct an analysis of water and air quality and to implement training for local communities on monitoring pollution levels, building capacities of communities to use results in future dialogue with companies and public authorities (see the Annex for more details on the scientific methods employed in the research).

To ensure the research was rights holder driven and addressed pertinent concerns, in November 2019, Swedwatch, Green Advocates International and Source International conducted community meetings and interviews with local residents and human rights defenders in 13 communities along the Farmington River, both up- and downstream of the Firestone Liberia rubber processing facilities. At the same time, Source International engaged in preliminary on-site water and air pollution tests. In the second phase of the research, Source International, with support of Green Advocates International, conducted water and air quality analysis from 23 February to 2 March 2020 at monitoring points throughout the Farmington river sub-basin.

Based on these research findings, Swedwatch sent a set of questions to Bridgestone Americas Inc (referred to hereafter as Bridgestone Americas) and its indirect subsidiary Firestone Liberia about their efforts to avoid and mitigate potential contributions



to adverse impacts of their business operations in Liberia. Bridgestone Americas, in its written reply on behalf of its subsidiary Firestone Liberia, demonstrated openness to further dialogue, which is commendable and in line with the UN Guiding Principles on Business and Human Rights (UNGPs). In a next step, Bridgestone Americas was offered the opportunity to comment on sections focusing on its business operations, to which Bridgestone Americas, on behalf of Firestone Liberia, commented in writing on factual matters regarding its business operations and expressed openness for continued dialogue. Prior to the publication of this report, Swedwatch shared the full report with the company, offering Bridgestone Americas the opportunity to have its comments published on Swedwatch's website.

This report first presents an overview of environmental and human rights impacts related to the global natural rubber industry and Liberia's natural rubber processing operations. It then outlines human rights and environmental impacts experienced by communities near the rubber processing facilities of Firestone Liberia. The report further summarises the results of the scientific analysis of the water and air monitoring conducted in the wetlands and Farmington River sub-basin by Source International. Finally, the report outlines the dialogue between Swedwatch and Firestone Liberia and its parent company Bridgestone Americas as well as an analysis of the findings of this research.



Firestone Liberia facilities as seen from community of Owensgrove, left and above.

PHOTO: SOURCE INTERNATIONAL

Environmental and human rights impacts of the natural rubber industry

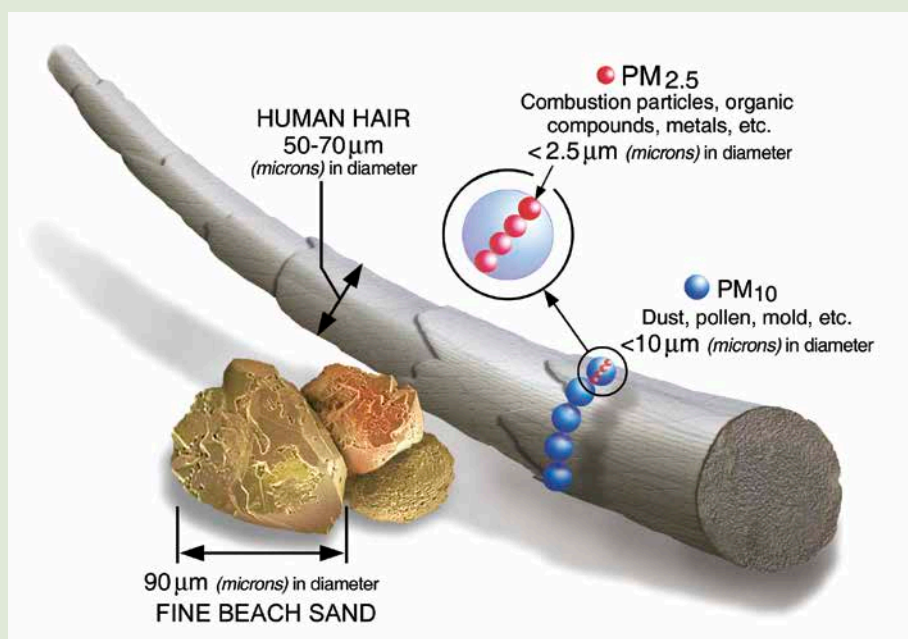
Natural rubber originates from the Amazon basin. It is derived from tapping the sap (or latex) of the *Hevea brasiliensis* tree. Rubber was traditionally grown by small-holder farmers and was spread to the global market by the colonial powers in West Africa and Southeast Asia. With an increase in the demand for (and price of) rubber, commercial investors and agribusinesses rapidly established large numbers of industrial rubber plantations. Between 1983 and 2012, the total area under rubber cultivation around the world almost doubled from 5.5 to 9.9 million hectares.⁵ In 2019, 90 percent of the world's natural rubber came from Asia; Thailand, Indonesia and Vietnam were amongst the largest producers. While the tyre industry uses 70 percent of global natural rubber supplies, other commercial uses include household items, medical products, and sports equipment.⁶

The industrial production and processing of natural rubber has in many parts of the world been associated with wide-ranging negative impacts. Human rights concerns include land grabbing, health impacts arising from environmental pollution (most notably of waterways), child labour, violations of labour rights, an increase in social conflicts, the loss of access to community forests and sacred sites, and subsequent declines in traditional sources of food and medicine.⁷ Environmental concerns include deforestation (notably across West Africa and Southeast Asia) which aggravates climate change, a decline in wildlife and overall destruction of biodiversity, and the contamination of water and air.⁸ Indeed, the natural rubber sector is considered one of the world's worst water-polluting industries.⁹

First, strong chemicals used in rubber production are frequently found in wastewater released by rubber production factories.¹⁰ The wastewater discharge from a rubber industry plant also commonly contains oils. When wastewater is discharged into rivers, these oils form a layer on the surface that prevents the oxygen from dissolving and blocks the sunlight from entering and reaching the riverbeds and river plants. This disrupts the process of photosynthesis and subsequently the river's levels of dissolved oxygen, which in turn kills animals living in the river, such as fish.

Second, industrial processes that include combustion, such as the rubber drying process, frequently release dust called particulate matter (PM) into the air (see text on next page). These particles jeopardise the health of workers involved in the drying process and neighbouring communities alike and can contribute significantly to air pollution.

Particulate matter (PM)



Size comparisons for PM particles. SOURCE: US ENVIRONMENTAL PROTECTION AGENCY

Particulate matter (PM) is the term for a mixture of solid particles and liquid droplets found in the air.

PM₁₀: These are inhalable particles, with diameters of 10 micrometres or less. PM₁₀ penetrates the first respiratory tract up to the larynx.

PM_{2.5}: These are breathable fine particles, with diameters of 2.5 micrometres or less. PM_{2.5} penetrates the deep respiratory tract up to the lungs and passes into the blood, causing more damage to humans than PM₁₀.¹¹

International civil society organisations have in the last decade repeatedly called upon companies throughout the natural rubber value chain to address the sustainability issues facing the sector, change their practices, and monitor the implementation of existing sustainability policies at the company level. Nevertheless, according to reporting by civil society organisations (CSOs) such as Global Witness, challenges in the sector remain.¹²

One of the most prominent initiatives towards a sustainable natural rubber industry, the International Rubber Study Group's Sustainable Natural Rubber Initiative – which was established in 2014 with a view to defining voluntary sustainability standards regarding the broader natural rubber sector – has so far been largely unsuccessful at fundamentally changing the rubber industry's sustainability footprint, and has frequently failed to include relevant stakeholders, including CSOs.¹³ The sector has,

according to the global campaign organisation Mighty Earth, only recently treated the matter with some degree of urgency. According to research by Mighty Earth, nine of the world's leading tyre brands and several of the world's largest rubber companies had by 2019 adopted a sustainable natural rubber policy.¹⁴

As a result of calls to increase the supply and uptake of sustainable natural rubber in the global marketplace, the Global Platform for Sustainable Natural Rubber (GPSNR) was created in 2019 to enable multiple stakeholders in the rubber sector, including CSOs, tyre companies, rubber producers and smallholder farmer representatives, to collectively develop strategies to tackle critical social and environmental issues. (More on the GPSNR on page 17.)

Natural rubber processing and Firestone Liberia

Firestone Liberia is the world's largest single natural rubber operation owned by one of the world's largest tyre and rubber companies, Bridgestone Corporation, via its subsidiary Bridgestone Americas.¹⁵ Firestone has operated in Liberia since 1926 and today constitutes Liberia's largest private employer.¹⁶ The original concession agreement was amended and renewed in 2008 to extend Firestone Liberia's license until 2041.



SOURCE: NATURAL EARTH/VIEWFINDER PANORAMA, MEGHAN KELLY FOR THE WASHINGTON POST

Firestone's total concession area comprises four percent of Liberia's territory and nearly ten percent of its arable land.¹⁷ Tens of thousands of people live on and around the Firestone plantation grounds in Harbel in Margibi County, including about 5,400 workers.¹⁸ According to Firestone Liberia, the processing plant based in Harbel produces technically specified rubber.¹⁹

In recent decades, national and international CSOs as well as human rights and environmental defenders have regularly documented the environmental, social and human rights impacts associated with Firestone Liberia's business operations.²⁰ Reported negative impacts include environmental pollution (such as the mismanagement of industrial waste and air pollution) and poor working conditions (including a lack of protective equipment, low wages and child labour).²¹ Furthermore, earlier research by Green Advocates International and Swedwatch has highlighted the risk of heightened social conflicts in the context of business operations, including Firestone Liberia's, as part of large-scale land concessions in Liberia's post-war economy and society.²²

Conscious of the potentially harmful effects of natural rubber processing on the local environment and human rights of workers and affected communities, the renewed concession agreement of 2008 between the Firestone Liberia and the Liberian government included environmental protection commitments by Firestone Liberia.

*'Firestone Liberia shall take reasonable measures to ensure that production does not cause unreasonable risks to public health or damage to the environment and shall employ protective measures as employed by persons in Liberia and elsewhere engaged in production on a basis similar to production under this agreement (Art. 15a).'*²³

Furthermore, following advocacy and a class action lawsuit in the US, Firestone Liberia in 2008 started to address some of the issues raised. In relation to pollution, the company in 2008 initiated the construction of a wastewater treatment facility.²⁴ To Swedwatch's knowledge, the wastewater treatment in use when this research was conducted consists of a system of equalization and clarification tanks at the processing facilities in Harbel and releasing that industrial effluent into a natural wetland in the Farmington river sub-basin that acts as a bio-accumulation filtering system. The vegetation in the natural wetland is supposed to act as a bio-filter, with microorganisms removing pollutants and decomposing waste.²⁵



Wastewater discharge into the wetlands of the Farmington River sub-basin.

PHOTO: SOURCE INTERNATIONAL

In its dialogue with Swedwatch during the writing of this report, Firestone Liberia stated that it “conducts weekly sampling of the wastewater treatment plant outfall in compliance with the company’s Environmental Protection Agency (EPA) permit. Additionally, the company regularly samples surrounding surface waters in proximity of the wastewater discharge point. Third-party environmental consultants hired by Firestone Liberia conduct ESIA and environmental audits to monitor any potential impact of its operations on the environment”.²⁶ Firestone Liberia further stated that “it is fully acknowledged with all stakeholders that certain nutrient constituents in the wastewater have, on multiple occasions, exceeded permitted standards. However, we are not aware of any harm or damage resulting from these exceedances.”²⁷

Interviews with affected communities

In community meetings as well as individual and group interviews conducted for this research by Swedwatch, Green Advocates International and Source International with over 100 local community members of 13 different communities living in the vicinity of Firestone Liberia’s rubber processing facilities, **the limited access to clean water was highlighted as a key environmental impact associated with the rubber processing plant.**

The Firestone Liberia rubber processing plant is separated from neighbouring communities by the Farmington River, which local communities rely on for household use as well as their livelihoods, such as fishing and transportation.²⁸ Creeks and small lakes around the natural wetland in the Farmington River sub-basin, which eventually feed back into the Farmington River, are also used for domestic purposes, including fishing and drinking. Residents of communities downstream²⁹ of the Firestone Liberia processing facilities along the river and sub-basin described various impacts of water and air pollution on their livelihoods and health.

Community members reported that drinking the river water causes them severe diarrhoea and nausea. People dig their own wells as alternative sources for drinking water. However, in the dry season, well water appears to be affected by salt from the nearby sea as well as chemicals that residents believe come from the Firestone Liberia plant, rendering the water undrinkable. In most local communities, women are the main caregivers for their families. Their roles include taking responsibility for securing water, fishing and washing. Bearing these responsibilities, women suffer disproportionately from negative effects on the quality of water sources.

In group interviews with women who use the Farmington river to fish and clean clothes, virtually every woman reported skin rashes. Many interviewed women furthermore reported vaginal infections which they believe are caused by their exposure to the polluted water.³⁰

“To lay baskets in the river the women have to bend [down]. This allows water to enter our bodies. We often have inner infections.”
/Female community member, Owensgrove³¹

Interviews with community members further highlighted that environmental pollution has not only impacted the quality of water and people’s access to clean water; it has also affected their livelihoods. Community members related a decrease in food intake, particularly affecting children who rely on fish as their main source of protein, as well as a loss of income from fisheries due to several major fish die-offs in recent years.

“There used to be good and bad fishing seasons. Now there are only bad seasons.”
/Local fisherman, Owensgrove³²

Furthermore, interviewed community members reported high levels of dust and odour annoyance that they attribute to air pollution caused by the processing facilities. Communities described frequent loss of appetite, headaches, vomiting, rashes, nosebleeds and bloodshot eyes. In line with these testimonies, the air quality analysis conducted for this study demonstrated higher pollutant levels in the vicinity of Firestone Liberia’s rubber processing facility: the quality of all analysed parameters worsened closer to the factory. While there are no international guidelines on odour levels, and odour annoyance is not currently classified under toxic fumes, prior studies have suggested that exposure to such emissions may lead to shortness of breath, eye irritation, headache, loss of appetite, dry throat, and psychological stress.³³

“The odour coming from the Firestone factory affects us greatly. The stench causes headaches and nosebleeds; it can really make you go out of your mind.”
/Community member, Owensgrove³⁴

The complaints brought forward by community members interviewed for this research in 2019 and 2020 were identical to those that communities had lodged between 2005 and 2010 with Green Advocates International, highlighting a long history of concerns relating to water and air pollution in the area affected by Firestone Liberia business operations.³⁵

In addition to the expressed concerns in relation to the right to health, water and food, interviewed community members highlighted the lack of access to information. Local community leaders, human rights defenders and national CSOs alike described insufficient transparency regarding assessments of pollution levels in the vicinity of the Firestone Liberia’s business operations. Interviewed local community leaders in particular requested information on pollution levels in the water used for fishing and household use by community members, expressing concern whether an evacuation of some communities would be advisable.³⁶

At the time of publication in February 2021, local communities describe the situation as outlined above unchanged from when rights holder interviews were conducted in February 2020.

According to local civil society organisations, the experiences outlined by communities in the vicinity of the Firestone Liberia rubber facilities are not uncommon for communities affected by business operations in Liberia and indeed reflect challenges associated with the reliance of the Liberian post-war economy on foreign direct investment (FDI) in the country’s natural resources and large-scale land concessions.³⁷ While the economic boom resulting from FDI promotes growth in the struggling economy, research by Green Advocates International has shown that local communities typically have not received these benefits in the past despite hopes that concessions would bring employment, improved infrastructure, and medical care.³⁸ Instead many local communities reportedly experienced land loss, water scarcity, involuntary resettlement, desecration of shrines and sacred places and loss of livelihood sources, thus heightening community-company tension.³⁹

Relevant business, human rights and environmental initiatives and frameworks

As early as 1972, the Stockholm Declaration stated that the natural environment is essential to a man's well-being and enjoyment of basic human rights. This declaration laid the foundation for the development of a new human right: the right to a safe, clean, healthy, and sustainable development. The right to a healthy environment has since been recognised in national and regional legislation around the world. Meanwhile, unsustainable production and consumption patterns when combined with increases in the use of resources, put at risk the healthy planet needed to attain sustainable development. Contamination of air, water and soil from industrial waste interferes specifically with rights to life, health, food, water, housing, and development. With this in mind, the role of business in preventing and mitigating adverse environmental and human rights impacts associated with business activities becomes self-evident.

The **Global Platform for Sustainable Natural Rubber (GPSNR)** is an international, multi-stakeholder, voluntary membership organisation, created in 2019. As a collaboration between rubber companies, major tyre brands, carmakers, civil society organisations, and smallholder farmers it seeks to address the rubber industry's sustainability efforts and improve the socioeconomic and environmental performance of the natural rubber value chain. The GPSNR Policy Framework sets out eight overarching themes that include commitments of GPSNR member companies to legal compliance, community livelihoods, healthy, functioning ecosystems (including no deforestation), and respecting all human rights. The Policy Framework explicitly outlines commitments on maintaining an active, regular stakeholder dialogue to provide relevant information, and to afford opportunities for feedback and suggestions related to fulfilment of the company's commitments.

The **UN Guiding Principles on Business and Human Rights (UNGPs)** stipulate that all business enterprises must respect human rights and have the responsibility to prevent and mitigate the adverse human rights impacts associated with their company's activities. Human Rights Due Diligence (HRDD) represents a fundamental tool that enables companies to respect human rights. The HRDD process should include assessing actual and potential human rights impacts, integrating and acting upon the findings, tracking responses, and communicating how the impacts are addressed. An effective HRDD informs a company of impacts that have already taken place, and thereby helps companies to understand when a Human Rights Impact Assessment (HRIA) should be conducted. A HRIA can be a time-consuming exercise but is needed to adequately understand who has been impacted, and how. HRIAs also help a company understand its level of involvement in the impact and are therefore a vital tool for assessing issues related to remedy.

According to the **OECD Guidelines for Multinational Enterprises**, companies should assess and address the foreseeable environmental, health and safety-related impacts associated with their goods and services over their full life cycle. Companies should also prepare an Environmental Impact Assessment if their activities may have significant environmental, health or safety impacts. A gender-sensitive perspective is important to ensure awareness of gender issues and women's human rights in situations where women and girls may be disproportionately impacted.

The importance of a **gender-sensitive approach** is a common thread in all international guidance. The guidelines all highlight that the human rights of women and men, girls

and boys are impacted differently by the environmental impacts of business operations. Gender-focused due diligence starts with knowing where women and men are typically involved in the supply chain. A gendered approach to due diligence involves adjusting the actions that business actors take to identify, prevent, mitigate, and address any impacts to ensure these are effective and appropriate. Examples include consulting women using a separate space from men and using gender-disaggregated data for instance to assess effective grievance mechanisms.

International guidance on business, human rights and the environment further covers the need for a **conflict-sensitive approach** to business operations in conflict-affected settings. Conflict-sensitive business operations entail context and conflict analysis to understand actors and factors within the context that drive or sustain conflict and tensions (and those that mitigate them) and modifying business activities to reduce their negative impacts on conflict drivers. The importance of heightened due diligence for businesses operating in conflict-affected areas was outlined in the UNGPs from the onset and is expected to be further emphasised on occasion of the 10-year anniversary of the UNGPs. In addition, an increasing recognition that there is no clear evidence of an intrinsic link between business and investment, on the one hand, and peace, on the other hand has led to a sharp increase in available toolkits and guidance supporting companies in efforts to mitigate their impact on conflict.⁴⁰

While the **UN Sustainable Development Goals (SDGs)**, adopted by all UN member states in 2015 and outlining a path to end extreme poverty, fight inequality, and protect our planet, are broader in scope than specific business and human rights guidance, the fundamental ways that business can contribute remain unchanged. Among the 17 SDGs, **Goal 12** aims to ensure sustainable consumption and production patterns. Actions to achieve this goal include reducing resource use, degradation and pollution throughout a product's life cycle while increasing the quality of life. Business actors can positively or negatively contribute to all SDGs. Increased adherence by companies to established guidelines on business, human rights and environment and the empowerment of human rights and environmental defenders contributes, in addition to Goal 12, in particular to **Goal 1** No poverty; **Goal 2** Zero hunger; **Goal 3** Good health and well-being; **Goal 5** Gender equality; **Goal 6** Clean water and sanitation; **Goal 8** Decent work and economic growth; **Goal 10** Reduced inequalities; **Goal 12** Responsible consumption and production; **Goal 13** Climate action; and **Goal 16** Peace, justice and strong institutions.

Results of water and air analysis

The complaints brought forward by community members interviewed for this research were identical to those that communities had lodged with Green Advocates International between 2005 and 2010 as well as to those reported in previous Swedwatch research on the rubber industry in Liberia, highlighting a long history of concerns relating to water and air pollution in the area affected by Firestone Liberia business operations. In order to quantitatively assess these complaints, Swedwatch commissioned Source International to conduct an analysis of water and air quality and to implement training for local communities on monitoring pollution levels, building capacities of communities to use results in future dialogue with companies and public authorities.



Wetland and sub-basin water sampling stations and control point (A1). SOURCE: SOURCE INTERNATIONAL

Water analysis of Farmington River sub-basin, including wetland area and Yur-Chu Creek

Source International conducted water analysis of the wetland area and additional creeks near the Firestone Liberia rubber processing facilities as well as the Farmington river. The water quality study took place between 25 February and 2 March 2020, during the dry season. The water sampling took place on 2 March 2020. 7 sampling points were assessed: 4 along the Farmington River close to the Firestone processing plant, 1 in the wetland used to treat wastewater from the Firestone operation facilities, and 2 points in Yur-Chu (Ninpu) Creek, which receives treated wastewater. The Annex contains details on the scientific methodology used in the analysis.

The Farmington River sub-basin includes creeks and rivers that originate from a natural wetland area used as wastewater discharge pools by Firestone Liberia. The water coming from the natural wetland area, via the Yur-Chu and other creeks and small lakes, eventually enters the Farmington River. Local residents rely on the small lakes and creeks in the sub-basin, including Yur-Chu Creek, for domestic use, fishing and drinking.

The conducted water analysis detected significant differences in the water quality between the wetland area (station A5 on p. 19 map) and Yur-Chu Creek (stations A6 and A7). **The analysed data suggest a link between Firestone Liberia's rubber processing facility and the high concentrations of heavy metals⁴¹ detected in the wetland area (A5).** Levels of **aluminium** and **copper** were found to be above Northern American aquatic life protection limits,⁴² while the concentration of **iron** at A5 was 63 times higher than the reference level measured at station A1 in an unpolluted section of the Farmington River. Moreover, **phosphate**

Table: Heavy metals and organic compound levels in wetland area

Heavy metals (mg/l)	WHO Human Consumption	US EPA Water Life Protection	Liberian Water Quality Guidelines	A5 wetland	A6 Yur-Chu Creek	A7 Yur-Chu Creek
Aluminium	0,2	0,75	—	6.3	0.16	0.051
Iron	0,3	—	0.1 (I); 1.5 (II)	19	3.8	2
Manganese	0,05	—	—	0.42	0.18	0.22
Copper	2	—	0.01 (I-II)	0.012	0.0016	0.00058
Organic compounds	Human Consumption	Water Life Protection	Liberian Water Quality Guidelines	A5 wetland	A6 Yur-Chu Creek	A7 Yur-Chu Creek
Phosphate (mg/l PO ₄)	—	—	0.01 (I); 0.02 (II)	14	5.4	1.3
Total phosphorus (mg/l P)	0.025 mg/l (US EPA)	0.1 mg/L (US EPA)	—	42.9	16.6	4.0
Ammoniacal nitrogen (mg NH ₄ /l)	0.5 mg/l (EU)	<15 mg/L (EU), 0.019 mg/L (Canada)	1 (I); 3 (II)	79	46	35
BOD (mg O ₂ /l)	25 mg/L (EU)	5 mg/l (EU)	—	350	20	0
COD (mg O ₂ /l)	125 mg/L (EU)	160 mg/L (EU)	—	1,300	94	40

(-) international or national standards non-existent.

Liberia Water Quality Guideline: Class I (drinking water); class II: For fisheries, cultivated fisheries, organized public baths.

concentrations are above the aquatic life protection level; levels of biological oxygen demand (BOD₅) (350 mg/l) and chemical oxygen demand (COD) (1.300mg/l) exceed international aquatic life protection levels by 70 and 8 times, respectively.⁴³

The analysis revealed that the water in Yur-Chu Creek is highly polluted and effectively undrinkable. Iron concentration in the creek is 12 times higher than the drinking water standard set by the World Health Organization (WHO). The concentration of **manganese** is 4 times higher than the level deemed to be safe by the WHO.

The results of the conducted water analysis suggested that the Firestone Liberia wet-land wastewater treatment system in operation during the conducted analysis had not been working adequately. The results indicate that this system is not able to reduce contaminants to an acceptable level and appears to release high levels of harmful and toxic pollutants into rivers and creeks, thus negatively impacting the environment and human rights of local communities.

Water analysis of Farmington River and Owensgrove Creek

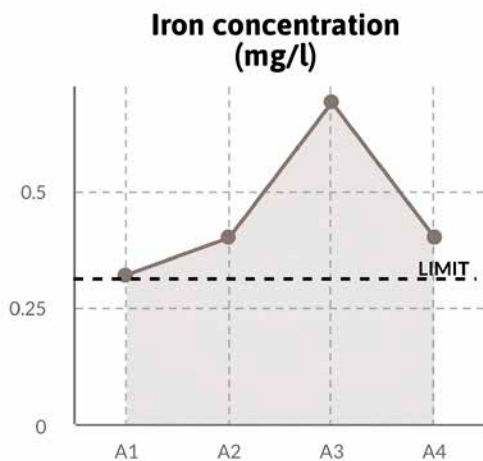
Source International's analysis of water samples from the Farmington River recorded concentrations of organic and inorganic pollution above permissible levels determined by water quality guidelines for human consumption. While the high concentrations of organic and inorganic pollutants constitute a threat to the health of local communities that use the river as a water source as well as the freshwater ecosystem of the Farmington River that provides livelihoods for local communities, it remains unclear to what extent the operations of the Firestone Liberia facilities impact the levels of organic pollution recorded in the Farmington River.



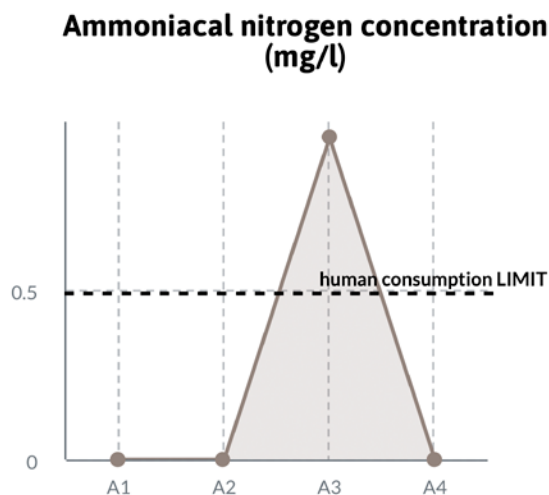
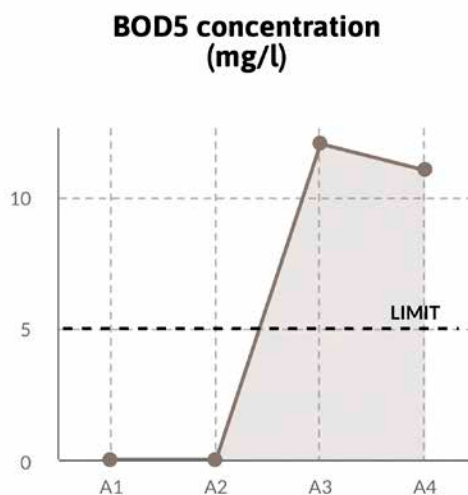
Farmington river water sampling stations. SOURCE: SOURCE INTERNATIONAL

The environmental data collected for this study reveal significant changes in the water quality of the Farmington River between control point A1 near Poinnah Town and the downstream stations (A2, A3, A4) near the Firestone Liberia operation facilities, close to Owensgrove (see map on p. 21). Samples taken from stations downstream of Firestone Liberia (A2, A3, A4) showed water quality parameters⁴⁴ above permissible levels determined by the Liberian water quality guidelines for human consumption,⁴⁵ and above the permissible level for aquatic life protection set by international environmental protection guidelines.⁴⁶

Pollution levels were particularly high in a small creek off the Farmington River, the Owensgrove Creek (station A3 in map on p. 21), which flows close to the Firestone Liberia processing facilities. While the concentration of **iron** was measured at all four control points (see map above) to be above permissible levels set in the Liberian water quality guidelines for drinking water, it was highest in Owensgrove Creek.



In Owensgrove Creek the concentrations of **manganese** and **ammoniacal nitrogen**⁴⁷ were found to be over the WHO limit for human consumption.⁴⁸ Furthermore, the BOD₅⁴⁹ and level of total **hydrocarbon** (petroleum origin) significantly exceeded the European limit for aquatic life protection⁵⁰ and the European Union guidelines for drinkable water, respectively.⁵¹



While the collected data indicated significant organic and inorganic pollution and thus significant risks to the health and livelihoods of local communities along the Farmington River, it remains unclear to what extent the operations of the Firestone Liberia facilities impact the levels of organic pollution recorded in the Farmington River. For instance, concentrations of **phosphates**⁵² – which at high concentrations can contribute to the loss of oxygen,⁵³ thus impacting the number of fish deaths reported by local fishermen – were found to exceed the Liberian water quality guidelines for both human consumption and for fishing and recreational use in all four stations, both upstream and downstream of the Firestone Liberia facilities.

Analysis of air quality

According to the UN Environment Programme, air pollution is the single greatest environmental risk to human health, causing close to 7 million premature deaths per year globally.⁵⁴ The rubber industry is a main contributor to air pollution. It releases large amounts of hazardous compounds into the air including dust, gases such as so-called volatile organic compounds (VOCs), vapours and fumes that are linked to odour annoyance.

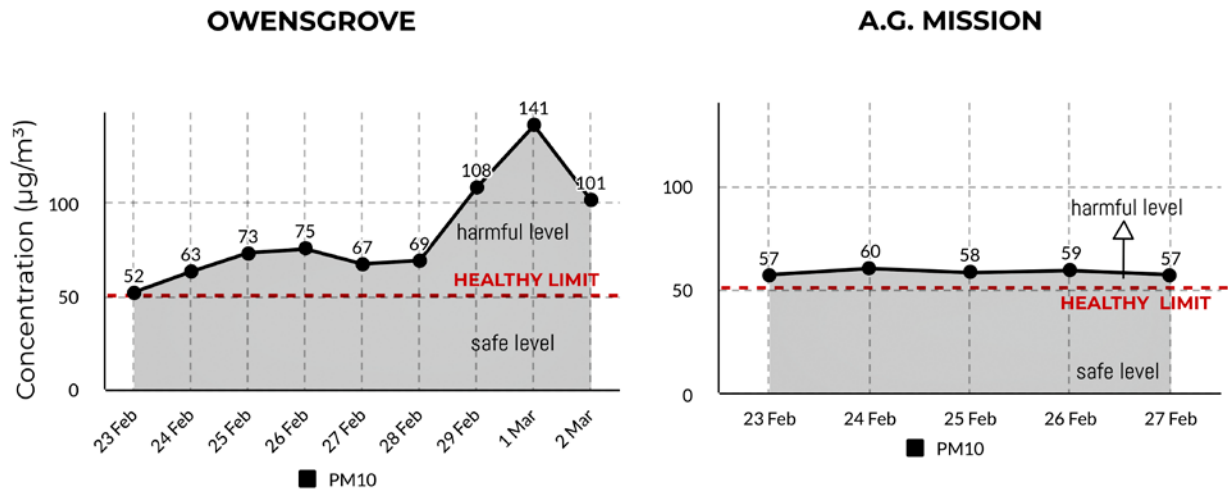
As part of this research, Source International conducted air monitoring between 23 February and 1 March 2020 in the vicinity of the Firestone Liberia processing facilities, analysing dust, total volatile organic compounds (TVOCs) and odour. **The air quality analysis demonstrated higher pollutant levels near Firestone Liberia's rubber processing facility: the quality of all analysed parameters worsened the closer monitoring stations were located to the factory.** The rural location of the investigated area, and thus lack of other likely causes, suggests a link between Firestone Liberia's processing facilities and the recorded levels of air pollution.

Dust

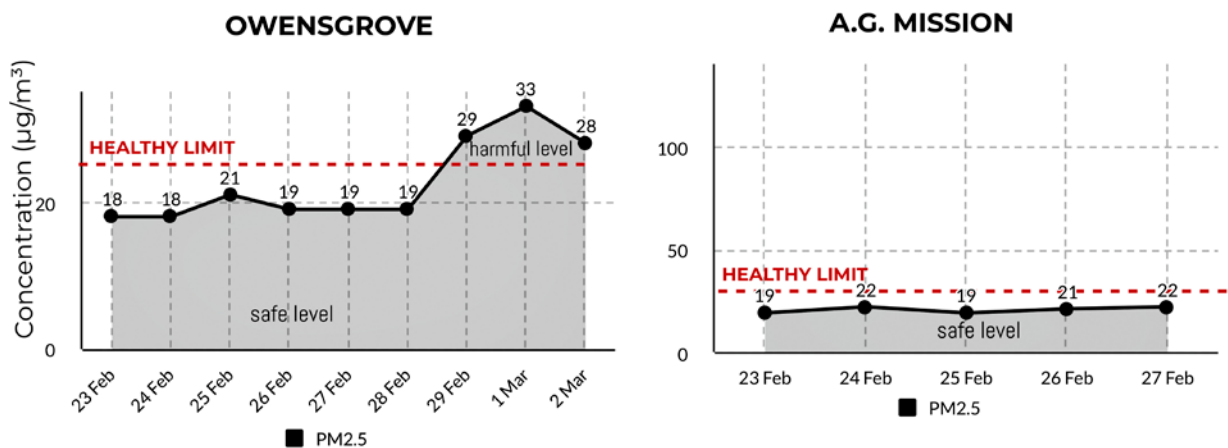
Two dust monitoring stations were installed in two communities: in Owensgrove (just opposite the Firestone Liberia processing facilities, D1) and A.G. Mission (1.7 km from the factory, D2), monitoring levels of inhalable particles PM₁₀ and PM_{2.5}. Exposure to these particles over a long period of time increases the likelihood of respiratory and cardiovascular diseases as well as lung cancer.⁵⁵

A higher concentration of dust was recorded in Owensgrove (D1) than in A.G. Mission (D2), suggesting a link between the proximity of the Firestone Liberia rubber processing facilities and pollution levels. The highest dust (PM₁₀) concentration in Owensgrove is 43 percent higher than in A.G. Mission. **Levels of PM₁₀ in Owensgrove exceeded the permissible limit considered harmful by the WHO⁵⁶ on every day of the monitoring period.** The levels of the finest particles (PM_{2.5}) in Owensgrove station exceeded the health limit on 3 days of the monitoring period. PM_{2.5} was not recorded over the limit in A.G. Mission during the monitoring period.

Largest dust (PM10)



Finest dust (PM2.5)



Gas

The Owensgrove (D1) and A.G. Mission (D2) monitoring stations also measured detectable levels of gas ammonia and hydrogen sulphide, both of which are used in rubber processing. Ammonia is a colourless, highly irritating gas with a sharp suffocating odour. Exposure to high levels of ammonia in the air may irritate skin, eyes, throat, and lungs and cause coughing and burns.⁵⁷ Hydrogen sulphide is both an irritant and a chemical asphyxiant that affects oxygen utilization and the central nervous system. Low concentrations irritate the eyes, nose, throat and respiratory system. Repeated or prolonged exposure to high concentrations may cause eye inflammation, headache, fatigue, irritability, insomnia, digestive disturbances, and weight loss.⁵⁸

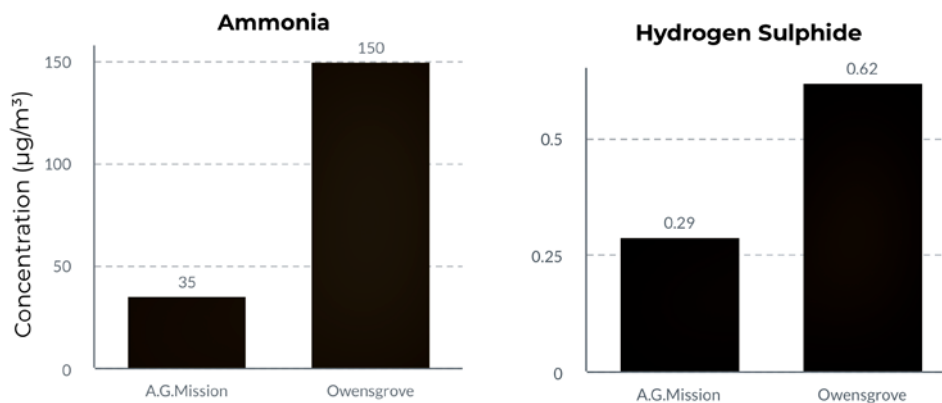


Location of Particulate Matter (PM10-PM2.5) and Gas monitoring stations.

SOURCE: SOURCE INTERNATIONAL

The air analysis suggested that the Firestone Liberia processing facilities contribute to the ammonia and hydrogen sulphide emissions found in the air samples. The level of ammonia concentration measured in Owensgrove ($150\text{ }\mu\text{g}/\text{m}^3$) was more than four times higher than in A.G. Mission ($35\text{ }\mu\text{g}/\text{m}^3$), while hydrogen sulphide concentrations were twice as high in Owensgrove ($0.62\text{ }\mu\text{g}/\text{m}^3$) as in A.G. Mission ($0.29\text{ }\mu\text{g}/\text{m}^3$) during the monitoring period. Notably, the hydrogen sulphide concentration drastically reduced with distance from the Firestone Liberia processing facilities indicating that Firestone Liberia business operations might indeed have an impact on the air quality of surrounding communities.

Recorded levels of both gases remained below levels considered dangerous.⁵⁹ In response to this analysis, Firestone Liberia further asserted that “the suggested air sample concentrations are significantly below threshold limits to which workers can be exposed as established by the American Conference of Governmental Industrial Hygienists”.⁶⁰ It is indeed likely that high levels of air humidity influenced the fall-down process of gases, reducing their concentration in the air as reflected in low levels of both gases documented in the conducted air quality analysis. It would therefore be advisable that the Liberian EPA repeat these measurements, potentially in the context of a renewed Environmental Impact Assessment and be provided with any required technical assistance and capacity-building to this end.





Location of odour and Volatile Organic Compounds (VOCs) monitoring stations.

SOURCE: SOURCE INTERNATIONAL

TVOCs⁶¹

During the monitoring period, four monitoring stations were set up to measure the level of TVOCs and odour between 25 February and 1 March: station G1 (around the factory perimeter on the north side of Firestone Liberia processing facilities), station G2 (140 m in front of the factory in Owensgrove), station G3 (near the Owensgrove health clinic), and station G4 (in A.G. Mission).

The strongest odours were observed close to the Firestone Liberia processing facilities (G1). Strong odours were recorded in Owensgrove (G2), while no odours were detected in A.G. Mission (G4). **These air quality measures suggest that the Firestone Liberia processing facilities are contributing to the odour annoyance reported by local communities.**

While no international guidelines on odour levels are available at the time of writing and odour annoyance is not yet classified under toxic fumes, prior studies have suggested that exposure to such emissions may lead to shortness of breath, eye irritation, headache, loss of appetite, dry throat, and psychological stress.⁶² Vulnerable groups such as young children, the elderly and pregnant women may be more sensitive to odours.

Similar to the odour levels, higher levels of TVOC were recorded at the monitoring stations close to the factory and surrounding areas. **TVOC levels decreased further away from the Firestone Liberia factory, suggesting that the company's processing facilities play a role in contributing to local air pollution.** The average value range in Owensgrove is 80 µg/m³, compared with 40 µg/m³ in A.G. Mission. No legal limits for these gases have been determined at the time of writing. TVOCs can affect the nervous system. Health effects of long-term exposure to TVOC can include irritation to the eyes, nose and throat; allergic skin reactions; shortness of breath; headaches; loss of coordination; nausea; fatigue; and damage to the liver, kidney and central nervous system.⁶³

Company dialogue

Based on the research findings presented above, Swedwatch approached Firestone Liberia and its parent company Bridgestone Americas for comments. Bridgestone Americas replied to Swedwatch's initial outreach in writing and demonstrated openness to further dialogue. This is commendable and in line with the UNGPs. However, the company's answers to Swedwatch's inquiry neither provided sufficiently detailed information on its HRDD on its business operations in Liberia, whether any human rights focused impact assessments had been conducted in this context nor whether it had integrated a gender perspective into their HRDD processes.

GPSNR grievance procedures

The findings of the water and air quality analysis outlined in this report correlate closely with a complaint related to environmental problems brought against Bridgestone Corporation in December 2019 under the GPSNR, of which the Bridgestone Corporation is a member.⁶⁴ In the complaint, the global campaign organisation Mighty Earth, which is also a founding member of the GPSNR, outlined violations by Bridgestone Corporation of GPSNR principles related to, amongst others, water management, human rights, free, prior, and informed consent, auditing protocols and transparent reporting.⁶⁵

The complaint was based on research conducted by Mighty Earth in communities along the Farmington River.⁶⁶ Through internal GPSNR procedures Mighty Earth encouraged Bridgestone to implement remedial steps to comply with both its own Global Sustainability Procurement Policy and GPSNR Principles. In its response, Firestone Liberia referred to the ongoing process of installing a new wetland wastewater treatment system, which was to be completed as quickly as possible; it concluded that it did not "see significant disparity in either party's environmental positions necessitating further dispute resolution".⁶⁷

In its dialogue with Swedwatch in early 2021, Bridgestone Americas referred to the Mighty Earth allegations from 2019 and again concluded that Bridgestone Americas had been unable to independently substantiate these allegations. Indeed, the company stated that "the management of Firestone Liberia, and its parent company, Bridgestone Americas, are unaware of any current negative impact of its rubber processing operations on the communities surrounding its operations".⁶⁸

Wetland wastewater treatment system

In its dialogue with Swedwatch in early 2021, Firestone Liberia's parent company Bridgestone Americas declared that completion of the company's new wastewater treatment system was interrupted during construction due to the COVID-19 global pandemic and will resume as soon as seasonal weather and the situation of the pandemic allows.⁶⁹ It is essential that Firestone Liberia proceed with constructing a new wetland wastewater treatment system without undue delay, in consultation with affected stakeholders, after adequately assessing the environmental impact of both the old and new wastewater treatment systems.

Access to information

In addition to the alleged violation of the right to health, water and food, interviewed community members highlighted the lack of access to information. Local community leaders, human rights defenders and national CSOs alike describe insufficient transparency regarding assessments of pollution levels in the vicinity of the Firestone Liberia's business operations.

In its dialogue with Swedwatch, Firestone Liberia's parent company Bridgestone Americas stated that the company regularly samples surrounding surface waters near the wetland wastewater discharge point as well as bore wells to ensure a continuous supply of clean drinking water.⁷⁰ However, the interviewed community members said they were not aware of any water testing organised by the company or the Liberian EPA. Should the results of water sampling indeed not be communicated to affected communities, this would violate the commitment made by the GPSNR member Bridgestone Corporation under the GPSNR Policy Framework which include "maintaining an active, regular stakeholder dialogue to provide relevant information, and to afford opportunities for feedback and suggestions related to fulfillment of the company's commitments".⁷¹

In its dialogue with Swedwatch, Firestone Liberia further stated that "it is fully acknowledged with all stakeholders that certain nutrient constituents in the wastewater have, on multiple occasions, exceeded permitted standards".⁷² However, community leaders interviewed for this report stated that they were unaware of a public acknowledgment by the company that constituents in the wastewater have exceeded permitted standards.

Equally, in dialogue with Swedwatch, Firestone Liberia claimed that "permit-required sampling is conducted by a Liberian EPA" and publicly available by law and on request. It also asserted that "public participation with potentially affected communities is a legal requirement for all permit issuances from the EPA and is part of our commitment to surrounding communities []." However, local community leaders and human rights defenders interviewed as part of this research maintain they have been unable to obtain any of the reports from the EPA and could not find them to be publicly available on the EPA website as of January 2021. While the option remains to file for access to environmental information under the environmental law and freedom of information laws, Firestone Liberia is encouraged to engage in active outreach and information-sharing with affected stakeholders.

In keeping with the UNGPs, Firestone Liberia should also commit to further transparency and publish the results of its analyses of all previous water samples – as well as Environment Management Plans and Environmental Impact Assessments – online to ensure access to information for all relevant stakeholders. This approach should also include active outreach to affected stakeholders to enable public participation in environmental decision-making as well as access to justice in environmental matters for affected communities.

Research analysis and conclusions

The testimonies of affected community members outlined in this report continue a long history of reported concerns relating to pollution in the vicinity of Firestone Liberia's rubber processing facilities.⁷³ Concerns over the possible effects of pollution levels remain, with community members describing various impacts of water and air pollution on their health, including infections, rashes, headaches, and nausea as well as a decrease in food intake. Interviewed community members further highlighted that environmental pollution has not only impacted people's access to clean water; it has also affected their livelihoods. However, in its dialogue with Swedwatch, Firestone Liberia and its parent company Bridgestone Americas maintained that they were unaware of any negative impact of their rubber processing operations on local communities.

The results of the conducted water analysis suggested that the Firestone Liberia wetland wastewater treatment system in operation during the conducted analysis had not been working adequately: it appears to be unable to reduce contaminants to an acceptable level and potentially releases high levels of harmful and toxic pollutants into wetlands, rivers, and the broader environment.

The results of the air analysis conducted for this study and the testimonies from community members likewise suggest that the current use of industry-standard air scrubber technology to improve air quality at the Firestone Liberia plant site and nearby communities, as outlined by Bridgestone Americas in its dialogue with Swedwatch, is not sufficient. While Firestone Liberia maintains that it operates within all required air permits, affected communities appear to be experiencing significant negative effects from air pollution.

In addition to the expressed concerns in relation to the right to health, water and food, community members interviewed for this report highlighted the lack of access to information. Local community leaders and human rights defenders have in the past requested transparency, and continue to do so, regarding the severity of water pollution as well as an objective assessment of the overall pollution level, indicating whether an evacuation of some communities along the Farmington River would be advisable.

In light of these findings, Firestone Liberia should without undue delay conduct an urgent Human Rights and Environmental Impact Assessment to identify risks and address any impacts the business may have contributed to, including impacts on air quality, and publicly disclose the results and assess them with local communities. Any gaps identified should be addressed, based on consultation with impacted communities and in cooperation with organisations or other actors that are true representatives of affected rights holders.

Firestone Liberia should further honour its commitment under the GPSNR Policy Framework and make all results of sampling as well as previously conducted Environmental Impact Assessments and Environment Management Plans publicly available,

including active outreach to affected stakeholders. These measures would facilitate public participation in environmental decision-making as well as access to justice in environmental matters for affected communities and therefore be in line with international best practice, such as the UN Economic Commission on Europe (UNECE) Aarhus Convention,⁷⁴ which calls upon public authorities to make provisions enabling access to environmental information, public participation in environmental decision-making and access to justice in environmental matters for affected communities.

The environmental contamination described above interferes with the local community members' human rights to life, health, and food as well as their right to a healthy environment, including access to clean water and air. Furthermore, interviews with affected community members indicate that procedural environmental rights, such as access to information and public participation in environmental decision-making, are being breached. The environmental pollution reported by rights holders further contradicts the vision of a fair, equitable and environmentally sound natural rubber value chain and principles of safe water management agreed upon by GPSNR members, including Bridgestone Corporation.⁷⁵

In relation to transparency and dialogue, should the results of water testing by the company indeed not be communicated to affected communities, this would violate the commitment to provide relevant information to affected stakeholder made by Bridgestone Corporation under the GPSNR Policy Framework. The reported lack of access to information is also not in line with company responsibilities as outlined international guidelines, including the UNGPs and the OECD Guidelines for Multinational Enterprises.⁷⁶

Furthermore, the company's answers to Swedwatch's inquiry neither provided sufficiently detailed information on its HRDD on its business operations in Liberia, whether any human rights focused impact assessments had been conducted in this context nor whether it had integrated a gender perspective into their HRDD processes. The findings in this report suggest that the need for Bridgestone Americas to intensify its HRDD in Liberia (and possibly also in other high-risk country contexts where the company has operation) is highly urgent. This would be in line with the sustainability commitments that Bridgestone Corporation has made, and with the UNGPs and other international corporate responsibility standards.

As one of the world's largest tyre and rubber companies, Bridgestone Corporation can significantly influence the overall market's adherence to international human rights standards. Swedwatch, Source International and Green Advocates call on Bridgestone Corporation to use its leading role for the advancement of the industry's contribution to the fulfilment of the UN Sustainable Development Goals, including goal 12 on sustainable production patterns.

This includes urgently conducting ongoing, conflict and gender sensitive HRDD and HREIA, proactively sharing all results with affected communities. It also entails delivering on all other aspects of its commitments under the GPSNR as well as its own Sustainability Policy.

Doing so would allow local communities to take part in the benefits that could come from large-scale land concessions and enjoy the full set of human rights to which they are entitled. It would also set a much-needed example of responsible business conduct for the entire natural rubber sector, which could improve the lives of millions of people and the environment across the globe.

Annex

Scientific methodology

To assess an area's environmental situation, an environmental monitoring and sampling process is required. Swedwatch commissioned Source International to conduct this process between 23 February and 8 March 2020, but it was forced to end early on 2 March due to the outbreak of the COVID-19 pandemic and subsequent travel restrictions.

Source International monitored physical-chemical parameters and collected water samples at 7 points within the Farmington River sub-basin in Margibi County. In order to obtain comparative data on water quality, a sample of surface water was also collected from the Farmington River near Poinnah Town, upstream of the Firestone Liberia processing facilities. The monitoring and sampling sites were selected based on a previous screening study conducted by Source International, Green Advocates International and Swedwatch in November 2019.

Physical field parameters were monitored in situ using a multiparameter probe (brand HANNA, model HI98194). The water quality parameters included pH,⁷⁷ electrical conductivity,⁷⁸ total dissolved solids,⁷⁹ oxidation-reduction potential,⁸⁰ dissolved oxygen,⁸¹ salinity⁸² and temperature.

Surface water sampling was carried out in accordance with the international guidelines provided by the US EPA.⁸³ The samples were collected in different volumes of bottles as requested by international protocols: 50ml in plastic bottles for heavy metals, 250ml in plastic bottles for organic parameters, and 2L in glass bottles for oil, grease and total hydrocarbon.

Samples for heavy metals analysis were filtered with 45µm syringe filters and acidified with nitric acid suprapur, tagged with codes, and stored in a cooler bag (< 4°C) for less than 24 hours before delivery to an accredited laboratory.

The data from each monitoring and sampling point were recorded in field sheets before being digitalised into Microsoft Excel spreadsheets. Water samples were taken in accordance with the tides,⁸⁴ ensuring the collection of samples during low tide to reduce the alteration of chemical-physical parameters due to any possible intrusion of marine water. The coordinates were recorded with a portable GPS and entered into Google Earth aerial images.

The following laboratorial methodologies were used to analyse water samples:

Parameter	Methodology
Heavy metals	UNI EN ISO 15587-1: 2002 + UNI EN ISO 17294-2:2016
BOD ₅ at 20°C	APAT CNR IRSA 5120 Man 29 2003
COD	ISO 15705:2002
Ammoniacal nitrogen	APAT CNR IRSA 4030 A2 / C Man 29 2003
Nitrates – phosphates	UNI EN ISO 10304-1:2009
Oil and greases	APAT CNR IRSA 5160 B1+APAT; CNR IRSA 5160 B2 Man 29 2003
Total hydrocarbon	APAT CNR IRSA 5160 B2 Man 29 2003

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- 40 See: FriEnt Working Group on Peace and Development, Business and Peace – It takes two to tango, 2020.
- 41 Heavy metals are metallic and non-metallic elements found in nature; they are also produced by industrial processes. They are toxic and harmful to human health if present in high concentrations in water ingested, food consumed or soil used for agricultural purposes, and in breathable air. Some of them produce cancer, including iron, manganese, aluminium, copper, arsenic, mercury, cadmium, lead and zinc.
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- 43 Ibid.
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- 45 Shared by Liberia EPA because it is not available online.
- 46 Canadian Council of Ministers of the Environment 2014; US Environmental Protection Agency 2020.

- 47 Ammoniacal nitrogen is a measure of the amount of ammonia, a toxic pollutant often found in waste products such as sewage. Ammonia is used in agriculture as fertilizer and in the rubber industry as a cleaning and coagulant reagent.
- 48 WHO, Drinking Water Quality Guidelines, 2017. https://www.who.int/water_sanitation_health/publications/drinking-water-quality-guidelines-4-including-1st-addendum/en/
- 49 BOD₅ is the amount of dissolved oxygen needed by small aquatic organisms to break down organic material present in a water sample over a specific time period (5 days). Unpolluted waters typically have BOD values below 2 milligrams of oxygen per litre of water (unit measure: mg/l) whereas wastewaters may have values up to 100–1000 mg/l.
- 50 European Environment Agency, Indicator Fact Sheet Nitrate in Groundwater, 2003. <https://www.eea.europa.eu/data-and-maps/indicators/nitrate-in-groundwater/nitrate-in-groundwater>.
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- 55 WHO, Health Effects of Particulate Matter, 2013. http://www.euro.who.int/__data/assets/pdf_file/0006/189051/Health-effects-of-particulate-matter-final-Eng.pdf
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- 59 The following international standard for ambient air were used as reference points: WHO, 2000, Air Quality Guidelines, Chapter 6.6 on Hydrogen Sulfides.
- 60 Bridgestone America's response to Swedwatch's questions to Firestone Liberia regarding responsible business practices and environment management, 19 February 2021.
- 61 TVOCs (Total Volatile Organic Compounds) are the total amount of organic compounds that are volatile (i.e. in the gas status) at a normal temperature and pressure. Their chemical properties vary widely. Inhaling TVOCs can be harmful

- to a person's health, with effects varying depending on their chemical composition and the amount of human exposure.
- 62 Wang, B. et al., Determination of VOSCs in Sewer Headspace Air using TD–GC–SCD, 2015. <https://pubmed.ncbi.nlm.nih.gov/25770608/>
 - 63 British Columbia Centre for Disease Control, HealthLinkBC Number 65D. Air Quality: Volatile Organic Compounds, 2018.
 - 64 According to the platform's website, the GPSNR was initiated by the CEOs of the World Business Council for Sustainable Development's Tire Industry Project in 2017. Platform members include tire manufacturers, rubber suppliers and processors, vehicle makers and non-governmental organisations.
 - 65 Complaint to the Global Platform on Sustainable Natural Rubber against the Bridgestone Corporation for Violations of the Platform principles and Code of Conduct, <https://gpsnr.org/files/15/Complaint/Firestone%20complaint.pdf>.
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 - 67 Firestone Liberia's response to the Complaint to the Global Platform on Sustainable Natural Rubber against the Bridgestone Corporation for Violations of the Platform principles and Code of Conduct, <https://gpsnr.org/files/15/Complaint/FSLB%20Response%20for%20GPSNR%20re%20Mighty%20Earth%20Complaint%20Dec%2026%202019.pdf>.
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 - 75 Global Platform for Sustainable Natural Rubber, Statutes of the Global Platform for Sustainable Natural Rubber, 2020. <https://sustainablenaturalrubber.org/documents/>
 - 76 OECD, Environment and the OECD Guidelines for Multinational Enterprises: Corporate Tools and Approaches, 2005. <https://www.oecd.org/env/34992954.pdf>

- 77 pH measures water's acidity on a scale from 0 (acidic) to 14 (alkaline); 7 = neutral.
- 78 Measuring the electrical conductivity of a water solution determines how many ions are dissolved in the water.
- 79 Total dissolved solids measures the amount of inorganic salts, organic matter and other dissolved materials in water. Concentrations in natural waters may vary depending on industrial effluent, changes to the water balance or saltwater intrusion.
- 80 Oxidation reduction potential measures a river's ability to clean itself or break down waste products, such as contaminants and dead plants and animals.
- 81 Quantity of oxygen dissolved in the water.
- 82 Saltiness or amount of salt dissolved in a body of water.
- 83 US Environmental Protection Agency, Quick Guide to Drinking Water Sample Collection, 2016. https://www.epa.gov/sites/production/files/2015-11/documents/drinking_water_sample_collection.pdf
- 84 Daily consultation of tide forecast, <https://www.tide-forecast.com/>



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