Corporate Sustainability Claims Versus Lived Realities: Sarnia's Chemical Valley

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Abstract

In April 2024, the Aamjiwnaang First Nation declared a state of emergency as benzene levels soared to twenty times above provincial safety standards, prompting school closures and federal intervention. This crisis highlights the disconnect between corporate sustainability claims and the realities of environmental justice in Canada's Chemical Valley. My research investigates how Imperial Oil's sustainability frameworks impact environmental justice outcomes for affected communities, concentrating on the period from 2015 to 2024, which saw a surge in environmental social and governance (ESG) and sustainable development goals (SDG) adoption.

Using a mixed-methods gap analysis, this study examines the disconnects between corporate claims and material impacts through a systematic document analysis of sustainability reports, environmental monitoring data, community health studies, and media coverage. The analysis employs Schlosberg's tripartite environmental justice framework, critical corporate sustainability and sustainable development theory, as well as Indigenous environmental rights perspectives.

Findings reveal profound gaps: despite Imperial Oil's reported 27% reduction in volatile organic compounds, benzene concentrations at Aamjiwnaang fence-line monitors exceeded Ontario's standards by 300-2000% (2017-2023). The analysis demonstrates systematic failures across distributive justice (disproportionate toxic exposure), procedural justice (consultation without authority), and recognition justice (exclusion of Indigenous epistemologies). These findings suggest that ESG frameworks operate as enablers for fragmented sustainability, obscuring localized impacts through aggregated metrics.

My research proposes an integrated environmental justice-ESG framework comprising four pillars: governance for justice; environmental performance through an environmental justice lens; social performance centered on equity; and disclosure for accountability. This framework mandates community co-governance, hyperlocal monitoring with community authority, culturally appropriate grievance mechanisms, and impact-focused materiality assessments. The study contributes to critical sustainability scholarship by demonstrating how standardized ESG frameworks can perpetuate rather than remedy environmental inequities, while offering pathways towards more just corporate accountability.

Foreword

My Major Paper represents the culmination of my Master in Environmental Studies (MES) degree at York University's Faculty of Environmental and Urban Change. The research meets the MES program requirements by integrating critical environmental theory with a practical analysis of corporate sustainability practices, demonstrating the interdisciplinary approach central to the program's mission.

My professional experience in corporate sustainability roles directly informed this research focus. I witnessed how companies crafted environmental reports to satisfy investors and regulators while obscuring ground-level realities. Sustainability metrics were carefully selected to demonstrate progress, yet, fence-line communities continued to experience toxic exposures. This disconnect between polished environmental social and governance narratives and lived environmental injustices obliged me to pursue graduate studies to examine these dynamics academically.

My Major Paper investigates the troubling gap through the lens of Imperial Oil's operations in Sarnia's Chemical Valley, where corporate sustainability claims starkly contrast with the Aamjiwnaang First Nation's environmental emergencies. The research applies environmental justice theory to critically analyze corporate accountability frameworks, proposing transformative alternatives that prioritize community well-being over institutional reputation. Through this work, I aim to contribute to the scholarly understanding and development of practical approaches for achieving genuine environmental justice in industrial contexts.

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AAQC - Ambient Air Quality Criteria

AFN - Aamjiwnaang First Nation

BASES - Bluewater Association for Safety, Environment, and Sustainability

BTEX - Benzene, Toluene, Ethylbenzene, and Xylenes

CAPP - Canadian Association of Petroleum Producers

CBA - Community Benefit Agreement

CCAB - Canadian Council for Aboriginal Business

CCS - Carbon Capture and Storage

CEP - Communications, Energy and Paperworkers Union of Canada

CEPA - Canadian Environmental Protection Act

CER Act - Canadian Energy Regulator Act

CIA - Cumulative Impact Assessment

CIAC - Chemistry Industry Association of Canada

CIMS - Controls Integrity Management System

CSA - Canadian Securities Administrators

CSR - Corporate Sustainability Report

ECA - Environmental Compliance Approval

ECCC - Environment and Climate Change Canada

ECO - Environmental Commissioner of Ontario

EII - Energy Intensity Index

EJ - Environmental Justice

EMS - Environmental Management System

EPA - Environmental Protection Act

ESG - Environmental, Social, and Governance

FPIC - Free, Prior, and Informed Consent

GHG - Greenhouse Gas

GRI - Global Reporting Initiative

HDD - Horizontal Directional Drilling

HIA - Health Impact Assessment

IAA - Impact Assessment Act

IFC - International Finance Corporation

INCO - International Nickel Company

IOMAPB - International Ontario-Michigan Air Pollution Board

IPIECA - International Petroleum Industry Environmental Conservation Association

ISED - Innovation, Science and Economic Development Canada

LDAR - Leak Detection and Repair

MECP - Ministry of the Environment, Conservation and Parks (Ontario)

MOE - Ministry of Environment

MOU - Memorandum of Understanding

MSCI - Morgan Stanley Capital International

NGO - Non-Governmental Organization

NOx - Nitrogen Oxides

NPRI - National Pollutant Release Inventory

OIMS - Operations Integrity Management System

OWRA - Ontario Water Resources Act

PAR - Progressive Aboriginal Relations

PFAS - Per- and Polyfluoroalkyl Substances

PM - Particulate Matter

SAEHP - Sarnia Area Environmental Health Project

SASB - Sustainability Accounting Standards Board

SCRRC - St. Clair River Research Committee

SDG - Sustainable Development Goals

SEC - Securities and Exchange Commission

SLEA - Sarnia-Lambton Environmental Association

SO_2 - Sulphur Dioxide

STEM - Science, Technology, Engineering, and Mathematics

TCFD - Task Force on Climate-related Financial Disclosures

UN - United Nations

UNDRIP - United Nations Declaration on the Rights of Indigenous Peoples

UCISL - University of Cambridge Institute for Sustainability Leadership

VOC - Volatile Organic Compounds

WCED - World Commission on Environment and Development

WHO - World Health Organizatio

Introduction

In April 2024, the Aamjiwnaang First Nation declared a state of emergency as benzene levels spiked to twenty times provincial safety standards, forcing school closures and triggering federal intervention (CBC News, 2024). This crisis exemplifies an unmistakable disconnect: while Imperial Oil reported 27% emission reductions in volatile organic compounds (VOCs) and alignment with UN Sustainable Development Goals (UN SDGs), fence-line monitors documented benzene concentrations that posed immediate health threats to Indigenous children. This contradiction between corporate sustainability claims and environmental justice realities reveals how standardized Environmental, Social and Governance (ESG) frameworks can legitimize rather than remedy environmental harm in resource-rich zones like Canada's Chemical Valley.

My research examines how Imperial Oil's sustainability frameworks, specifically those aligned with Sustainable Development Goals (SDGs) 3 Good Health and Wellbeing, 6 Clean Water and Sanitation, and 11 Sustainable Cities and Communities, translate into environmental justice outcomes for communities most affected by its operations. Employing a gap analysis approach, the study evaluates disconnects between corporate sustainability claims and their material impacts between 2015 and 2024, a period characterized by heightened corporate adoption of ESG frameworks and SDG commitments (Eccles and Klimenko, 2019; Stefanescu, 2022).

The analysis is situated within environmental justice theory, emphasizing distributional equity, procedural inclusion, and recognition of diverse community perspectives (Schlosberg, 2007). This theoretical framework illuminates how standardized sustainability metrics may systematically exclude Indigenous epistemologies and community health concerns (Scott, 2013), thereby perpetuating what Nixon (2011) terms "slow violence" through technocratic language and regulatory narrowing.

By critically evaluating the space between Imperial Oil's sustainability discourse and the Aamjiwnaang First Nation's lived realities, this research moves beyond a descriptive account to interrogate how corporate sustainability is framed, whose interests these framings serve, and the implications for environmental justice. Thus, it enriches critical corporate sustainability literature while addressing pertinent questions of regulatory reform and corporate accountability.

Corporate Sustainability vs Environmental Justice in Chemical Valley

The petrochemical industry in Sarnia's Chemical Valley presents a typical illustration of the tension between corporate sustainability claims and environmental justice outcomes. Despite substantial corporate commitments to environmental stewardship, Sarnia maintains some of the highest pollution levels in Canada, with its air quality being some of the worst in the country (MacDonald and Rang, 2007). This contradiction is evident in Imperial Oil's operations, where formal sustainability frameworks, including SDG commitments and ESG metrics, coexist with ongoing environmental health concerns for neighbouring communities.

The Aamjiwnaang First Nation, situated directly within Chemical Valley, experiences disproportionate exposure to industrial emissions, with documented health impacts including elevated rates of respiratory illness, reproductive disorders, and cancer (Wiebe, 2016; MacDonald and Rang, 2007). These realities persist despite Imperial Oil's public commitments to environmental sustainability and community well-being (Imperial Oil, n.d.). The 2019 Sarnia Area Environmental Health Project confirmed elevated benzene and sulphur dioxide levels affecting residents in the industrial south end of Sarnia and the Aamjiwnaang First Nation (Kramer et al., 2015). Yet, corporate sustainability reporting often fails to acknowledge these localized impacts.

At the core of this problem is what Scott (2013) identifies as the systematic unrecognition of downstream communities through technocratic regulatory frameworks and corporate reporting mechanisms. This process obscures the lived experiences of fence-line communities through regulatory decisions that narrowly scope environmental assessments, excluding consideration of cumulative impacts (Scott, 2013). Similar to industry practice, Imperial Oil's sustainability frameworks emphasize quantifiable metrics like emissions intensity and waste reduction targets while potentially overlooking qualitative dimensions of community health and well-being (Cho et al., 2015).

The gap between corporate rhetoric and community experience raises critical questions about the efficacy of current sustainability frameworks in addressing environmental justice concerns. Despite the adoption of sustainability language and ESG frameworks by companies operating in Chemical Valley, their business practices often continue to prioritize economic performance over environmental protection and community well-being in their operational decision-making.

My research examines these disconnects through the specific case of Imperial Oil, interrogating how standardized sustainability frameworks may perpetuate environmental inequities even as they purport to address them. It also seeks to provide a framework for better integrating environmental justice outcomes within sustainability (ESG) frameworks.

Research Questions and Objectives

My research examines the relationship between Imperial Oil's sustainability commitments and environmental justice outcomes in Sarnia's Chemical Valley, focusing specifically on impacts on the Aamjiwnaang First Nation from 2015 to 2024.

The research objectives are threefold: first, to systematically analyze Imperial Oil's sustainability frameworks through corporate documentation and community perspectives; second, to identify gaps between sustainability claims and environmental justice outcomes using a structured assessment methodology; and third, to contribute to theoretical understanding of how corporate sustainability practices may perpetuate or mitigate environmental inequities in resource-intensive industrial contexts. Addressing these objectives further advances the scholarly understanding and practical approaches to more equitable environmental governance in Chemical Valley and improves existing ESG frameworks, which are applied in similar contexts.

This study pursues three interconnected research questions that guide its analytical approach:

1. How do Imperial Oil's sustainability frameworks align with the SDG targets for health (3), water and sanitation (6), and sustainable communities (11)?

This question evaluates Imperial Oil company's formal sustainability commitments against internationally recognized benchmarks, examining the comprehensiveness and implementation of these frameworks through documented corporate practices.

2. How has Imperial Oil's sustainability discourse and practice evolved in Sarnia (from 2015 to 2024) concerning a) environmental justice concerns raised by the Aamjiwnaang First Nation and b) local health impact data and community advocacy

This question traces the development of Imperial Oil's environmental practices over time, assessing to what extent community concerns and empirical health data have influenced corporate approaches to sustainability and environmental management.

3. What critical disconnects exist between Imperial Oil's ESG performance and reporting and the lived experiences of fence-line Indigenous communities in Sarnia?

This question examines gaps between corporate metrics and community impacts, focusing on how standardized reporting frameworks may systematically exclude certain environmental justice concerns.

Research Context and Significance

My research is situated at the intersection of corporate sustainability practice, environmental justice, and community rights within the specific context of Sarnia's Chemical Valley, a region that embodies the complex legacy of Canadian industrial development. As home to approximately 40% of Canada's petrochemical industry, including Imperial Oil's Sarnia refinery established in 1897, Chemical Valley represents one of North America's most concentrated industrial corridors (MacDonald and Rang, 2007). The region's historical development reflects broader patterns of industrial expansion that have often prioritized economic growth over environmental protection and community well-being (Jackson, 2020).

The significance of this research emerges from several converging factors. First, it addresses a critical gap in the literature regarding how standardized corporate sustainability frameworks translate into environmental justice outcomes at the community level. While extensive scholarship examines corporate sustainability reporting (Cho et al., 2020; Stefanescu, 2022) and environmental justice separately (Schlosberg, 2007; Wiebe, 2016), fewer studies integrate these perspectives to evaluate how corporate sustainability practices affect marginalized communities in concrete terms.

Second, the temporal scope of this analysis (2015 to 2024) coincides with the global adoption of the UN Sustainable Development Goals and increasing corporate embrace of ESG frameworks, allowing for the assessment of how these international sustainability standards influence local corporate practices during a period of significant evolution in sustainability governance (Eccles and Klimenko, 2019). By focusing on Imperial Oil, one of Canada's oldest and most established petrochemical companies, my research provides insight into how long-established industries navigate contemporary sustainability expectations.

Third, this research contributes to environmental justice scholarship by examining the often gradual, invisible forms of environmental harm that disproportionately affect marginalized communities (Nixon, 2011). The Aamjiwnaang First Nation, located adjacent to Chemical Valley, has experienced documented health impacts, including elevated rates of respiratory illness and reproductive disorders (Wiebe, 2016). However, these impacts remain underrepresented in corporate sustainability assessments and regulatory frameworks.

Fourth, the study has practical significance for policy development and corporate practice. Identifying gaps between corporate sustainability frameworks and community impacts can inform more effective regulatory approaches that better integrate cumulative effects assessment and Indigenous (and wider community) perspectives. For corporate practitioners, the findings illuminate potential blind spots in current sustainability frameworks and suggest pathways toward more inclusive and effective sustainability practices.

Finally, the research contributes to ongoing discussions about reconciliation with Indigenous peoples in Canada by examining how corporate activities affect Indigenous communities' environmental rights and well-being. As such, it responds to calls from scholars and activists for more justice-oriented approaches to sustainability that recognize the interconnection between environmental protection, cultural continuity, and community health (Agyeman et al., 2016).

Methodology

My research employs a mixed-methods approach to examine the relationship between corporate sustainability claims and environmental justice outcomes in Sarnia's Chemical Valley. The analysis is operationalized through several key theoretical lenses: environmental justice theory provides the framework for assessing distributional, procedural, and recognition injustices; critical corporate sustainability concepts are used to deconstruct corporate claims and the efficacy of ESG initiatives; and Indigenous perspectives, especially those emphasizing self-determination and relational accountability, inform the evaluation of impacts on the Aamjiwnaang First Nation. My methodology integrates document analysis, environmental data assessment, and community impact analysis within a structured gap analysis framework.

Epistemological Positioning

My research is positioned within critical environmental justice scholarship that challenges dominant corporate sustainability paradigms. Rather than accepting corporate sustainability frameworks as neutral assessment tools, this analysis examines how these frameworks may systematically exclude Indigenous knowledge and marginalize fence-line community concerns. The methodology explicitly centers Indigenous perspectives not as 'stakeholder input' but as authoritative knowledge systems that offer alternative frameworks for understanding environmental relationships and corporate accountability.

In doing so, my research aims to support rather than supplant Indigenous knowledge production and environmental governance authority.

Gap Analysis Framework

My research employs a customized gap analysis framework to systematically assess disconnects between Imperial Oil's sustainability commitments and their environmental justice implications. This framework examines five distinct dimensions of potential disconnection:

1) Corporate sustainability commitments versus actual performance;
2) Regulatory requirements versus implementation;
3) Community needs versus corporate/government responses;

4) Environmental justice principles versus observed outcomes; and
5) Epistemic justice gaps.

Drawing on Schlosberg's (2007) tripartite model of environmental justice, which emphasizes distributive, procedural, and recognition dimensions, the analysis evaluates Imperial Oil's sustainability practices in light of their stated objectives and their impacts on the Aamjiwnaang First Nation. Each dimension is assessed using specific indicators derived from the literature on corporate sustainability (Eccles et al., 2014) and environmental justice (Agyeman et al., 2016), paying specific attention to the SDG targets for health (3), water and sanitation (6), and sustainable communities (11). For instance, corporate sustainability commitments versus actual performance and regulatory requirements versus implementation will be scrutinized for distributive and procedural justice implications. Community needs versus corporate/government responses directly addresses the responsiveness often lacking in procedural justice. Environmental justice principles versus observed outcomes provides an overarching assessment. Crucially, epistemic justice gaps examines whose knowledge and framing of sustainability are privileged or marginalized, a key aspect of recognition justice and the critique of dominant corporate sustainability epistemologies that often exclude Indigenous worldviews.

This approach facilitates identifying areas where corporate sustainability frameworks may systematically exclude or inadequately address community concerns.

Document Analysis

The document analysis examines corporate sustainability reporting and SDG implementation from 2015 to 2024, focusing on Imperial Oil's public disclosures, including sustainability reports, environmental compliance documentation, and community engagement materials. Government documents from regulatory bodies such as Ontario's Ministry of Environment, Conservation and Parks and community-generated materials from the Aamjiwnaang First Nation and local advocacy organizations provide additional perspectives. The documents to be reviewed include:

a) Imperial Oil corporate sustainability reports (2015-2024);
b) Critical academic literature on corporate sustainability, environmental justice and sustainable development;
c) Indigenous-led health reports and assessments;
d) Environmental organization reports; and
e) Media reports.

Following Stefanescu's (2022) approach to sustainability discourse analysis, these documents are evaluated for SDG integration, performance indicators, and environmental justice considerations

to facilitate systematic comparisons between stated corporate objectives and observable outcomes through thematic coding of key concepts and commitments.

Environmental/Health Data Assessment Methods

Environmental and health data assessment employs quantitative and qualitative methods to evaluate Imperial Oil's environmental performance and its health implications for the Aamjiwnaang community. Quantitatively, the research analyzes air quality monitoring data from government and industry sources, focusing on key pollutants, including benzene, sulphur dioxide, and particulate matter. These data are evaluated against regulatory standards and epidemiological thresholds to assess potential health impacts. The analysis incorporates temporal trends from 2015 to 2024 and spatial distribution to identify patterns of environmental risk. Health indicators, including respiratory illness rates, cancer incidence, and reproductive health metrics from community health studies and public health statistics, are examined when available.

Qualitatively, the analysis incorporates incident reports and environmental assessments to provide context for quantitative findings. Adopting a methodological approach to environmental health assessment in Chemical Valley, this research critically analyzes how environmental data is collected, reported, and utilized in decision-making processes. Particular attention is paid to cumulative impact assessment and how monitoring programs account for or exclude consideration for the compounding effects of various pollutants.

Community Impact Analysis Approach

The community impact analysis incorporates documentary evidence to assess how Imperial Oil's operations affect the Aamjiwnaang First Nation and surrounding communities. Documentary sources include community health studies, Indigenous environmental monitoring data, NGO reports, and local media coverage. This approach offers a deeper insight into lived experiences and perspectives by identifying recurring concerns, perceived gaps in corporate reporting, and community priorities related to environmental justice.

Limitations and Mitigation Strategies

This research faces several methodological limitations requiring acknowledgment and mitigation. First, data accessibility constraints may limit the comprehensive analysis of Imperial Oil's internal sustainability practices; this is addressed through the triangulation of multiple external sources and transparent acknowledgment of information gaps. Second, the complex causality between industrial emissions and health outcomes presents attribution challenges; the research addresses this limitation by focusing on documented exposure pathways rather than claiming definitive health outcome attribution.

This research deliberately prioritizes and amplifies existing Indigenous voices by centering publicly available community-generated reports, official statements, regulatory submissions, and academic research conducted in partnership with or by Indigenous scholars. This methodological approach responds to two critical considerations: first, it respects concerns about research fatigue within the Aamjiwnaang community, which has been extensively studied over decades; second, it avoids extractive research practices that risk further marginalizing Indigenous knowledge and authority.

The 2015-2024 timeframe was selected to align with the global adoption of the UN Sustainable Development Goals (2015) and heightened corporate embrace of ESG frameworks, enabling assessment of how international sustainability standards influence local corporate practices during a period of significant evolution in sustainability governance.

In Chemical Valley's multi-source industrial environment, definitively attributing specific health impacts or ambient pollutant concentrations to individual facilities presents methodological challenges. However, National Pollutant Release Inventory (NPRI) data and facility-specific monitoring confirm Imperial Oil as a significant contributor to the overall pollution burden affecting the Aamjiwnaang First Nation.

Paper Mapping

This paper unfolds across five major sections, each designed to address the research questions and objectives systematically.

Following this introduction, Section 1: Environmental Justice Meets Corporate Sustainability establishes the theoretical frameworks underpinning the analysis, integrating environmental justice theory, Indigenous environmental rights perspectives, corporate sustainability theory, and the SDG framework as analytical lenses.

Section 2: Sarnia's Chemical Valley: A Legacy of Industrial Development and Environmental Justice Challenges contextualizes the research within Sarnia's Chemical Valley, providing historical background on industrial development, the current regulatory landscape, Imperial Oil's operations, and the Aamjiwnaang First Nation's environmental challenges.

Section 3: Sustainability Gap Analysis presents the findings of the sustainability gap analysis, examining Imperial Oil's corporate sustainability claims, their alignment with SDG targets, documented environmental and health impacts, and community perspectives.

Section 4: Socio-Environmental Justice Gap Analysis synthesizes these findings into a comprehensive socio-environmental justice gap analysis that identifies key disconnects between corporate sustainability frameworks and environmental justice outcomes, with particular

attention to measurement issues, implementation gaps, Indigenous perspectives, and regulatory reform needs.

Section 5:Rethinking ESG Frameworks- Centering Environmental Justice in Industrial/Extractive Settings proposes a framework for integrating environmental justice considerations within mainstream sustainability (ESG) paradigms as a pathway for improving corporate sustainability.

The conclusion articulates the research's contributions to scholarship and practice, discusses policy implications, and offers final reflections on pathways toward more just and inclusive approaches to corporate sustainability in Chemical Valley.

1. Environmental Justice Meets Corporate Sustainability

This section presents the theoretical frameworks that underpin the critical examination of corporate sustainability practices, environmental justice implications, and community rights in Imperial Oil's operations in Sarnia's Chemical Valley, Ontario. The analysis uses environmental justice theory, Indigenous environmental rights perspectives, corporate sustainability, ESG theories, and the UN Sustainable Development Goals as an assessment framework. These frameworks provide a multifaceted lens to critically evaluate the complex interplay between industrial activity, environmental impacts, community well-being, Indigenous sovereignty, and corporate accountability in a region with significant historical and ongoing environmental challenges.

Environmental Justice Theory

Environmental justice theory serves as a critical lens for understanding the disproportionate environmental burdens experienced by marginalized communities and the systemic inequities that perpetuate these disparities (Agyeman, Bullard, and Evans, 2002; Holifield, Chakraborty, and Walker, 2012). Emerging from grassroots activism in the United States during the 1980s, specifically struggles against the siting of hazardous facilities in predominantly Black neighbourhoods (Bullard, 2018), environmental justice has evolved into a social movement and an academic framework. It is primarily focused on achieving fairness in the distribution of environmental benefits and burdens, as well as in the decision-making processes that determine this distribution (Bullard, 2018; Schlosberg, 2004).

The core tenets of environmental justice revolve around the principles of fair treatment and meaningful involvement of all people, regardless of race, colour, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies (Salem, 2019). Fair treatment implies that no group should bear a disproportionate share of negative environmental consequences. At the same time, meaningful involvement ensures that communities can participate in decisions affecting their environment and health, that their contribution can influence outcomes, and that their concerns are considered (Salem, 2019).

Environmental justice distinguishes itself from mainstream environmentalism by prioritizing grassroots political organizing and community-led action (Bullard, 2018; Pellow, 2016). It seeks to uncover underlying assumptions contributing to unequal environmental protection, posing ethical and political questions about "who gets what, why, and how much" (Bullard, 2014: 243). Conceptualized as praxis, environmental justice integrates theory and practice, allowing it to adapt to diverse populations, problems, and places (Sze and London, 2008).

Initially focused on the unequal distribution of environmental harms (distributive justice), the theory expanded to encompass the fairness of decision-making processes (procedural justice) and the importance of acknowledging diverse experiences and perspectives (recognition justice) (Bullard, 2018; Schlosberg, 2004, 2007; Walker, 2009). This multidimensional approach recognizes that environmental injustice involves exposure disparities and power dynamics, voice, and the fairness of governing systems (Figueroa, 2022; Schlosberg, 2007). The movement often employs a strategy that combines grassroots activism with engagement with state institutions and research organizations to gain recognition and promote systemic change (Bullard, 2018; Pellow, 2016).

In Canada, environmental justice scholarship highlights the disproportionate environmental burdens borne by Indigenous communities (Scott, 2013; Wiebe, 2016). This multidimensional environmental justice framework is relevant for examining the relationship between industrial operations and fence-line communities in Sarnia's Chemical Valley, where environmental impacts disproportionately affect the Aamjiwnaang First Nation (Luginaah et al., 2010; Scott, 2013; Wiebe, 2016).

Distributive Justice

Distributive justice focuses on equitably allocating environmental risks, benefits, and resources across different populations (Agyeman et al., 2002; Walker, 2012). It questions whether environmental harms (e.g., pollution exposure) and benefits (e.g., access to green space, economic opportunities) are fairly shared or if certain communities with less political and economic power bear disproportionate burdens (Bullard, 2018; Walker, 2009). This approach involves examining spatial patterns of pollution, access to amenities, and comparative risk

exposure across demographic groups (Walker, 2009). In the context of this study, distributive justice is a critical lens to examine whether Imperial Oil's operations and the broader industrial complex of Chemical Valley impose a disproportionate share of environmental pollution and health risks on the Aamjiwnaang First Nation, while the economic benefits may accrue more broadly or to entities outside the community.

A critical aspect of distributive injustice is environmental racism, which highlights the systemic ways environmental hazards are disproportionately located in racialized and low-income communities (Bullard, 2018; Figueroa, 2022; Pellow, 2016). This injustice leads to higher pollution exposure levels and related health problems in these communities (Bullard, 2018; Pellow, 2016). The concept of "sacrifice zones" describes areas, often politically disempowered and poorer, subjected to disproportionate environmental harm and toxic exposure, frequently resulting from industries following the "path of least resistance" (Bullard, 2014: 259, 258; Pellow, 2016). This theory suggests that polluting facilities are often sited in communities perceived to have limited capacity to resist, minimizing opposition and development delays (Bullard, 2014, 2018; Pellow, 2016). This phenomenon raises questions about whether the concentration of industry on Aamjiwnaang land was coincidental or a result of systemic power imbalances disadvantaging Indigenous communities.

In Sarnia's Chemical Valley, distributive justice concerns are stark. Approximately 40% of Canada's chemical industry is concentrated within a 25-kilometer radius of Sarnia, with the highest density directly surrounding Aamjiwnaang lands (MacDonald and Rang, 2007). This concentration creates what Jackson (2020: 154) calls "embodied" exposure to toxicity: the physical experience of inhabiting contaminated spaces and incorporating pollutants. The framework enables critical examination of how industrial benefits (jobs, tax revenue) and environmental burdens (pollution, health risks, ecosystem degradation) are allocated among corporations, governments, and local Indigenous and non-Indigenous residents (MacDonald and Rang, 2007; Wiebe, 2016). Furthermore, environmental justice addresses cumulative impacts, recognizing that communities facing multiple pollution sources and pre-existing social vulnerabilities experience compounded burdens (Bullard, 2014; Figueroa, 2022). The notion of environmental apartheid further illustrates systemic injustice, where dominant groups make decisions about hazard placement without meaningful participation or consent from affected communities, mimicking historical segregation patterns (Bullard, 2018; Figueroa, 2022). This occurrence mirrors the history of Indigenous-Crown relations in Canada, where land and resource decisions impacting First Nations territories have often lacked meaningful free, prior, and informed consent.

Procedural Justice

Procedural justice addresses the fairness, accountability, and transparency of decision-making processes and the meaningful inclusion of affected communities in environmental governance

(Agyeman et al., 2002; Schlosberg, 2007; Walker, 2012). It examines whether communities have equitable access to information, opportunities for participation, and influence in decisions impacting their environmental well-being (Schlosberg, 2007; Salem, 2019). Procedural justice goes beyond superficial consultation to require transparency, accountability, and genuine community empowerment throughout planning, implementation, and monitoring (Schlosberg, 2007; Walker, 2012). This study utilizes the procedural justice framework to analyze the nature and effectiveness of Imperial Oil's engagement with the Aamjiwnaang First Nation, assessing whether consultation processes allow for genuine community influence on decisions affecting their environment and health and whether access to information and accountability mechanisms are equitable.

A key challenge identified by scholars is addressing inherent power irregularities (Fraser, 2020; Young, 2020). Marginalized communities often lack the political and economic capital to effectively influence decisions made by powerful corporate and state actors (Fraser, 2020; Young, 2020). True procedural justice requires moving beyond mere consultation to foster empowered participation, providing communities with the necessary resources (including technical expertise) to bolster the authority of their lived experience and substantively influence outcomes (Skinner-Thompson, 2022; Walker, 2012). This participation involves removing barriers that exclude marginalized groups, especially in complex arenas where decisions are obscured by technical analyses (Skinner-Thompson, 2022; Walker, 2012). The concept of procedural equity emphasizes inclusive, accessible, and authentic engagement, requiring accessible information, appropriate languages, and resources for effective participation and accountability (Keating, 1997). International agreements like the Aarhus Convention aim to promote such meaningful public participation (United Nations, 1999).

However, public involvement programs in natural resource management are often criticized as unresponsive to public desires, indicating a gap between intent and practice (Diduck and Mitchell, 2015; Walker, 2012). This fact raises questions about the effectiveness of consultation processes undertaken by corporations like Imperial Oil with the Aamjiwnaang First Nation and whether they allow for genuine community influence.

For Indigenous communities like Aamjiwnaang, procedural justice intersects with sovereignty and self-determination. Regulatory decisions about the industry often occur within colonial governance structures that marginalize Indigenous knowledge and authority (Christie, 2013). Regulatory bodies frequently employ narrow, technocratic scoping that excludes Indigenous perspectives (Scott, 2013). Scott's (2013) analysis of National Energy Board decisions affecting Sarnia demonstrates how such procedural exclusions contribute to harms accumulating over time, disproportionately affecting communities with limited institutional power. Procedural environmental justice thus demands transparent information disclosure, accessible participation, and decision-making authority for affected communities, a phenomenon often unmet by corporate sustainability frameworks. Practically enhancing procedural justice requires structural

reforms that redistribute decision-making authority to Indigenous communities, such as joint environmental governance models, co-management agreements, and legally binding consultation protocols (Borrows, 2010; Christie, 2013)

Recognition Justice

Recognition justice emphasizes the ethical and political imperative of acknowledging and respecting the diverse identities, cultures, histories, values, perspectives, and knowledge systems of marginalized communities affected by environmental issues (Fraser, 2020; Schlosberg, 2004, 2007; Whyte, 2011). It addresses how cultural devaluation, stereotyping, or invisibility of certain groups contributes to systemic environmental inequity (Fraser, 2020; Schlosberg, 2007).

Recognition justice requires acknowledging affected communities' distinct identities, histories, and knowledge systems. In this context, Indigenous peoples whose relationships with land transcend Western property frameworks and whose unique political statuses and experiences with colonization must be acknowledged (Dunbar-Ortiz and Gilio-Whitaker, 2016; Schlosberg, 2007; Whyte, 2011). It calls for recognizing Indigenous peoples' special legal relationships, inherent rights, and profound spiritual and cultural interdependence with the Earth (Dunbar-Ortiz and Gilio-Whitaker, 2016; Whyte, 2011). Applying recognition justice to the Sarnia context, this research examines how Imperial Oil's sustainability discourse and practices acknowledge or fail to acknowledge the Aamjiwnaang First Nation's distinct Anishinaabe identity, their traditional ecological knowledge, spiritual connection to the land, and their inherent rights and sovereignty, particularly in how environmental impacts and community well-being are defined and addressed.

Scholars like Nancy Fraser (2000, 2001) and Axel Honneth (2004) offer key insights. Fraser (2000, 2001, 2020) argues for recognizing differences and valuing diverse identities, stressing that justice requires addressing cultural recognition and economic redistribution, as they are often intertwined (see also Fraser and Honneth, 2003). Honneth (2004) emphasizes the social recognition needed for identity formation and self-realization, highlighting spheres of love, legal rights, and social esteem to avoid humiliation and disrespect (Fraser and Honneth, 2003). These perspectives suggest that addressing injustices faced by the Aamjiwnaang First Nation requires respecting their unique cultural identity and traditional knowledge alongside addressing material inequalities and historical harms from industrial development.

For the Aamjiwnaang First Nation, recognition justice involves honouring Anishinaabe traditional ecological knowledge, spiritual relationships with the land, and Indigenous governance systems (Borrows, 2010; Wiebe, 2016). Environmental governance in Chemical Valley, however, has historically involved the active "unimagining" of the Aamjiwnaang people, where corporate and regulatory narratives exclude Indigenous presence and perspectives to maintain a story of national development (Scott, 2013: 83). Jackson (2020) similarly shows how Sarnia's industrial development required the displacement of Indigenous communities whose

existence contradicts dominant progress narratives. The analytical lens of domestic geopolitics reveals how toxic exposure can render communities like Aamjiwnaang as 'sacrifice zones' and colonized subjects rather than valued citizens, highlighting the intersection of environmental injustice and settler colonialism (Cole and Foster, 2001; Pellow, 2016).

Recognition justice challenges corporations and regulators to move beyond standardized metrics to engage meaningfully with Indigenous worldviews. It includes recognizing the interconnectedness of environmental, cultural, and community health, often inadequately captured by conventional impact assessments or sustainability reporting (Wiebe, 2016). It demands acknowledgment of historical injustices, like colonial land appropriation and the intentional concentration of polluting industries near Indigenous territories, that shape current conditions.

Indigenous Environmental Rights

Indigenous environmental rights constitute a distinct theoretical framework extending beyond conventional environmental justice approaches to cover the unique legal, cultural, political, and spiritual relationships between Indigenous peoples and their traditional territories (Borrows, 2010; Smith, 2021; Whyte, 2016). This framework integrates principles from international law, Indigenous legal traditions, constitutional law, and political ecology (Borrows, 2010; Christie, 2013; Smith, 2021). Indigenous peoples in Canada have acted as stewards and caretakers of lands, waters, and ice since time immemorial, a relationship rooted in cultures, traditions, and spiritual beliefs, carrying inherent responsibilities (Assembly of First Nations, 2021).

In Canada, Indigenous environmental rights are grounded in multiple sources: Aboriginal and treaty rights recognized under Section 35 of the *Constitution Act, 1982*; traditional Indigenous legal orders; international instruments like the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP); and evolving jurisprudence on the Crown's duty to consult and accommodate (Borrows, 2010; Christie, 2013; Manley-Casimir, 2016). These rights include protection from environmental harm and authority over environmental decision-making, sustainable resource use, and maintenance of cultural practices linked to ecological integrity (Assembly of First Nations, 2021; Christie, 2013).

Canada's endorsement of United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) is significant. Article 25 affirms Indigenous peoples' right to maintain their distinctive spiritual relationship with traditional territories and uphold responsibilities to future generations (UNDRIP, 2007). Article 29 affirms their right to environmental conservation and protection, requiring states to prevent hazardous waste disposal on Indigenous lands without free, prior, and informed consent (UNDRIP, 2007). Article 32 enshrines the right to free, prior, and informed consent before approval of projects affecting their lands, territories, or resources (UNDRIP, 2007).

The common law duty to consult and accommodate requires the government and proponents to engage meaningfully with First Nations when proposed activities may adversely impact Aboriginal and Treaty rights (Manley-Casimir, 2016). Federal legislation like the *Impact Assessment Act* (IAA) and the *Canadian Energy Regulator Act* (CER Act) aims to enhance First Nations' participation and incorporate Indigenous knowledge (Government of Canada, 2019a, 2019b). Furthermore, the *National Strategy Respecting Environmental Racism and Environmental Justice Act* (Bill C-226) aims to address disproportionate ecological harms through data collection, community engagement, and legislative accountability (Government of Canada, 2023).

Despite legal advancements, implementation gaps persist, as Indigenous communities continue facing obstacles in exercising environmental self-determination within existing colonial regulatory frameworks. The Aamjiwnaang First Nation's environmental rights derive from their status as Anishinaabe people with inherent rights to traditional territories along the St. Clair River, territories progressively encroached upon by industry (Wiebe, 2016). Their reserve lands diminished through surrenders, expropriations, and contested transfers as petrochemical facilities expanded to surround them (Wiebe, 2016). This industrial encirclement reflects colonial environmental governance prioritizing resource extraction over Indigenous territorial relationships (Wiebe, 2016; Zalik, 2011).

Environmental self-determination is central, emphasizing that environmental protection is inseparable from sovereignty and governance (Whyte, 2016). It challenges conventional regulatory frameworks that fragment decision-making, disconnecting technical assessments from holistic Indigenous cosmologies (Christie, 2013). Indigenous environmental authority derives from inherent jurisdiction predating colonial structures (Christie, 2013). Indigenous environmental rights also encompass cultural dimensions involving responsibilities to non-human beings, future generations, and ancestral teachings. These are often unacknowledged in corporate sustainability frameworks (Borrows, 2010) and manifests in "environmental repossession," where communities reclaim physical territories, cultural practices, knowledge systems, and governance structures essential for environmental wellbeing (Big-Canoe and Richmond, 2014: 4). The concept of rights of nature, embedded in many Indigenous worldviews, recognizes the inherent value and legal rights of non-human entities, offering an alternative to anthropocentric paradigms (Whyte, 2017).

The tension between Indigenous environmental rights and corporate sustainability is evident in Chemical Valley. Companies like Imperial Oil have historically operated within regulatory frameworks marginalizing Indigenous jurisdiction (Luginaah et al., 2010; Scott, 2013). Environmental monitoring typically uses technical-scientific frameworks, excluding Indigenous knowledge, constituting epistemic exclusion and environmental violence that undermines sovereignty while legitimizing industrial expansion (Luginaah et al., 2010; Wiebe, 2016). While legal protections have strengthened, significant gaps remain between recognition and

implementation, especially where the industry is entrenched (Joly et al., 2018; Wiebe, 2016). Corporate sustainability frameworks failing to meaningfully engage with Indigenous environmental rights risk perpetuating these gaps.

Corporate Sustainability and Environmental, Social and Governance (ESG) Frameworks

Corporate sustainability theory examines how businesses integrate environmental and social concerns into operations alongside economic goals (Kantabutra, 2022). Its roots trace to the concept of sustainable development, famously defined by the Brundtland Commission (1987) as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Early conceptualizations included the "triple bottom line" of people, planet, profit, emphasizing balanced consideration of economic, environmental, and social dimensions (Elkington, 1997: 3).

The sustainability 'business case' perspective gained prominence in the early 2000s, arguing that sustainability initiatives could create a competitive advantage through efficiency gains, risk management, enhanced reputation, and attracting talent (Porter and Kramer, 2006, 2011). This approach framed sustainability as aligning with shareholder interests rather than holistic sustainability goals. In contrast, integrative theories emphasize the embeddedness of businesses within social and ecological systems, arguing that long-term corporate viability depends on maintaining the integrity of these broader systems (Bansal, 2005; Eccles et al., 2014). These theories suggest that sustainability requires a more fundamental integration into corporate strategy and operations.

More recently, corporate sustainability theory incorporated institutional theory to examine how practices become legitimized through isomorphism, standardization, and external verification (Banerjee, 2008; Unerman et al., 2021). This trend explains the proliferation of reporting frameworks like the Global Reporting Initiative (GRI), Sustainability Accounting Standards Board (SASB), and Task Force on Climate-related Financial Disclosures (TCFD), adopted by companies to demonstrate commitment and meet stakeholder expectations.

Stakeholder and Legitimacy Theories

Two key theories underpinning corporate sustainability are stakeholder theory and legitimacy theory (Kantabutra, 2022; Rezaee, 2017). Stakeholder theory posits that corporations should create value for all individuals or groups who can affect or are affected by the organization's objectives, not just shareholders (Freeman, 2010; Freeman et al., 2010). Stakeholders include employees, customers, suppliers, communities, governments, and the environment itself (Freeman, 2010; Hörisch, 2014). The stakeholder theory emphasizes building relationships based

on trust, respect, and cooperation, recognizing that long-term corporate success is intertwined with stakeholder well-being (Freeman et al., 2010; Hörisch, 2014). This view contrasts with traditional shareholder primacy theory, which emphasizes maximizing shareholder wealth as management's primary responsibility (Freeman, 2010). This tension is relevant to Imperial Oil, potentially leading to the prioritization of investor interests over the Aamjiwnaang people's environmental and health concerns.

Legitimacy theory suggests that organizations strive to operate within the bounds considered socially acceptable by the communities in which they operate (Dowling and Pfeffer, 1975; Lindblom, 1994; Suchman, 1995). To gain and maintain legitimacy, corporations engage in social and environmental reporting to demonstrate congruence with societal values and expectations (Brown and Deegan, 1998; Deegan and Rankin, 1996). It typically involves transparency about performance and addressing perceived gaps between actions and societal norms (Lindblom, 1994).

Environmental, Social, and Governance (ESG) and its critiques

The evolution towards Environmental, Social, and Governance (ESG) frameworks has further integrated sustainability into corporate financial analysis and investor relations (Eccles, 2014; Eccles and Klimenko, 2019). ESG provides criteria for evaluating a company's performance and ethical impact across these three pillars. Investors increasingly view ESG performance as material to financial outcomes through risk mitigation (e.g., climate risk, regulatory risk), cost reduction (e.g., energy efficiency), talent attraction, and enhanced brand value (Eccles and Klimenko, 2019; Khan et al., 2016). This financialization has spurred the development of standardized metrics and rating systems designed to translate complex socio-ecological impacts into comparable data for investment decisions (Eccles and Klimenko, 2019).

Despite their growing prominence, corporate sustainability and ESG frameworks face significant criticism from scholars and practitioners.

First, they often privilege incremental improvements within existing business models rather than the transformative changes needed for true ecological sustainability and social justice (Banerjee, 2008; Levy and Newell, 2004). This tendency is relevant for extractive industries like oil and gas, where core activities may be fundamentally incompatible with climate stability or local environmental health, regardless of efficiency gains (Banerjee, 2008).

Second, scholars document widespread "organized hypocrisy" where sustainability rhetoric systematically diverges from operational reality (Cho et al., 2015: 2; Mu and Lee, 2023). This greenwashing involves selective disclosure and impression management that obscures rather than addresses core impacts (Berrone et al., 2017; Cho et al., 2015; Furlow, 2010). This hypocrisy is

particularly relevant in Chemical Valley, where corporate reports may emphasize positive initiatives while minimizing chronic pollution affecting fence-line communities (Jackson, 2020).

Third, the lack of standardized measurement methodologies and significant inconsistencies among ESG ratings provided by different agencies raise concerns about data reliability, comparability, and potential for manipulation (Rossi, Byrne, and Christiaen, 2024; Liang and Renneboog, 2017; Gibson et al., 2021). This variability in ratings makes it difficult for stakeholders to assess and compare corporate ESG performance accurately.

Fourth, dominant corporate sustainability and ESG frameworks typically reflect Western, market-oriented values that may conflict with Indigenous and non-dominant perspectives on environmental relationships and well-being (Smith, 2021; Whyte, 2016). This bias can render standardized metrics incapable of capturing the complex, place-based, cultural, and spiritual dimensions of Aamjiwnaang community-environment relationships (Wiebe, 2016).

Fifth, ESG frameworks are often criticized for prioritizing the financial materiality of the company (i.e., how environmental and social factors impact the bottom line) rather than the company's actual impact on the environment and society (impact materiality) (Liang and Renneboog, 2017). This bias raises questions about ESG's effectiveness in driving positive real-world outcomes beyond shareholder value.

Sixth, the "S" (Social) pillar is often considered the most challenging to analyze and integrate due to its broad scope, qualitative nature, and lack of standardized metrics compared to "E" (environmental) and "G" (governance) (Pelosi and Adamson, 2016). Issues like Indigenous rights, community health impacts, and procedural fairness can be difficult to quantify and incorporate into traditional investment analysis.

Finally, critical scholars emphasize how power asymmetries shape sustainability discourse and practice. Corporations leverage economic and political influence to define sustainability favourably, potentially marginalizing community voices and resisting more stringent regulation (Levy and Newell, 2004). In contexts like Chemical Valley, these dynamics can enable corporations to present themselves as sustainability leaders while continuing practices harmful to local communities (Temby, 2020).

These critiques highlight internal conflicts in corporate sustainability: shareholder vs. stakeholder interests, incremental vs. transformative change, standardized vs. context-specific impacts, financial vs. impact materiality, and technical vs. political understandings of sustainability. Furthermore, the very structure of many ESG frameworks, with their emphasis on financial materiality and standardized, often Western-centric metrics, can inherently undermine recognition justice for Indigenous communities. After prioritizing quantifiable data relevant to investors over qualitative, place-based, and culturally specific understandings of harm and well-being, such as those held by the Aamjiwnaang First Nation, these frameworks risk perpetuating

the invisibility of Indigenous concerns within mainstream corporate accountability mechanisms (Whyte, 2011; Scott, 2013). These tensions are crucial in analyzing Imperial Oil's practices in Sarnia.

ESG Ratings and Corporate Sustainability Epistemology

ESG frameworks, framed as corporate accountability tools, often perpetuate environmental injustice through methodological narrowness and epistemic exclusion. ESG rating agencies such as Morgan Stanley Capital International (MSCI) and Sustainalytics employ proprietary algorithms to quantify sustainability performance, emphasizing metrics like emissions intensity and board diversity while marginalizing place-based harms (Eccles and Klimenko, 2019). Essentially, these ratings laud incremental reductions in greenhouse gas emissions per barrel but disregard the cumulative benzene exposures documented in Aamjiwnaang territory's air quality reports. This practice reflects a systemic bias toward financial materiality, assessing risks to shareholder value over impact materiality, which evaluates corporate impact/harm to communities and ecosystems (Bracking, 2020).

The exclusion of Indigenous knowledge systems is central to this critique. ESG ratings rely on corporate self-disclosures and technocratic datasets, systematically erasing Indigenous epistemologies that define sustainability through relational accountability and biocultural integrity. Aamjiwnaang First Nation's air quality assessments, which prioritize the frequency of respiratory distress during ceremonial gatherings, are absent from Imperial Oil's ESG reports, illustrating de Sousa Santos' (2015) concept of epistemicide or the suppression of alternative knowledge by dominant paradigms. Regulatory complicity intensifies this erasure: Canada's Strategic Innovation Fund allocates subsidies based on ESG scores (Innovation, Science and Economic Development Canada (ISED), 2024), rewarding firms for incremental efficiency gains while ignoring Indigenous health sovereignty.

This phenomenon reduces sustainability to a performance metric, legitimizing industrial operations in places like Chemical Valley.

The UN Sustainable Development Goals (SDGs) Framework and its Critiques

The United Nations Sustainable Development Goals (SDGs), adopted in 2015 as part of the 2030 Agenda for Sustainable Development, offer a globally recognized framework for assessing progress toward social, economic, and environmental sustainability (UN, 2015). Comprising 17 goals, 169 targets, and numerous indicators, the SDGs represent an ambitious attempt to establish a comprehensive, universal sustainability agenda applicable across diverse contexts (Arowoshegbe, Emmanuel, and Gina, 2016; United Nations, 2015). Their broad adoption by

governments, corporations, and civil society has positioned the SDGs as a common language for sustainability assessment, including corporate performance (Davim, 2025; UN Global Compact, 2015).

The UN SDGs build upon earlier frameworks by integrating environmental concerns (e.g., climate action, life below water, life on land) with social (e.g., poverty, hunger, health, education, gender equality) and economic (e.g., decent work, industry innovation, reduced inequalities) priorities (United Nations, 2015). Unlike the preceding Millennium Development Goals, the SDGs apply universally to all nations while emphasizing shared but differentiated responsibilities (Biermann et al., 2017). This universality has facilitated their uptake by multinational corporations seeking standardized metrics for global operations (University of Cambridge Institute for Sustainability Leadership (UCISL), 2017).

As an assessment framework for corporate sustainability, the SDGs offer potential advantages: comprehensive scope across diverse dimensions, emphasis on interconnections encouraging integrated approaches, specific, measurable targets enabling progress tracking, and global legitimacy potentially facilitating comparison (Sachs et al., 2019; UN Global Compact, 2015). Corporate engagement typically involves mapping activities to relevant goals, setting SDG-linked targets, and reporting contributions (Adams and Abhayawansa, 2022; UN Global Compact, 2015). Many petroleum and petrochemical companies, including Imperial Oil, reference SDG alignment in sustainability reporting (Imperial Oil, 2023).

Applying SDGs to Sarnia's Chemical Valley

Several SDGs are relevant for assessing Imperial Oil's sustainability efforts in Sarnia and their relationship to Aamjiwnaang's concerns.

a) **SDG 3 Good Health and Well-being** aims to "ensure healthy lives and promote well-being for all at all ages" (United Nations, 2015). Target 3.9 specifically aims to "substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water, and soil pollution and contamination" by 2030 (United Nations, 2015; World Health Organization, 2018).

   SDG 3 is highly relevant given the documented health issues in the Aamjiwnaang community linked to industrial pollution, including respiratory problems, cancers, and adverse reproductive outcomes (e.g., skewed birth ratios) (Bagelman and Wiebe, 2017; Mackenzie et al., 2005; Huebert, 2017). Studies like the Sarnia Area Environmental Health Project (SAEHP) (2024) confirm elevated health risks from pollutants like benzene and sulphur dioxide prevalent due to industrial emissions (Larsen et al., 2020; Jarvis, 2023). Research also indicates a higher asthma likelihood in children born near Sarnia (Radhakrishnan et al., 2021). Imperial Oil's operations potentially contribute significantly to

these pollution levels and associated health impacts (Imperial Oil, 2022, 2023). The documented health disparities sharply contrast SDG 3's aims, highlighting a gap between global aspirations and local realities. Corporate contributions often focus on occupational health or community wellness programs. However, alignment with Target 3.9 requires addressing cumulative health impacts from operations, an approach demanding more robust assessment and monitoring than typically practiced (Wiebe, 2016).

b) **SDG 6 Clean Water and Sanitation** aims to "ensure availability and sustainable management of water and sanitation for all" (United Nations, 2015). Target 6.3 focuses on improving water quality by reducing pollution, eliminating dumping, minimizing hazardous chemical releases, and increasing wastewater treatment and reuse (United Nations, 2015; United Nations-Water, 2021).

   The St. Clair River, bordering the Aamjiwnaang community and Chemical Valley, faces historical and ongoing water pollution concerns from industrial discharges and spills, potentially impacting water resources used for cultural practices, subsistence, and recreation (Gewurtz, 2007; MacDonald and Rang, 2007). Documented mercury contamination presents a long-term challenge (Gewurtz, 2007; Salem, 2019). Recent incidents, like Imperial Oil's 2021 'slop oil' spill, demonstrate ongoing threats (Jarvis, 2024) and directly contravene SDG 6 objectives. Corporate contributions typically focus on water efficiency and wastewater treatment within operations, but comprehensive alignment requires addressing historical impacts, preventing spills, and ensuring transparent reporting of incidents (Luginaah et al., 2010).

c) **SDG 11 Sustainable Cities and Communities** aims to "make cities and human settlements inclusive, safe, resilient and sustainable" (United Nations, 2015). Target 11.6 aims to reduce the adverse per capita environmental impact of cities, focusing on air quality and waste management (United Nations, 2015; United Nations-Habitat, 2020). Target 11.b calls for integrated policies towards inclusion, resource efficiency, climate adaptation, and resilience (United Nations, 2015).

   The Aamjiwnaang community, situated adjacent to Chemical Valley, is significantly impacted by environmental pollution from numerous facilities, including Imperial Oil (Bagelman and Wiebe, 2017). Persistent air and water pollution and health concerns raise questions about community safety and sustainability, reflecting environmental racism dynamics (Bullard, 2018; Wiebe, 2016). The Aamjiwnaang community's 2024 declaration of a state of emergency due to high benzene levels directly contradicts SDG 11's aspiration for safe communities (CBC News, 2024). The history of industrial encroachment, pollution, inadequate consultation, and disputed land sales indicates a failure to achieve inclusive and sustainable development as envisioned by SDG 11. Corporate contributions

underwhelmingly focus on facility emissions reductions or community infrastructure investments, but comprehensive alignment requires addressing cumulative impacts, ensuring equitable burden distribution, and supporting community-led initiatives, demanding greater integration of EJ principles.

Critiques of the SDG Framework

While the SDGs provide a valuable global framework, critical scholars point out limitations that hinder their effectiveness, especially in assessing corporate performance in unequal contexts.

First, the SDGs exhibit post-political tendencies, framing sustainability as a technical challenge rather than acknowledging fundamental conflicts over resources and power, thereby obscuring structural causes and maintaining existing relations (Hartley, 2020; Menton et al., 2020; Morton, Pencheon, and Squires, 2017)

Another critique is the framework's reliance on homogenized, state-centric metrics that often marginalize Indigenous definitions of sustainability and self-determination. As Tuck and Yang (2012: 2) argue, universalist frameworks like the SDGs risk perpetuating "settler moves to innocence" by subsuming Indigenous rights under broad, technocratic targets that prioritize state and corporate interests over sovereignty. For instance, SDG 11's focus on safe and sustainable cities blends urban-centric benchmarks with the lived realities of Indigenous communities like the Aamjiwnaang First Nation, whose environmental safety is contingent on the integrity of ancestral lands and waterways rather than infrastructural development. For example, a corporation like Imperial Oil might claim contributions to SDG 11 (Sustainable Cities and Communities) by highlighting investment in urban infrastructure projects in Sarnia or improvements in its facility's energy efficiency. However, if these claims ignore or divert attention from the ongoing contamination of Aamjiwnaang's traditional lands and waters directly adjacent to these operations or the community's definition of a sustainable and healthy environment (which may prioritize land integrity and cultural practices over urban metrics), then the SDG framework, in this application, risks facilitating such a move to innocence by validating corporate actions that do not fundamentally address Indigenous dispossession or environmental injustice

Next, the emphasis on quantifiable indicators may inadequately capture context-specific challenges and qualitative dimensions (Fukuda-Parr and McNeill, 2019). The technical-managerial approach risks reducing complex socio-ecological relationships to standardized metrics, missing critical cultural and spiritual dimensions, especially in Indigenous contexts like the Aamjiwnaang First Nation (Wiebe, 2016). Applying national-level indicators at the corporate level also poses similar challenges (Dang and Serajuddin, 2020; UN Global Compact, 2015).

Moreover, the SDGs contain internal contradictions, notably the tension between economic growth objectives (SDG 8) and ecological sustainability (SDGs 13 to15) or between industrial development (SDG 9) and health protection (SDG 3) (Eisenmenger et al., 2020; Pradhan et al., 2017; Morton, Pencheon, and Squires, 2017). These contradictions are acute in extractive industries like petrochemicals, where contributions to economic development may undermine community health and environmental integrity (Hickel, 2019; Swain, 2018). The historical emphasis on economic prosperity in Sarnia arguably contributed to Aamjiwnaang First Nation's environmental burdens, suggesting that SDG reliance is insufficient without critically considering this tension.

Furthermore, the voluntary, non-binding nature of the SDGs limits enforceability and enables selective implementation or "blue-washing," i.e., the superficial alignment for public relations without substantive change (Heras-Saizarbitoria et al., 2022: 2; Adams and Abhayawansa, 2022; Bebbington and Unerman, 2018; Biermann et al., 2017; Buhmann, Jonsson, and Fisker, 2019). Companies might highlight minor contributions while ignoring negative impacts or framing business-as-usual as progress (Fallah Shayan et al., 2022). This trend necessitates a critical analysis of corporate SDG claims versus actual impacts.

Finally, some argue that the SDG framework insufficiently integrates a human rights-based approach and focuses too heavily on market-based solutions, potentially overlooking principles of reconciliation, decolonization, and racial justice needed in contexts like Sarnia (Fleetwood, 2020; Swain, 2018). The SDGs might even inadvertently protect existing political and economic interests that contribute to the problems they aim to solve (Swain, 2018).

These limitations suggest that while SDGs provide useful metrics, a robust assessment of corporate sustainability in Chemical Valley requires retrofitting them with environmental justice principles, Indigenous perspectives, and context-specific measures of community wellbeing and rights fulfillment (Menton et al., 2020).

These theoretical frameworks expose a fundamental question: Can corporate sustainability frameworks designed for investor reporting adequately address environmental justice concerns in Indigenous territories? The Sarnia case study provides a critical test of this question, revealing systematic failures across distributive, procedural, and recognition dimensions of justice.

2. Sarnia's Chemical Valley: A Legacy of Industrial Development and Environmental Justice Challenges

Building on the theoretical foundations outlined previously, this section analyzes Sarnia's Chemical Valley, examining its historical trajectory, current industrial setup, and complex regulatory environment. It discusses Imperial Oil's significant role and investigates the environmental and social impacts on the Sarnia community and the Aamjiwnaang First Nation.

Figure 1 Aamjiwnaang Community neighbouring Industrial Complex in Sarnia

Source: PetroLia Lambton Independent

Historical Development of Sarnia's Chemical Valley

Sarnia's transformation into the industrial powerhouse known as 'Chemical Valley' is a tale of geographical chance, resource exploitation, and over a century of industrial drive. The region's destiny began to take shape in the mid-19th century with the groundbreaking discovery of oil in Lambton County in 1858. This pivotal moment marked North America's first commercial oil production (Burr, 2006; University of Waterloo, 1993). The discovery in Petrolia and nearby Oil

Springs laid the groundwork for petroleum refining and transportation, setting Sarnia on a path to industrial dominance (Armstrong, 2019; Elford and Block, 2019).

Sarnia's strategic geography played a pivotal role in its industrial growth. Situated at the southern entrance of Lake Huron into the St. Clair River, Sarnia held a crucial position on the U.S. border, providing exceptional logistical advantages for transporting resources and facilitating trade with major North American hubs like Toronto, Chicago, and Detroit (Ford, 2015; Elford and Block, 2019). This natural advantage was further enhanced by early infrastructural icons, such as the St. Clair Tunnel, the world's first subaqueous rail tunnel connecting Canada and the United States, completed in the late 19th century, and the Bluewater Bridge, which established a vital channel for vehicular commerce (Scott, 2013). Additionally, the region's unique geological makeup, featuring underground salt caverns ideal for storing industrial feedstocks and by-products, further contributed to its appeal as an industrial hub (Ford, 2015).

Imperial Oil, founded in 1880 in London, Ontario, recognized Sarnia's potential and relocated its headquarters there in 1898. Operations began in 1897, making Imperial Oil an early and enduring anchor of the region's industrial landscape (Imperial Oil, n.d. (a); Taylor, 2019). This pivotal phase laid the foundation for Sarnia's transformation into a significant industrial center.

In 1942, Chemical Valley experienced a transformative chapter due to the needs of World War II. The critical shortage of natural rubber prompted the Canadian government to establish Polymer Corporation (later Polysar), a Crown corporation dedicated to synthetic rubber production (Bellamy, 2007). With its established oil infrastructure, abundant water supply from the St. Clair River for cooling, and strategic location, Sarnia was deemed the ideal location for this new industry (Bellamy, 2007; Chemical Institute of Canada, 2013). This venture marked a significant shift from primary resource extraction to sophisticated, value-added manufacturing, establishing an industrial clustering model defining the region.

The post-war era witnessed an explosive expansion of Sarnia's industrial base. Multinational corporations, drawn by the success of Polymer and the region's inherent advantages, flocked to the area. Imperial Oil significantly expanded its operations during this period (Taylor, 2019). Dow Chemical established facilities to supply Polymer, followed by other industrial giants such as Shell, Sunoco (later Suncor), and Nova Chemicals (Jackson, 2020). The construction of pipelines post-1959, notably the Enbridge pipeline delivering Albertan oil, further cemented Sarnia's status as a central processing and manufacturing nexus (Temby, 2020). By the early 1960s, civic and business leaders had informally adopted the name 'Chemical Valley,' reflecting pride in innovation and an acknowledgment of the sheer concentration of chemical industries (Jackson, 2020).

This industrial boom ushered in an era of unprecedented economic prosperity. By the 1970s, Sarnia boasted one of Canada's highest living standards, with per capita disposable income 35%

above the national average (Elford and Block, 2019). The petrochemical complex provided abundant, high-wage employment, cultivating a distinct blue-collar affluence that shaped the community's social identity,

However, this period of rapid industrialization and economic uplift occurred with limited foresight into the potential environmental ramifications (The Sarnia Observer, 2024). As early as the 1940s, mercury contamination was detected in the St. Clair River (Graf, 2024), and by the 1950s, broader evidence of environmental degradation began to surface, with the river later gaining notoriety for the 'toxic blob' in the 1980s (Adkin, 1998). Concerns over air quality intensified as emissions from the clustered facilities permeated the local airshed. In response, the industry formed the St. Clair River Research Committee in 1952, which evolved into the Lambton Industrial Society and eventually the Sarnia-Lambton Environmental Association (SLEA), ostensibly to monitor emissions but also, as some critics argue, to deflect stringent regulation (Temby, 2020). The long-term health effects for workers and the community associated with petrochemical processing would take decades to become fully apparent (Cryderman et al., 2016).

The environmental justice dimensions of Chemical Valley's development were evident in its relationship with the Aamjiwnaang First Nation, a situation Wiebe (2016) terms 'everyday exposure.' The relentless expansion of the industrial complex led to the progressive encirclement of the Aamjiwnaang reserve. As Scott (2013) documents, the First Nation's ancestral lands were systematically diminished through various surrenders, often under duress or contested processes, alongside suspicious land deals, highway expansions, and municipal annexations. This historical process represents a profound distributive injustice, concentrating environmental hazards around a dispossessed Indigenous community. It also reveals a failure of recognition justice, as colonial and industrial imperatives superseded Anishinaabe land tenure systems and relationships to the territory. The resulting inequitable distribution of environmental burdens set the stage for ongoing environmental racism.

The Contemporary Industrial Landscape of Chemical Valley

Sarnia's Chemical Valley boasts a significant presence, encompassing approximately 40% of Canada's chemical industry within a 25-kilometre radius (MacDonald and Rang, 2007). This densely populated industrial corridor comprises over 60 facilities, including refineries, chemical production plants, power generation stations, and ancillary infrastructure, all interconnected within a complex manufacturing ecosystem (Scott, 2013). Key corporate players in this region include Imperial Oil, Shell Canada, NOVA Chemicals, Dow Chemical, Bayer, BASF, Cabot, and DuPont (Roberts, 2024). The proximity of these operations, often located near residential zones and the Aamjiwnaang First Nation reserve, has resulted in a distinctive industrial landscape that raises significant environmental justice concerns.

Chemical Valley's current configuration is defined by its highly integrated production system, characterized by sophisticated material exchanges between facilities. Ford (2015: para 35) describes this interdependence: "In one interchange, Esso Chemicals sends ethylene to Dow, which then reacts with chlorine to produce vinyl chloride, which it sells back to Esso to manufacture polyvinyl chloride." While this interconnectedness likely enhanced operational efficiency, it also complicated environmental governance by diffusing accountability for emissions across numerous corporate entities. The primary products produced in Chemical Valley are diverse, including gasoline, synthetic rubbers, plastics, pesticides, fertilizers, and various solvents (Roberts, 2024).

Refineries serve as the backbone of the industrial landscape, processing conventional crude oil and, increasingly, bitumen extracted from Alberta's oil sands. Imperial Oil's Sarnia facility stands as one of Canada's largest and most integrated refineries. It processes approximately 121,000 barrels of crude oil daily, generating a diverse range of petroleum products and producing over one million tonnes of polyethylene and other chemicals annually (Gagnon, 2023; Sarnia Lambton Economic Partnership, 2015). Statistics Canada data reveal that in 2011, petroleum products refined in Sarnia primarily originated from Western Canada, accounting for around 84% of the total, while the remainder was imported (Statistics Canada, n.d.). NOVA Chemicals (n.d.(a)) also holds a substantial presence in the region, with its Lambton County facilities producing over 3 billion pounds of petrochemicals annually. Collectively, the Sarnia-Lambton region contributes an estimated 40% of Canada's total petrochemical output (Environmental Justice Atlas, n.d.).

The industrial landscape is further characterized by extensive transportation and storage infrastructure. The Enbridge Line 9 pipeline, which has been a subject of considerable controversy since its 2015 flow reversal, connects Sarnia to Montreal refineries (Scott, 2013). The region's unique underground storage caverns provide substantial capacity for storing petrochemical feedstocks and products (Ontario Petroleum Institute, n.d.). Additionally, the St. Clair River serves dual purposes as a vital water source for industrial cooling and a conduit for transporting raw materials and finished goods.

Environmental monitoring infrastructure, primarily operated by the Sarnia-Lambton Environmental Association (SLEA), now known as the Bluewater Association for Safety, Environment, and Sustainability (BASES), an industry-funded consortium, is another prominent feature (Temby, 2020). While these networks have expanded due to regulatory pressures and community advocacy, critics consistently point to limitations in coverage, independence, and public accessibility of raw data (Jackson, 2020; Temby, 2020).

Despite its decline, the region's economic dependence on the petrochemical sector persists, creating tensions between employment requirements and opportunities, on the one hand, and environmental stewardship, on the other, particularly for workers whose livelihoods are closely tied to the industry (Jackson, 2020).

In recent years (from 2015 to 2024), the petrochemical industry in Sarnia has been navigating transformative pressures driven by global energy transitions and heightened environmental consciousness (Imperial Oil, n.d.(b)). Companies are increasingly investing in sustainable practices, such as carbon capture and storage technologies, and exploring the production of hydrogen and biofuels to mitigate their carbon footprint (Imperial Oil, n.d.(b); NOVA Chemicals, n.d.(b)). However, the industrial landscape also saw the announced closure of the INEOS Styrolution plant in 2024, with a permanent shutdown slated for 2026, following intense scrutiny over benzene emissions (INEOS Sarnia, n.d.). This event underscores the escalating regulatory and community pressures on industrial operators. The effectiveness and scale of these transitional initiatives in genuinely reducing the long-standing environmental burdens on communities like Aamjiwnaang are still unclear (McIntosh, 2025).

Regulatory Framework and Governance Gaps

Sarnia's Chemical Valley operates under a complex, multi-jurisdictional regulatory framework that governs industrial operations and environmental protection. Critics, such as Scott (2013), argue that this framework is fragmented and inadequate for addressing cumulative environmental impacts and is riddled with gaps that perpetuate environmental injustice. The framework involves federal, provincial, and, to a lesser extent, municipal authorities (Murphy, 2015).

Federally, Environment and Climate Change Canada (ECCC) wields authority through several key statutes. The *Canadian Environmental Protection Act, 1999* (CEPA, 1999) forms the legislative backbone for regulating toxic substances and preventing pollution (Government of Canada, 1999). Its National Pollutant Release Inventory (NPRI) requires facilities to report emissions of specified pollutants annually (Environment and Climate Change Canada, n.d.). The *Fisheries Act* pertains to discharges into water bodies, such as the St. Clair River, while the *Impact Assessment Act* (formerly the *Canadian Environmental Assessment Act*) outlines the requirements for assessing major projects (Impact Assessment Act, 2019). However, Scott (2013: 93) argues that the federal environmental assessment process has been diluted by legislative amendments that "severely curtail public reviews" and grant Cabinet powers to override decisions of supposedly independent bodies such as the National Energy Board.

Provincially, the Ontario Ministry of the Environment, Conservation, and Parks (MECP) is primarily responsible for regulating industrial air emissions, water discharges, and waste management through the Environmental Protection Act (EPA) (Environmental Registry of Ontario, n.d.), the Ontario Water Resources Act (OWRA) (Government of Ontario, 1990), and specific regulations like Air Pollution - Local Air Quality (O. Reg. 419/05) (Government of Ontario, 2005). The cornerstone of Ontario's air pollution regulatory regime is the issuance of Environmental Compliance Approvals (ECAs), which specify facility-specific emission limits and operational conditions (Government of Ontario, 2024). However, as highlighted by the Environmental Commissioner of Ontario (ECO) (2006), a critical flaw in this system is its

facility-by-facility assessment approach. This approach creates a significant regulatory gap in areas with multiple point sources of pollution, such as Chemical Valley, as it fails to adequately consider the cumulative impacts of the dense concentration of emitters.

Closely tied to this regulatory failure is Imperial Oil's considerable political influence, which has historically undermined efforts to implement comprehensive cumulative environmental impact assessments. As detailed by Temby (2020), through its membership in powerful industry lobbies, such as the Canadian Association of Petroleum Producers (CAPP) and the Chemistry Industry Association of Canada (CIAC), Imperial Oil has consistently advocated for facility-specific permitting regimes, including Ontario Regulation 419/05. While appearing to regulate emissions, these regimes effectively obscure collective responsibility for Chemical Valley's aggregate health burdens by failing to account for the compounded effects of multiple polluters. This exertion of corporate power, aligning with Li's (2023) concept of the 'third face of power', where industry shapes regulatory agendas by controlling the scope of policy debate, represents a significant procedural injustice. It actively limits the avenues for affected communities, such as Aamjiwnaang, to seek redress for cumulative harms and ensures that regulatory frameworks prioritize industrial interests over community health and environmental integrity.

This regulatory deficiency is central to an ongoing constitutional challenge initiated by members of the Aamjiwnaang First Nation. They argue that Ontario's air pollution regulations are fundamentally inadequate when applied to clusters of large, high-emitting facilities, effectively allowing the MECP "to continue to hand out permits without taking into account the background levels of pollution already present" (Scott, 2013: 99). This practice constitutes a profound environmental justice failure in heavily industrialized locales like Sarnia.

The regulation of benzene, a known human carcinogen prevalent in Chemical Valley's emissions, exemplifies these challenges. While the Canadian Council of Ministers of the Environment (2012) introduced Canada-wide standards for benzene in 2010, aiming for progressive emission reductions, their implementation has been inconsistent. These standards adopt a sectoral approach with varying targets for different industries, rather than a unified, health-based threshold. Critically, they function as guidelines rather than legally enforceable requirements, thereby limiting their efficacy (Wiebe, 2016). Recent federal actions, such as an emergency order in May 2024 to control benzene emissions from specific Sarnia facilities, underscore the ongoing severity of this issue and the reactive nature of regulatory interventions (Government of Canada, 2024a; Environmental Defence, 2024).

Monitoring and enforcement mechanisms further highlight regulatory shortcomings. While the Ontario Ministry of the Environment, Conservation, and Parks conducts inspections and monitors ambient air quality, resource limitations have historically limited the frequency and comprehensiveness of these oversight activities (Environmental Commissioner of Ontario, 2006). Consequently, environmental monitoring heavily relies on industry self-reporting and data generated by the industry-funded BASES. However, Temby (2020) points out that while BASES

(formerly SLEA) produces substantial environmental data, persistent issues such as limited public access to raw data, industry control over monitoring parameters, and gaps in cumulative effects assessment undermine its utility and credibility.

The intersection of this regulatory framework with Indigenous governance frequently marginalizes the Aamjiwnaang First Nation's authority and rights over its traditional territory. Although the Crown has a constitutional duty to consult with Indigenous communities on activities that may impact their rights, its implementation in Chemical Valley has been widely criticized as inconsistent and often superficial (Wiebe, 2016).

The most glaring regulatory gap is the absence of a mechanism to effectively address the cumulative health and environmental impacts resulting from the aggregate emissions of over 60 industrial facilities. The Environmental Commissioner of Ontario (ECO) (2006) has criticized this blind spot, opining that the Ministry of Environment essentially admits that its regulatory regime is inadequate to protect the health of residents.

Recent developments include initiatives such as the Sarnia Area Environmental Health Project (SAEHP), launched in 2019, aimed at better understanding the linkages between environmental exposures and health outcomes (Clean Air Sarnia and Area, 2020). There is also a growing emphasis on cumulative effects assessments, although their implementation may not always be robust (MacDonald, 2024). However, critics argue that such initiatives often prioritize data collection over substantive regulatory reform and fail to address the fundamental environmental justice deficits inherent in the current system (Environmental Science and Engineering Magazine, 2024). Furthermore, the need for culturally sensitive, community-involved approaches that integrate the Aamjiwnaang First Nation's traditional knowledge and specific concerns into the regulatory framework remains pressing yet largely unmet (McIntosh, 2025).

Imperial Oil's Enduring Presence and Evolving Role

Imperial Oil, a pivotal player in Sarnia's Chemical Valley, has shaped its industrial past and present since its inception. Its influence extends to the physical, economic, political, and regulatory aspects of the region.

Established in 1897 and significantly expanded over the decades, the Sarnia refinery stands as one of Canada's largest and most integrated petroleum processing facilities. It plays a pivotal role in transforming crude oil into essential products such as gasoline, diesel, aviation fuels, heavy fuel oils, lubricating oils, and vital petrochemical feedstocks (Gagnon, 2023; Taylor, 2019). The refinery's historical development closely mirrors the broader narrative of Canada's petroleum industry, reflecting the country's historical significance as a dominant force in the industry. Beyond its refining capabilities, Imperial Oil maintains a substantial petrochemical manufacturing presence, producing polyethylene, benzene, and various solvents that are integral

inputs for other facilities in Sarnia's Chemical Valley. This interconnected industrial organism underscores the site's role in fostering economic growth and development in the region (Sarnia Lambton Economic Partnership, 2015).

Imperial Oil's corporate identity and operational ethos are significantly influenced by its majority ownership by ExxonMobil. This affiliation has shaped its corporate culture, technological advancements, and, notably, its environmental and sustainability practices (ExxonMobil, n.d.).

The company's environmental footprint in Sarnia is significant. National Pollutant Release Inventory (NPRI) data consistently identify Imperial Oil's Sarnia operations among the top industrial emitters in the region, releasing substantial quantities of criteria air contaminants, volatile organic compounds (VOCs), and greenhouse gases (Ecojustice, 2019). Monitoring by the Ontario Ministry of the Environment, Conservation and Parks has historically documented exceedances of provincial air quality standards for hazardous air pollutants such as benzene near Imperial Oil's facilities (Ecojustice, 2019).

Imperial Oil's operations and environmental consequences have been subject to regulatory scrutiny and community concern. For example, in January 2021, a slop oil leak from a steam tracer line resulted in a release of approximately 1150 litres, leading to a fine of $900,000 plus a $225,000 victim fine surcharge, with community members reporting eye, nose, and throat irritation, headaches, and nausea (Ontario Ministry of the Environment, Conservation and Parks, 2024; Environmental Science and Engineering Magazine, 2024). In 2019, excessive releases of sulphur dioxide led to penalties totalling $801,908.80 due to public health risks, including respiratory distress (Ecojustice, 2022). A flaring incident in February 2017, releasing unknown quantities of volatile organic compounds and sulphur dioxide, prompted a provincial environmental investigation and caused community frustration (Ecojustice, 2017). More recently, a biomass release from the water treatment system was reported in December 2024 (Reuters, 2024). These incidents highlight the ongoing challenges in managing environmental risks associated with large-scale refining and petrochemical operations.

Imperial Oil's relationship with the Aamjiwnaang First Nation, whose reserve is directly adjacent to the company's Sarnia complex, exemplifies the multifaceted environmental justice issues prevalent in Chemical Valley. The historical and ongoing industrial development, significantly shaped by Imperial Oil's operations, has led to what Scott (2013) describes as the effective annexation of the reserve by refineries and storage tanks, with pipelines transecting traditional lands. This spatial encroachment clearly manifests distributive injustice, concentrating risks and pollution burdens directly onto the Aamjiwnaang community. Furthermore, the processes through which these developments occurred often marginalized Aamjiwnaang voices and their right to free, prior, and informed consent, reflecting deep-seated procedural and recognition injustices that continue to characterize the relationship between industry and the First Nation.

Imperial Oil's approach to community engagement and sustainability has evolved in response to mounting environmental justice advocacy and broader societal expectations. The company is an active participant in the Bluewater Association for Safety, Environment, and Sustainability (BASES) (Temby, 2020). It has also developed specific Indigenous engagement programs, though critics such as Wiebe (2016) contend these often prioritize economic opportunities over addressing fundamental environmental and treaty rights concerns. Since 2015, coinciding with the Paris Agreement and the United Nations' Sustainable Development Goals (SDGs), Imperial Oil's sustainability reporting has undergone significant expansion (Imperial Oil, 2022). Annual reports are increasingly referencing alignment with frameworks such as the Task Force on Climate-related Financial Disclosures (TCFD) and the Sustainable Development Goals (SDGs), detailing commitments to emissions reduction, water management, and community investment (Imperial Oil, 2022; McGee, 2022). Investments in cleaner technologies are also prominently featured.

However, the company's predominant technological approach to environmental management in Sarnia has historically emphasized end-of-pipe pollution control rather than comprehensive pollution prevention. While investments have been made in emissions reduction technologies like improved leak detection and repair (LDAR) programs and more efficient combustion (Imperial Oil, n.d.), these programs primarily aim to reduce, not eliminate, harmful releases. Wiebe (2016) argues that this incrementalism fails to adequately address the cumulative impact concerns and the core environmental justice issues faced by the Aamjiwnaang community. The perceived disconnect between corporate sustainability rhetoric and the lived environmental realities of fence-line communities remains a significant point of contention and a central theme for further investigation (TVO Today, 2017).

Imperial Oil's influence in Chemical Valley extends beyond its operations. As a major employer and taxpayer, it likely shapes regional development and environmental governance, enabling and constraining initiatives for genuine environmental justice.

The Aamjiwnaang First Nation and Sarnia Community: Environmental Health and Justice Context

Sarnia, a city of 72,000, and the Aamjiwnaang First Nation, with an on-reserve population of 850 (but a total membership of 2,500), share a geographical space but have contrasting relationships to Chemical Valley's industrial monument. These relationships reveal how environmental burdens are unequally distributed based on race, colonial history, and socio-economic power.

Sarnia proper largely extends north of Chemical Valley, with its primary residential and commercial areas situated several kilometres from the main industrial zone (Jackson, 2020). The city's economic and social fabric has been historically interwoven with the petrochemical

industry, creating a complex, often uncertain, relationship where economic dependence coexists with environmental anxieties. As Jackson (2020: 159) observed, for many Sarnia residents, the "good-paying jobs" offered by the industry often assuaged overt environmental activism.

In sharp contrast, the Aamjiwnaang First Nation's reserve, spanning approximately 3,100 acres, is directly abutted and virtually encircled by Chemical Valley's refineries, chemical plants, and storage facilities (Scott, 2013). This land base is a fraction of their traditional territory systematically diminished through colonial land appropriations, contested surrenders, and expropriations for industrial and infrastructural expansion (Scott, 2013). This reality of an Indigenous community enveloped by heavy industry creates a situation of extreme environmental vulnerability. The Aamjiwnaang population is significantly younger than Sarnia's, with approximately 33% of residents under 25 (Statistics Canada, 2021), a demographic profile that heightens environmental justice concerns due to children's increased susceptibility to environmental toxins.

The air quality in the Sarnia-Lambton region is among the most compromised in Canada (Global News, 2023). Subsequent monitoring and reports continue to highlight significant concerns. Industrial facilities in the region collectively release millions of kilograms of pollutants inventoried under the National Pollutant Release Inventory (NPRI) annually, with emissions including benzene, sulphur dioxide, and particulate matter (Wittnebel, 2024; PBI Canada, 2022). The Aamjiwnaang First Nation continues to experience acute air pollution events, including elevated benzene levels that prompted community-declared states of emergency and federal intervention (McIntosh, 2025).

This pervasive pollution burden translates into severe health challenges, borne disproportionately by the Aamjiwnaang First Nation. Numerous studies and community health surveys have documented elevated rates of respiratory illnesses (such as asthma), various cancers, cardiovascular diseases, learning disabilities, and reproductive health issues within the Aamjiwnaang community when compared to regional or national averages (Luginaah et al., 2010). One alarming finding was a significantly skewed sex ratio at birth, with nearly two female births for every male birth observed between 1993 and 2003 - one of the most extreme imbalances documented globally (Mackenzie et al., 2005). While establishing direct causal links between specific emissions and individual health outcomes is scientifically complex, the cumulative weight of evidence strongly suggests profound environmental health impacts stemming from Chemical Valley's operations (Environmental Science and Engineering Magazine, 2025; Mathewson, 2014). A 2020 study indicated that Aamjiwnaang residents may face higher cancer risks due to airborne toxic substances (Larsen et al., 2022).

Water quality in the St. Clair River, a vital resource for Sarnia and Aamjiwnaang, remains a critical concern. The river has been subjected to numerous chemical spills and discharges. Between 2010 and 2013 alone, 42 spills from Chemical Valley facilities were reported (Wiebe, 2016). These incidents contribute to persistent contamination, impacting aquatic ecosystems and

posing risks to those who rely on the river, the Aamjiwnaang First Nation, whose cultural and spiritual practices are deeply intertwined with it (Luginaah et al., 2010). Soil contamination from historical industrial waste disposal practices further compounds these environmental health risks, with studies on Aamjiwnaang land detecting elevated levels of contaminants like lead, arsenic, and polycyclic aromatic hydrocarbons in areas used for traditional activities (Wiebe, 2016).

Beyond the quantifiable physical health impacts, living under constant environmental threat poses a pervasive "slow violence" (Nixon, 2011). Aamjiwnaang residents endure chronic anxiety and fear due to frequent industrial 'releases,' 'incidents,' flaring, and odours, which have become normalized aspects of daily life in Chemical Valley (Wiebe, 2016). This ongoing environmental stress erodes community well-being, mental health, and cultural continuity. Traditional hunting, fishing, and gathering practices are compromised by contamination fears (Luginaah et al., 2010; McIntosh, 2025).

The distribution of these environmental burdens is not accidental but reflects systemic patterns of environmental injustice or environmental racism (Waldron, 2021). It describes how Indigenous and racialized communities are disproportionately subjected to environmental hazards due to historical and ongoing structural inequalities, colonial legacies, and power imbalances in decision-making processes.

In response, the Aamjiwnaang First Nation has shown resilience and agency by developing environmental monitoring capabilities, advocating through its Environment Committee, and engaging in research partnerships to document impacts and demand accountability. It has operated an independent air quality monitoring network, deploying real-time sensors to track benzene, sulphur dioxide, and volatile organic compounds (VOCs) at strategic locations adjacent to Imperial Oil's facilities (Aamjiwnaang Environment Committee, 2021). This initiative, partly funded by the Ontario Ministry of Environment, Conservation and Parks, directly challenges the industry-dominated BASES monitoring regime by prioritizing hyperlocal exposure data aligned with community health concerns. For instance, Aamjiwnaang's 2022 Air Quality and Health Impacts Report revealed benzene concentrations near the reserve's daycare center exceeding provincial thresholds by 300% during flaring incidents (Aamjiwnaang First Nation, 2023). The community has also partnered with academic institutions to document biocultural impacts, such as the degradation of traditional medicinal plants due to soil contamination (Luginaah et al., 2010) and advocated for Indigenous-led cumulative impact assessments in regulatory proceedings (MacDonald, 2024).

Recent initiatives, such as the Sarnia Area Environmental Health Project (SAEHP), aim to better correlate environmental exposures with health outcomes (Clean Air Sarnia and Area, 2020). While such projects provide valuable data, they often focus on studying the problem rather than implementing solutions that address the root causes of environmental injustice (Wiebe, 2016). Efforts towards greater transparency, such as expanded real-time air monitoring and public emissions reporting, have also been noted (INEOS Sarnia, n.d.).

Furthermore, there have been recent agreements and pilot projects involving the Aamjiwnaang First Nation and federal and provincial governments aimed at addressing pollution and environmental racism, such as enhanced benzene regulations and collaborative monitoring (Government of Canada, 2024b). However, the persistent health disparities and ongoing environmental threats underscore that these measures have yet to achieve comprehensive environmental equity or fully dismantle the structures of environmental racism that have long defined Chemical Valley.

This historical and regulatory context sets the stage for examining how Imperial Oil's sustainability claims interact with Aamjiwnaang's lived realities. The concentration of industries, combined with regulatory frameworks that assess facilities individually rather than cumulatively, creates conditions where corporate sustainability success can coexist with community environmental emergency. This is a contradiction the following analysis systematically documents.

3. Sustainability Gap Analysis

This section undertakes a critical sustainability gap analysis, examining the period between 2015 and 2024. It contrasts Imperial Oil's publicly stated sustainability claims regarding its Sarnia refinery and chemical complex, often portrayed as an exemplar of responsible energy, with the persistent environmental and social realities experienced by the Aamjiwnaang First Nation.

It aims to identify the extent to which corporate claims align with on-the-ground conditions and to illuminate the disconnects between corporate sustainability frameworks and their material impacts on environmental and health conditions, particularly for the Aamjiwnaang community. This gap analysis is informed by the theoretical frameworks established earlier, employing an environmental justice lens that focuses on distributive, procedural, and recognition justice, as well as critical corporate sustainability perspectives, to understand how concepts such as legitimacy management or greenwashing might explain the discrepancies between Imperial Oil's narrative and community realities.

For this analysis, a 'gap' is defined as a demonstrable disconnect between Imperial Oil's public commitments, environmental performance data, and sustainability rhetoric, and the documented environmental health impacts, lived experiences, and justice concerns faced by the Aamjiwnaang First Nation. These gaps may manifest as direct contradictions, significant omissions, misleading emphases, or a fundamental failure to address core community concerns despite generalized sustainability assertions.

Imperial Oil's Corporate Sustainability Claims

Imperial Oil's public sustainability narrative regarding its operations, including those in Sarnia, has undergone significant evolution. This evolution reflects broader trends in corporate social responsibility, as the company's reporting has become increasingly structured and detailed over the years. Later reports, notably the 2022 Corporate Sustainability Report (CSR) (Imperial Oil, 2022), demonstrate a greater adoption of recognized sustainability frameworks such as International Petroleum Industry Environmental Conservation Association (IPIECA) guidelines, the Global Reporting Initiative (GRI) Standards, Sustainability Accounting Standards Board (SASB), and the Task Force on Climate-related Financial Disclosures (TCFD) (Imperial Oil, 2022: 64). The company has also articulated more defined targets in specific areas, particularly for greenhouse gas (GHG) emissions, and has started to outline more precise pollution reduction plans for facilities like Sarnia. This section outlines these claims as presented by Imperial Oil across key areas.

Environmental Commitments

Imperial Oil frames its environmental commitments within a corporate-wide strategy that emphasizes responsible energy development and a transition to a lower-carbon future.

Strategic Goals and Emissions Reduction: Imperial Oil's commitment to reducing its environmental footprint is a recurring theme in its sustainability reports. The company's 2022 CSR formalizes a long-term goal to achieve net-zero Scope 1 and 2 GHG emissions in its operated oil sands by 2050 (Imperial Oil, 2022: 7). The company highlights its investment in research and development, totalling over $2.4 billion in the past 20 years (as of the 2022 report), which is focused on next-generation upstream technologies aimed at smaller footprints, reduced water use, and lower greenhouse gas (GHG) intensity (Imperial Oil, 2022: 8). Specific technological pathways mentioned include advancing carbon capture and storage (CCS), developing lower-carbon intensity hydrogen, exploring small modular reactors, and investing in renewable fuels, such as the planned renewable diesel complex at the Strathcona refinery (Imperial Oil, 2022: 7-8). These initiatives build on its earlier 2015 report, which focused on productivity and efficiency improvements for long-term value (Imperial Oil, 2015: 3).

Site-Specific Promises (Sarnia): For its Sarnia operations, Imperial Oil has reported specific environmental initiatives. Its 2015 report identified successes in emissions reduction due to the elimination of coke burning and the installation of a tail-gas cleanup unit. Imperial Oil reports planned 90% sulphur oxide (SO_2) reductions by 2028 and achieved 27% volatile organic compound (VOC) reductions (2015-2021) through furnace retrofits and expanded Leak Detection and Repair (LDAR) programs (Imperial Oil, 2022: 11). Imperial Oil's 2019 CSR also emphasized the installation of low-Nox (nitrogen oxide) burners at the Strathcona refinery, with

plans to further reduce the gas by 20% by 2028 (Imperial Oil, 2019: 61; Imperial Oil, 2022: 11). Furthermore, the 2022 CSR notes an assessment of using advanced recycling at the Sarnia facility to process plastic waste (Imperial Oil, 2022: 26).

Water Stewardship: Imperial Oil expresses its commitment to responsible water use, aiming to minimize impacts from water withdrawal, consumption, and discharges, guided by its "Protect Tomorrow Today" principle (Imperial Oil, 2022: 13). The company reports that its operations are situated in regions with sufficient water and that it is piloting a screening tool to assess water scarcity and risk (Imperial Oil, 2022: 13). For its downstream facilities, which include Sarnia, the 2022 CSR highlights that over 85% of the water withdrawn is safely returned to the environment in accordance with regulatory approvals (Imperial Oil, 2022: 15).

Land Use, Biodiversity, and Waste Management: Imperial reports aiming to limit operational impacts and conserve and restore land and biodiversity through progressive reclamation and habitat restoration (Imperial Oil, 2022: 16). The company indicates it thoughtfully considers these factors in all aspects of its operations and adheres to a mitigation hierarchy in areas of high biodiversity (Imperial Oil, 2022: 16). Specific initiatives include caribou habitat restoration efforts (Imperial Oil, 2022: 18), support for wildlife habitat management programs certified by the Wildlife Habitat Council (Imperial Oil, 2022: 17), and innovative reclamation techniques, such as the use of remote sensing technology (Imperial Oil, 2022: 21). Regarding waste, Imperial outlines a strategy that prioritizes avoidance, reduction, reuse, recycling, and treatment before disposal, with all process waste managed at Imperial-audited third-party facilities (Imperial Oil, 2022: 25). The 2019 CSR also noted that reclamation planning commences long before production begins (Imperial Oil, 2019: 70).

Reported Performance

Imperial Oil's sustainability reports provide performance data across a range of environmental metrics, frequently highlighting improvements and compliance with management systems.

Emissions Performance: The company reports on its air emissions, including sulphur oxide (SO_2), nitrogen oxide (NO_2), and volatile organic compounds (VOCs). Imperial Oil's 2022 CSR, for instance, indicates a company-wide reduction in VOC emissions from 10.7 thousand metric tonnes in 2018 to 10.1 thousand metric tonnes in 2021, along with a decrease in upstream flaring of over 30% since 2016 (Imperial Oil, 2022: 11, 65). The 2019 CSR similarly highlighted a nearly 30% reduction in upstream flaring since 2016 (Imperial Oil, 2019: 2). The company also provides data on energy consumption and efficiency, such as the Solomon EII for refinery energy efficiency (Imperial Oil, 2022: 66). Notably, as of mid-2024, Imperial Oil's carbon emissions performance failed its own internal targets as well as national and international goals, as illustrated in Figure 2 below:

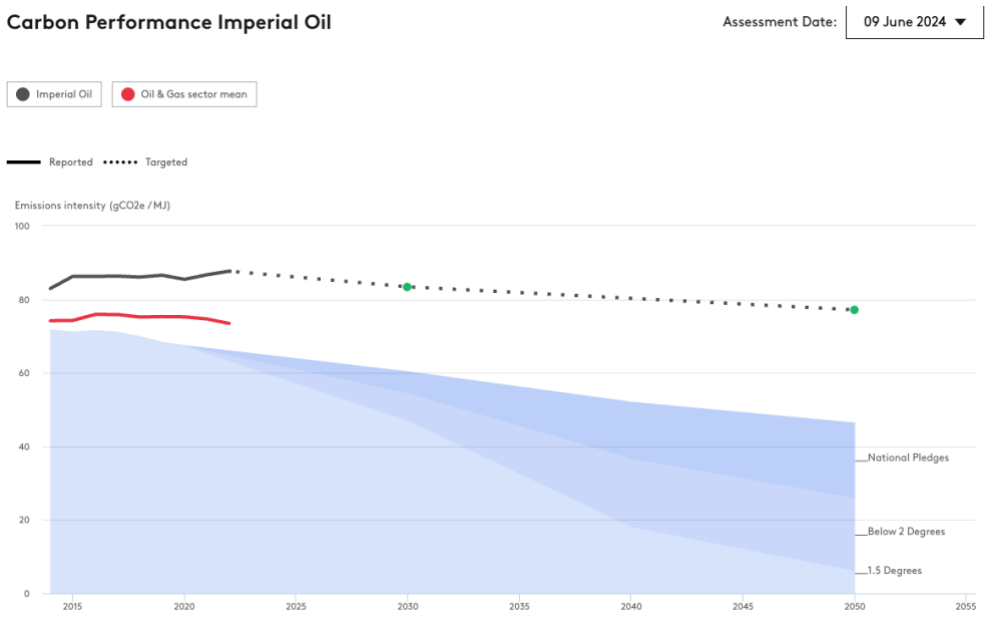

Figure 2 Imperial Oil Carbon Emissions Performance measured in 2024

(Source: Transition Pathway Initiative, 2024)

Spill Performance and Compliance: Imperial Oil reports on oil and chemical spills, including the total number and volume. For instance, the 2022 CSR indicates six (6) oil and chemical spills (>1 barrel) in 2021, with a total volume of 39 barrels, a decrease from previous years (Imperial Oil, 2022: 66). The 2015 CSR highlighted record-low spill counts and regulatory compliance incidents for that year (Imperial Oil, 2015: 3). Additionally, the company reports on environmental fines and penalties as well as the number of environmental exceedance incidents (Imperial Oil, 2022: 66).

Management Systems: A cornerstone of Imperial Oil's reported environmental and safety performance is its Operations Integrity Management System (OIMS). This system serves as a comprehensive framework for managing safety, security, health, and environmental risks while achieving performance excellence (Imperial Oil, 2022: 57). The 2022 CSR notes that its OIMS has received certification from Lloyd's Register Quality Assurance, Inc. for meeting ISO 14001 (Environmental Management) and ISO 45001 (Occupational Health and Safety) standards (Imperial Oil, 2022: 57). Similarly, its Controls Integrity Management System (CIMS) is highlighted for managing operational, financial, and administrative control risks (Imperial Oil, 2022: 56). The 2019 CSR also emphasized the OIMS and CIMS as foundational to their operations (Imperial Oil, 2019: 22-24).

Community Engagement Initiatives

Imperial Oil reports a structured approach to community and Indigenous engagement, emphasizing collaboration and shared prosperity.

Indigenous Engagement: The company outlines a four-pillar strategy for Indigenous engagement: consultation, workforce development, business development, and community relations (Imperial Oil, 2022: 38). Imperial Oil highlights its achievement of Progressive Aboriginal Relations (PAR) Silver level certification from the Canadian Council for Aboriginal Business (CCAB) for its upstream business (Imperial Oil, 2022: 38). The company reports significant investments in Indigenous businesses, with nearly $450 million spent in 2021 and a cumulative $3.8 billion since 2008 (Imperial Oil, 2022: 38). The reports also detail initiatives for Indigenous workforce development, including recruitment programs, internships, scholarships, and employee networks (Imperial Oil, 2022: 40-41). For consultation, Imperial states it engages in open dialogue, values traditional knowledge, and incorporates Indigenous input into project planning, such as for the Sarnia Products Pipeline replacement, where an archaeological site was preserved (Imperial Oil, 2022:16, 42). The 2019 report highlights an innovative Indigenous benefits model, which was recognized with an award (Imperial Oil, 2019: 1).

Broader Community Investment and Stakeholder Engagement: Imperial Oil reports significant investments in Canadian communities, contributing over $17 million in 2021 and focusing on areas that align with its sustainability priorities, including climate solutions, Indigenous reconciliation, health and wellness, and land/water conservation (Imperial Oil, 2022: 45). Examples include support for Forests Ontario, as well as Science, Technology, Engineering, and Mathematics (STEM) programs through Actua (a Canadian charity) aimed at Indigenous youth, in addition to backing the Canadian Mental Health Association (Imperial Oil, 2022: 45). The company describes its stakeholder engagement program as rooted in the principles of inclusion, respect, and accountability, employing various platforms, from direct meetings to third-party research, to understand stakeholder concerns (Imperial Oil, 2022: 60). A grievance management process, guided by IFC/IPIECA good practices, is also said to be in place to address the concerns of individuals or communities (Imperial Oil, 2022: 60). The 2015 report noted $27 million invested in communities and 54,000 volunteer hours contributed by employees and retirees (Imperial Oil, 2015: 1).

SDG Alignment and Reporting

In its more recent sustainability reports, Imperial Oil explicitly references the United Nations Sustainable Development Goals (SDGs). The 2022 CSR identifies a series of SDGs most relevant to its focus areas, including SDG 3 Good Health and Well-being, SDG 6 Clean Water and Sanitation, SDG 7 Affordable and Clean Energy, SDG 8 Decent Work and Economic Growth, SDG 9 Industry, Innovation and Infrastructure, SDG 11 Sustainable Cities and Communities, SDG 12 Responsible Consumption and Production, SDG 13 Climate Action, SDG

15 Life on Land, and SDG 17 Partnerships for the Goals (Imperial Oil, 2022: 64). The 2019 CSR also notes the relevance of the SDGs to its focus areas (Imperial Oil, 2019: 7). The company's reporting structure often aligns projects and initiatives with these selected SDGs, such as linking community investments to SDGs 3, 4, and 11.

SDG Implementation Strategies

Imperial Oil outlines its SDG contributions as being realized through its core business activities, strategic investments, and community programs.

The Operations Integrity Management System (OIMS) and various management frameworks are crucial enablers for achieving environmental and social performance objectives that support different SDGs (Imperial Oil, 2022: 57). Specific projects are often linked to SDG contributions. For instance, the planned renewable diesel facility is positioned as contributing to SDG 13 Climate Action by reducing emissions in the transportation sector (Imperial Oil, 2022: 1). Community investments in education, health, and Indigenous capacity building align with SDGs 3 Good Health and Well-being, 4 Quality Education, 8 Decent Work and Economic Growth, and 10 Reduced Inequalities (Imperial Oil, 2022: 45). The company's commitment to external reporting frameworks, such as Task Force on Climate-related Financial Disclosures (TCFD) (for climate), Sustainability Accounting Standards Board (SASB), and Global Reporting Initiative (GRI), is also part of its strategy to communicate progress on sustainability issues relevant to the SDGs (Imperial Oil, 2022: 64).

Timeline Overview of Imperial Oil Sustainability Claims Juxtaposed Against Major Pollution Events

Table 1 chronologically juxtaposes Imperial Oil's sustainability claims with concurrent pollution events to reveal persistent gaps between corporate environmental narratives and community-level outcomes.

Table 1: Timeline of Major Pollution Events vs. Sustainability Claims

Year	Imperial Oil Sustainability Claims	Significant Pollution Events/Actions
2015	Imperial Oil publishes a Corporate Citizenship Summary emphasizing climate change risk as a priority and pledging to work on effective emission-reduction solutions. (Imperial Oil, 2016)	Aamjiwnaang sisters Vanessa and Lindsay Gray begin 'Toxic Tours' to highlight health impacts from Chemical Valley (Garrick, 2015).
2016	Imperial Oil reports elimination of petroleum coke-burning, tail-gas cleanup unit installation, expansion of cogeneration, and benzene emission reductions. These are presented as evidence of continuous improvement (Imperial Oil Limited, n.d.).	Imperial Oil fined C$650,000 for 2014 toxic gas leak impacting Sarnia residents (Lombardi, 2016).

2017	Imperial Oil's 2017 report reiterates commitment to climate risk reduction and emissions cuts (Imperial Oil, 2018).	Imperial Oil flaring incident causes community panic (Jarvis, 2019). **March**: Ecojustice files formal complaint (Jarvis, 2019). **October**: Global News exposé links pollution to health issues in Aamjiwnaang (Craig et al., 2017). Ontario Commissioner condemns provincial inaction and highlights benzene regulation gaps (Miron and MacDonald, 2017). Ontario commits to funding a health study (Global News, 2017).
2018	Imperial Oil sets new company-wide target to reduce oil-sands GHG intensity by 10% by 2023; claims progress in lowering emissions (Imperial Oil Limited, 2022).	Community still reports frequent pollution and odours (Garrick, 2015).
2019	Sustainability report notes VOC emission reduction and community outreach, including Aamjiwnaang information session (Imperial Oil, 2020).	**February**: Imperial fined C$400,000 for 2016 wastewater spill (Dentinger, 2019). **March**: Ontario declines to charge Imperial over 2017 flaring despite community distress (Jarvis, 2019).
2020	Imperial highlights COVID-19 safety and community support. No new climate targets announced. Work on climate strategy begins (Imperial Oil Limited, n.d.).	COVID-19 pandemic slows protests. Sarnia health project continues amid restrictions.
2021	Joins 'Oil Sands Pathways to Net Zero' alliance with 2050 target (Imperial Oil, 2021). Announces renewable diesel project at Strathcona refinery (Business Wire, 2021).	**April**: Slop oil spill affects Aamjiwnaang residents (Jarvis, 2024). **June**: Imperial Oil pays over C$800,000 in penalties for repeated SO_2 pollution events (Ecojustice, 2021).
2022	Sets 2030 target to reduce oil sands GHG intensity by 30%. Reaffirms 2050 net-zero aim and highlights emission decline, improved leak detection, fewer flaring events (Imperial Oil Limited, 2022).	Imperial Oil publishes Neighbour News; Aamjiwnaang leadership presses for better communication (Blahey, 2019).
2023	Continues work on renewable diesel project and reports strong financial returns. Claims reduction in VOCs and flaring. Stresses environmental excellence (Jarvis, 2024).	Benzene emissions from INEOS raise alarm; Health study finds increased cancer risk (Irwin, 2024; Jarvis, 2024).
2024	Ongoing project updates and climate claims reiterated (Jarvis, 2024).	**April**: Benzene spikes prompt Aamjiwnaang to declare emergency (Sonntag et al., 2024). **June**: Sarnia Council supports Aamjiwnaang's call for INEOS closure (Irwin, 2024). **Sept**: Imperial fined C$1.125M for 2021 spill (Jarvis, 2024). **Oct**: Global News reports on penalty. **Nov**: Aamjiwnaang appeals for fine redistribution (Irwin, 2024).

Priority Environmental Justice Gaps - Imperial Oil Sarnia Operations

Table 2 categorizes environmental justice failures at Chemical Valley by severity, demonstrating how corporate compliance can coexist with critical Indigenous health and sovereignty impacts.

Table 2: Prioritization of Environmental Justice Gaps at Chemical Valley

Gap Category	Severity	Key Evidence	Community Impact
Benzene Exposure	Critical	Corporate claim: 27% VOC reduction Reality: 3-20x provincial standards	Emergency declarations, school closures
Sulfur Dioxide (SO_2) Emissions	High	Target: 90% reduction by 2028 Reality: 37 exceedances in 2023	Respiratory distress, hospitalization spikes
Cumulative Impacts	Critical	Corporate claim: Individual facility compliance Reality: Valley-wide burden unaddressed	Compounded health risks, cultural disruption
Engagement Authority	High	Corporate claim: Meaningful consultation with communities Reality: Limited decision-making influence from communities	Procedural injustice, sovereignty erosion
Data Transparency	Moderate	Corporate claim: Framework alignment at all times Reality: Limited real-time fence-line data availability for community	Information asymmetry, accountability gaps

Lived Realities of the Aamjiwnaang First Nation and Environmental Health Impacts

Despite Imperial Oil's reported sustainability commitments, the Aamjiwnaang First Nation continues to face significant environmental and health challenges associated with the industrial complex of Chemical Valley (as highlighted in Table 1 and 2 above) that surrounds their community. This reality sharply contrasts with corporate sustainability narratives.

Air Quality Data and Impacts

News reports and community statements consistently highlight the ongoing struggles with pollution, particularly air pollution, and its detrimental effects on the health and well-being of Aamjiwnaang residents (CBC News, 2024; PetroLia Lambton Independent, 2025; Global News, 2024). Air quality monitoring data from various sources documents persistent concerns regarding sulphur dioxide and benzene pollutant levels in Sarnia's airshed, especially in areas adjacent to Chemical Valley facilities, including Imperial Oil. These are discussed below:

Benzene

The following presents a snapshot of benzene contamination as experienced by the Aamjiwnaang community:

a) Repeated benzene spikes triggering crisis measures

- In April 2024, the Aamjiwnaang First Nation declared a state of emergency after another surge in benzene readings (CBC News, 2024; Global News, 2024).
- Schools and other key buildings have faced temporary closures during peak episodes (Global News, 2024).

b) Magnitude of exceedances

- Aamjiwnaang First Nation fence line data consistently show benzene concentrations approximately 13 times higher than those reported for comparable U.S. refinery communities (The Narwhal, 2024).
- In contrast, Imperial Oil's monitors indicate flat or rising trends (2018-2021) for the same areas, despite corporate claims of reductions.

c) Regulatory and community monitoring results

- Sarnia Air Action Plan identified multiple stations near Aamjiwnaang First Nation that exceed Ontario's Ambient Air Quality Criteria (AAQC), with Imperial Oil cited as a contributor (Clean Air Sarnia and Area, 2020).
- The Sarnia Area Environmental Health Project (SAEHP) Air Exposure Review 2023 found benzene levels up to 11 times the AAQC around Aamjiwnaang First Nation, and a lifetime cancer risk of $\geq 1 \times 10^{-5}$ (1 in 100,000) for receptor Zone 4 (SAEHP, 2024).
- Aamjiwnaang First Nation's 60-week study (2017-2018) detected benzene levels above the provincial standard at all 15 sites; two sites exceeded the limit by more than 15 times (Aamjiwnaang First Nation, 2023).

d) Station-specific averages (closest to Imperial Oil operations)

- Annual average readings of 1.7-3.9 µg m^{-3} (≈ 4-9 times AAQC) recorded between 2018-2023 (Clean Air Sarnia and Area, 2020; SAEHP, 2024).
- The Aamjiwnaang First Nation daycare monitor routinely logs readings of 1.5-1.6 µg m^{-3}, which is more than three times the Ontario limit.

e) Event-driven peaks

- The community network captured flaring events with benzene levels up to 30 times the provincial standards (Aamjiwnaang First Nation, 2023).

Sulphur Dioxide (SO_2)

The Aamjiwnaang community has also faced issues with other pollutants, such as sulphur dioxide (SO_2), which are linked to respiratory problems (Ecojustice, 2024; The Narwhal, 2024).

a) For instance, the annual mean SO_2 level at the new Ada (Lockridge) Rogers monitor on Aamjiwnaang First Nation lands averaged 8.2 $\mu g\ m^{-3}$ in 2023, ranking among the highest in Sarnia's network.

b) Additionally, SO_2 1-hour exceedances exceeding 100 $\mu g\ m^{-3}$ were recorded 37 times in 2023. Imperial Oil's net-zero pathway excludes a refinery-specific SO_2 trajectory, and hourly exceedances persist during flaring events.

c) The SO_2 emissions intensity at Imperial Oil-Sarnia is 108 t SO_2 per 10^6 barrels processed, compared to 8.3 t SO_2 per 10^6 barrels at three Bay-Area refineries (2017).

Other Pollutants and General Air Quality

a) The SAEHP ranks Sarnia's particulate matter ($PM_{2.5}$) above Ontario's chronic toxicity benchmark, although it is comparable to Windsor and Hamilton.

b) Ontario's Ministry of Environment monitoring stations in Sarnia recorded numerous exceedances of provincial air quality standards during the study period, with benzene and sulphur dioxide identified as particularly problematic (Ontario Ministry of the Environment, Conservation and Parks (MECP), 2022).

c) The SAEHP Air Exposure Review (2023) found that, despite some improvements since 2015, the concentrations of benzene, sulphur dioxide, and particulate matter remained elevated compared to provincial averages, with the highest levels occurring in areas closest to Chemical Valley facilities (SAEHP, 2024).

Health Statistics and Concerns

A review of available health data shows ongoing concerns about pollution-related health outcomes in Sarnia.

a) **Cancer Risks**: A study by Larsen et al. (2022) found elevated cancer risks linked to ambient air exposures in Aamjiwnaang territory, with risks up to three times higher than the provincial averages for certain types of cancer. Benzene was identified as a major contributor to this risk.

b) **Respiratory Conditions**: Epidemiological studies have shown links between Sarnia's petrochemical exposure and an increased incidence of asthma and migraines. A study by Radhakrishnan et al. (2021) found that children born in Sarnia were approximately 24% more likely to develop asthma compared to children in similar Ontario cities. This disparity was partly attributed to differing air pollution exposure, with children living closer to industrial facilities facing higher risks. The Sarnia Area Environmental Health Project also documented higher rates of hospital admissions for respiratory conditions in Sarnia compared to provincial averages during the study period. The analysis found

statistically significant associations between peaks in industrial air pollution and increases in emergency department visits for respiratory complaints, particularly among children and elderly residents (SAEHP, 2024).

c) **Transgenerational Concerns**: Aamjiwnaang representatives express concern about the long-term effects of chemical exposures on future generations, highlighting documented reproductive health issues in the community (Aamjiwnaang First Nation, 2023; Wiebe, 2016).

The persistence of elevated illness rates contradicts corporate narratives of successful sustainability implementation, highlighting limitations in current regulatory and corporate approaches to health protection. Provincial data also seem to lack adequate Indigenous identifiers, which limits causal precision.

Water Quality and Spills

Imperial Oil's Sarnia operations have also impacted local water bodies, primarily the St. Clair River.

Spills

The 2021 oil spill from Imperial Oil's Sarnia refinery, which directly impacted the Aamjiwnaang community and resulted in a significant fine (Play1037, 2024), serves as a clear example of the environmental damage caused by the company's operations. In January 2021, Imperial Oil's Sarnia refinery experienced a slop oil spill into the St. Clair River, leading to a $900,000 fine plus a $225,000 victim fine surcharge (Ontario MECP, 2024). The Ministry's investigation uncovered that the company delayed repairs on a leaking steam tracer line, permitting approximately 1,150 litres of oil to enter the river (Environmental Science and Engineering Magazine, 2024). This incident contradicts Imperial Oil's assertions of strong spill prevention and highlights the significant gaps discussed.

Water quality monitoring data from the St. Clair River reveals ongoing concerns about industrial impacts. The Sarnia-Lambton Environmental Association (now BASES) water monitoring program has detected industrial contaminants, including VOCs, downstream from Chemical Valley facilities throughout the study period. However, specific attribution to Imperial Oil is difficult due to the presence of multiple industrial dischargers (SLEA, 2021). Furthermore, community reports indicate persistent water quality issues in the St. Clair River watershed. The Aamjiwnaang Environmental Committee has recorded approximately 42 spills into the river from Chemical Valley facilities between 2015 and 2023, contributing to ongoing concerns regarding water safety and cultural impacts for the First Nation (Wiebe, 2016; McIntosh, 2025). The Aamjiwnaang First Nation consistently reports challenges in accessing water resources for traditional purposes due to concerns about contamination and industrial encroachment (Wiebe, 2016; McIntosh, 2025).

Imperial Oil offers limited discussion on specific initiatives aimed at addressing historical contamination, cumulative impacts, or specific measures to safeguard traditional water uses by Indigenous communities (Imperial Oil, 2019, 2022, 2023).

Regulatory and Corporate Shortcomings

The Sarnia Area Environmental Health Project (SAEHP) Air Exposure Review found that, although individual facilities may comply with their respective emissions limits, the overall pollution loading in Sarnia's airshed resulted in consistent exceedances of health-based air quality standards (SAEHP, 2024). This cumulative burden is especially pronounced for fence-line communities, such as Aamjiwnaang First Nation, which experience simultaneous exposure to multiple pollutants from numerous industrial sources.

SAEHP evaluated 53 contaminants, revealing that Ontario's single-contaminant standards underestimate additive cancer risk, particularly the synergistic effects of benzene and 1,3-butadiene. Research by MacDonald (2024) documented the limitations of regulatory approaches that fail to consider these cumulative impacts. The analysis found that Ontario's facility-specific environmental compliance framework underestimates total environmental loading and health risks in Chemical Valley. Imperial Oil's sustainability reporting demonstrates a similar limitation, focusing predominantly on facility-specific metrics rather than contributions to cumulative impacts (Imperial Oil, 2022, 2023). This approach confirms Scott's (2013) critique of industrial impact assessments, which evaluate each facility in isolation despite the reality of combined exposures experienced by nearby communities. Imperial Oil's sustainability efforts, as detailed in its reports (e.g., Imperial Oil, 2023), outline general commitments to environmental responsibility and Indigenous engagement, but largely fail to address the cumulative nature of pollution in Chemical Valley in a meaningful way. This omission is critical because the Aamjiwnaang First Nation experiences not just isolated incidents from one company but the compounded burden of over 60 facilities. From an environmental justice perspective, this failure to account for cumulative impacts in corporate reporting and mitigation strategies results in:

a) A persistent distributive injustice, as the Aamjiwnaang First Nation continue to bear an excessive health burden due to the cumulative effects of industrial activity.
b) An ongoing procedural injustice, as neither corporate engagement nor regulatory frameworks typically offer mechanisms for the Aamjiwnaang community to address these compounded effects meaningfully.
c) A profound recognition injustice, as Imperial Oil corporation's focus on its individual facility compliance or site-specific improvements can negate the Aamjiwnaang community's lived reality of being in a sacrifice zone (Bullard, 2014), shaped by decades of environmental racism.

Community Advocacy

The Aamjiwnaang First Nation's long history of living in the shadow of Chemical Valley, dealing with land dispossession and facing ongoing environmental and health concerns, is discussed extensively in this research. A submission to the Impact Assessment Agency of Canada detailed the history of environmental racism against the Aamjiwnaang community and highlighted the significant health and environmental impacts, including data on Imperial Oil's chemical plant emissions and the findings of the SAEHP, which indicated serious threats to local health, particularly for Aamjiwnaang First Nation (2024).

The Aamjiwnaang Environment Newsletter highlights a focus on environmental protection, native plant restoration, and reporting pollution incidents, demonstrating proactive efforts to safeguard land and resources (Aamjiwnaang Environment, 2018). Aamjiwnaang First Nation has also publicly called for immediate action following the release of environmental health reports confirming high levels of toxic air pollutants, emphasizing the cumulative impact of pollution (Aamjiwnaang First Nation, 2023). Initiatives like the 'Toxic Tour' led by Vanessa Gray of Chemical Valley have illustrated the direct impact of pollution on Aamjiwnaang and working-class communities (Wright, 2024).

The gap between single-source assessment approaches and cumulative reality signifies a fundamental limitation in current sustainability frameworks for Chemical Valley. As Wiebe (2016) argues, this disconnection between regulatory/corporate frameworks and lived experiences constitutes environmental violence that disproportionately affects Indigenous communities like Aamjiwnaang First Nation.

Community Perspectives and Engagement Experiences

Community perspectives offer essential insights into the real experiences of corporate sustainability initiatives and their tangible effects on environmental conditions in Sarnia.

Lived Experiences of Pollution

Community perspectives on Imperial Oil's sustainability practices reveal significant disconnections between corporate claims and day-to-day realities. Members of the Aamjiwnaang First Nation consistently report experiencing industrial impacts that contrast with corporate narratives of environmental improvement and community protection (Aamjiwnaang First Nation, 2023; McIntosh, 2025).

A recurring theme in community accounts is the normalization of industrial disturbances such as flaring, odours, and noise events that Imperial Oil and other companies frame as exceptional, yet residents perceive them as routine aspects of life in Chemical Valley (Wiebe, 2016; McIntosh, 2025). As one Aamjiwnaang resident noted in testimony to the Impact Assessment Agency: "We're told these events are rare, but we experience them weekly" (cited in MacDonald, 2024: 8), while others describe a persistent trust deficit in provincial enforcement mechanisms.

Daily Life and Cultural Impacts

Testimonies from Aamjiwnaang members describe how industrial activities impact daily life and cultural practices. As documented in Aamjiwnaang's submission to the Impact Assessment Agency: "There was a leak and my daughter was outside playing and started puking for no reason then was fine and we came inside and closed the windows and found out there was an alert to stay inside but we didn't know at the time" (cited in Clean Air Sarnia Area, 2023: 4).

Corporate accountability claims often diverge from community experiences, particularly in industrial incidents. For example, following Imperial Oil's 2021 spill, Aamjiwnaang community members felt a disconnection between corporate messaging regarding effective response and the environmental and health impacts (Environmental Science and Engineering Magazine, 2024). This disconnection highlights fundamental differences in how health and well-being are conceptualized. While Imperial Oil emphasizes regulatory compliance and quantifiable metrics, Aamjiwnaang community perspectives take into account cultural, spiritual, and relational aspects of health that extend beyond conventional corporate frameworks (Wiebe, 2016; Whyte, 2016).

The Sustainability Gap: Imperial Oil and Aamjiwnaang

A direct comparison of Imperial Oil's stated sustainability claims, particularly those articulated in their Corporate Sustainability Reports (CSRs) from 2015 to 2022, with the documented environmental health realities and lived experiences of the Aamjiwnaang First Nation reveals significant and ongoing sustainability gaps. These gaps highlight the shortcomings of corporate sustainability frameworks in addressing the severe and localized environmental justice issues faced by communities neighbouring major industrial operations like Imperial Oil's Sarnia complex.

Specific Gaps Against Claims and SDG Targets

The following gap analysis applies Schlosberg's (2007) tripartite environmental justice framework to systematically evaluate Imperial Oil's sustainability claims. Each identified gap represents failures across distributive justice (fair allocation of environmental burdens), procedural justice (meaningful participation in decisions), and recognition justice (acknowledgment of Indigenous knowledge and territorial relationships). This framework reveals how corporate sustainability metrics can perpetuate rather than remedy environmental injustice.

Air Quality (SDG 3.9 - Reduce deaths/illness from hazardous air pollutants)

Table 3 exposes contradictions between reported air quality improvements and documented toxic exposures, revealing how sustainability metrics can obscure localized health risks.

Table 3: Overview of Air Quality Gaps vs. Sustainability Claims

Aspect / Pollutant	Imperial Oil Corporate Narrative (CSR)	Aamjiwnaang Observed Reality and External Findings	Resulting Gap / Key Issue
Benzene (VOC of greatest health concern)	No numeric, time-bound benzene-reduction target. Reports highlight a 27% drop in total VOCs (2015-2021) via LDAR expansion. Collaboration with regulators and community air-monitoring noted.	Aamjiwnaang First Nation (AFN) fence line data (2017-18) recorded 9.5 µg m^{-3} at Churchill @ Hwy 40 20 times Ontario's AAQC. SAEHP (2023) confirms exceedances substantially above health thresholds; daycare monitor readings 3 times AAQC. State of emergency declared (April 2024) after another benzene spike.	CSR aggregates VOCs, masking benzene hotspots. No fence line or community-health metric despite repeated exceedances and emergency declaration.
Sulphur Dioxide (SO_2)	Goal: > 90% reduction at Sarnia by 2028 through furnace retrofits + additives CSR cites past cuts from eliminating coke burning and adding tail-gas cleanup.	37 one-hour exceedances (> 100 µg m^{-3}) logged in 2023 at Sarnia station; AFN monitor had network's highest annual mean. NPRI shows refinery remains a major SO_2 emitter.	Target horizon (2028) not matched to acute exposures now. No interim milestones: community continues to face frequent exceedances.
Total VOCs (all species)	CSR claims 27% reduction (2015-2021) from LDAR and other controls. Emphasises company-wide progress, not site-specific numbers.	Despite aggregate drop, benzene and other toxics persist above guidelines near AFN. NPRI still ranks refinery as significant VOC source.	Aggregate VOC reductions do not guarantee safety for individual harmful species. Lack of pollutant-specific targets undermines health-protective outcomes.
GHG Intensity and Flaring	10% GHG-intensity cut for operated oil-sands by 2023; 30% by 2030 (vs 2016). 30% flaring reduction (upstream) since 2016 highlighted in 2019 CSR.	GHG-intensity focus does not affect fence line toxic exposures. Absolute emissions can rise with production.	Climate metrics receive high visibility, diverting attention from localized air-toxic health risks most relevant to SDG 3.9 for AFN residents.
Advanced (Chemical) Recycling Initiative	2022 CSR identifies advanced plastic-waste recycling at Sarnia, framed as an environmental solution.	Initiative does not address current air-toxic load from refinery/chemical operations impacting AFN.	Sustainability narrative expands scope without tackling immediate hazardous-air-pollutant challenges.

Water Protection and Quality (SDG 6.3 - Improve water quality; reduce hazardous discharges)

Table 4 examines divergences between water stewardship commitments and ongoing aquatic ecosystem challenges affecting Indigenous territorial relationships.

Table 4: Overview of Water Quality Gaps vs. Sustainability Claims

Dimension	Imperial Oil Corporate Narrative (CSR)	Aamjiwnaang Observed Reality and External Findings	Resulting Gap / Key Issue
Spill Prevention and Emergency Preparedness	'Protect Tomorrow. Today.' principle; robust inspection /maintenance and emergency-response systems (2019 CSR).	46 total spills and releases (>1 barrel) recorded from 2018-2022: (1) 2018-13 (2) 2019-10 (3) 2020-7 (4) 2021-6 (5) 2022-10	Major incidents contradict zero significant spills narrative. Demonstrates operational failures despite stated management systems.
Effluent Quality and Water-Return Claims	2022 CSR: > 85% of water withdrawn at downstream sites is returned safely to the environment under permit conditions. States continuous improvement in wastewater treatment.	CSRs omit Sarnia-specific effluent chemistry (e.g., BTEX, metals, PFAS) needed for independent verification. Limited public data on discharge concentrations, frequency or acute toxicity.	Transparency gap: stakeholders cannot assess whether safe return standard is met for all contaminants.
Innovative Treatment Projects	Highlights Kearl constructed wetland for oil-sands mine water as evidence of innovation (2022 CSR).	Initiative not relevant to Sarnia refinery/chemical complex, where wetland treatment is not deployed.	Use of non-Sarnia examples could divert focus from local water-quality challenges.
Cumulative and Cultural-Use Considerations	Narrative centres on regulatory compliance and single-event reporting.	Aamjiwnaang members cite ongoing concerns about fish consumption, ceremonial use and shoreline access due to repeated spills and legacy contamination. Multiple Chemical Valley facilities discharge to the same river, compounding load.	CSR fails to address cumulative impacts or Indigenous traditional-use criteria under SDG 6.3.
Overall Performance Framing	Emphasises responsible water management and adherence to permits.	Fines and spill history call the responsible framing into question.	Credibility issue: claims of robust systems not matched by on-the-ground outcomes.

Community Health and Well-being (SDG 3 - Good Health and Well-being; SDG 11.6 - Reduce per-capita environmental impact of cities)

Table 5 contrasts corporate community wellbeing claims with evidence of elevated disease rates among Aamjiwnaang residents.

Table 5: Overview of Community Wellbeing Gaps vs Sustainability Claims

Dimension	Imperial Oil Corporate Narrative (CSR)	Aamjiwnaang Observed Reality and External Findings	Resulting Gap / Key Issue
Health and Well-being Commitment	2022 CSR pledges to 'enhance the health and well-being of our employees and communities' via a Culture of Health program. 2018 CSR promises to 'improve the quality of life in Indigenous and operating communities.'	Epidemiological studies and community surveys report higher rates of respiratory illness, certain cancers, and other chronic conditions in Aamjiwnaang and adjacent Sarnia neighborhoods, linked to industrial emissions. SAEHP (2023) models lifetime benzene cancer risk $\geq 1 \times 10^{-5}$ in an AFN receptor zone above thresholds.	CSR language is broad and aspirational; no Aamjiwnaang-specific health-outcome targets or metrics that track environmental-exposure reduction.
Safety and Emergency Preparedness	Safety framed as a core value; 325 emergency drills conducted in 2021 across operations.	Community members cite fear and stress from frequent flaring events, odor incidents, and shelter-in-place advisories-factors not captured by drill statistics.	Emphasis on internal preparedness does not translate into reduced community exposure or anxiety during real incidents.
Community Investment and Philanthropy	Reports highlight donations to hospitals, education, and Indigenous initiatives (e.g., scholarships, cultural programs).	Investments appreciated yet do not mitigate source emissions responsible for health burdens; residents view them as insufficient trade-offs.	Philanthropy does not equate to pollution control. i.e. financial contributions fail to satisfy SDG 3.9's call for reducing illness from hazardous chemicals.
Environmental Health Programs	CSRs reference general wellness campaigns and mental-health resources.	No detailed, measurable programs aimed at lowering benzene/SO_2 exposure or funding health studies specific to Aamjiwnaang.	Programmatic gap with lack of targeted interventions addressing pollution-driven disease pathways.
Per-Capita Environmental Impact (SDG 11.6)	Tree-planting and community beautification cited as enhancing local environment.	Persistent industrial emissions leave AFN and Sarnia with one of Canada's highest per-capita pollutant loads; Quality-of-life indicators lag behind provincial averages.	Symbolic initiatives (e.g., tree planting) cannot offset the substantial, ongoing air- and water-quality impacts borne by residents.

Community Engagement and Indigenous Relations (Specifically for Sarnia/Aamjiwnaang)

Table 6 illustrates instances where corporate engagement processes fail to provide Indigenous communities with substantive decision-making authority over territorial developments.

Table 6: Overview of Community Engagement Gaps vs Sustainability Claims

Dimension	Imperial Oil Corporate Narrative (CSR)	Aamjiwnaang Observed Reality and External Findings	Resulting Gap / Key Issue
Engagement Framework	Pledges to 'strengthen collaboration and partnerships with Indigenous communities' through consultation, workforce/business development and community-relations programs. Grievance processes said to follow IFC / IPIECA good practice with tracking and response systems.	AFN report that engagement has not resolved core pollution and health concerns Grievance systems described as opaque and sometimes intimidating, discouraging use.	Procedural vs. substantive: dialogue exists, but outcomes fail to address environmental-health harms.
Project-Specific Collaboration	Cites the Sarnia Products Pipeline replacement: Indigenous monitors and archaeologists guided route changes; HDD drilling preserved a cultural site.	AFN acknowledges site-specific gains but stresses these do not translate to routine-operations oversight or emission reductions at the refinery/chemical complex.	Positive but isolated example; does not offset everyday exposure burdens.
SO_2 Reduction Plan Engagement	2022 CSR: SO_2 abatement (> 90% by 2028) will have a priority focus on timely and meaningful engagement with neighbouring Indigenous communities.	AFN notes little evidence engagement has influenced the design, pace, or interim milestones of the SO_2 program, let alone benzene controls.	Outcome gap: engagement promises not yet linked to measurable air-quality improvements.
Economic and Reconciliation Initiatives	Reports Indigenous procurement spend, scholarships, cultural sponsorships and workforce training.	While valued, economic benefits do not mitigate ongoing environmental health risks; residents view them as partial compensation, not reconciliation.	Justice imbalance: financial contributions without pollution relief fall short of SDG-aligned reconciliation.
Power and Decision-Making	CSRs highlight meetings, information sharing, and feedback loops.	AFN representatives describe limited decision-making power over operations that affect their treaty rights and well-being.	Power imbalance persists between corporate control and community authority over environmental protection.

Emissions Reporting and Transparency (for Sarnia)

Table 7 demonstrates how corporate transparency prioritizes investor disclosure over community empowerment, perpetuating information asymmetries.

Table 7: Summary of Transparency Gaps vs. Sustainability Claims

Dimension	Imperial Oil Corporate Narrative (CSR)	Aamjiwnaang Observed Reality and External Findings	Resulting Gap / Key Issue
Disclosure Frameworks and Verification	CSRs claim alignment with IPIECA, GRI, SASB, TCFD and note third-party verification for some GHG inventories.	Framework names do not guarantee site-level transparency; verification typically covers corporate-wide data rather than Sarnia-specific toxics.	Scope mismatch: high-level compliance cited, yet granular emissions most relevant to Aamjiwnaang remain opaque.
Sarnia-Specific Emission Data	2022 CSR lists planned > 90% SO_2 reduction by 2028 and a 27 % VOC drop (2015-2021).	CSR still aggregates downstream data, obscuring trends for benzene, $PM_{2.5}$, NO_x, etc. Routine fence line concentrations absent; community monitoring fills the gap and often finds exceedances.	Transparency gap: limited pollutant coverage, no year-by-year Sarnia trend lines, few real-time indicators.
Real-Time or Fenceline Concentrations	Narrative highlights planned reductions and material improvements.	No CSR tables/graphs showing daily or weekly benzene, SO_2, VOC levels at fence line monitors. Community networks reveal frequent spikes not captured in corporate reports.	Data-access gap: stakeholders cannot track progress or verify material reduction claims in near real-time.
Metric Emphasis (GHG vs. Toxics)	Substantial space devoted to GHG-intensity goals (oil sands, net-zero 2050).	Local health concern equates to toxic air contaminants, not corporate GHG intensity. Metrics most salient to AFN (benzene, SO_2 peaks) receive minimal CSR coverage.	Misalignment with community priorities: reported metrics overlook pollutants driving SDG 3.9 health risks.
Target Specificity and Trackability	Phrases such as ‘drive a material reduction in SO_2’ without interim figures until 2028.	Community lacks annual milestones to gauge progress; unclear baseline year for material claims.	Accountability gap: absence of discrete, time-bound targets hampers independent tracking and trust.

Cumulative Impacts and Environmental Justice (for Sarnia/Aamjiwnaang)

Table 8 analyzes how individual facility compliance claims obscure cumulative pollution burdens and the absence of valley-wide environmental justice considerations.

Table 8: Overview of Cumulative Impacts and Environmental Justice Claims

Dimension	Imperial Oil Corporate Narrative (CSR)	Aamjiwnaang Observed Reality and External Findings	Resulting Gap / Key Issue
Cumulative Pollution Responsibility	Reports emphasise Imperial's own EMS (Environmental-Management System) and site-level compliance. 2022 CSR highlights initiatives to protect water and promote biodiversity.	Aamjiwnaang First Nation (AFN) sits in Chemical Valley's high-density industrial cluster, where cumulative emissions from multiple plants drive persistent air and water-quality exceedances. Regulators still assess facilities in isolation, leaving the overall pollution load unresolved.	No explicit strategy for Imperial's share of the cumulative burden; CSR framing remains plant-centric rather than valley-wide.
Environmental Justice / Environmental Racism Lens	CSRs reference Indigenous relations, reconciliation and community investment.	AFN's situation is widely cited as a case of environmental racism and CSR reports do not use EJ language or acknowledge systemic inequity in Chemical Valley.	Blind-spot: CSR omits an environmental justice framework, leaving structural inequities unaddressed.
Stakeholder and Indigenous Engagement	Strengthening collaboration with Indigenous communities framed around economic partnerships, consultation, and investment.	Engagements have not mitigated health impacts from Imperial's routine emissions; cumulative risks continue to rise.	Procedural focus (meetings, investments) without substantive measures to alleviate pollution harms undermines credibility of reconciliation claims.
Strategic Integration	Sustainability goals presented as discrete themes (water, biodiversity, GHGs).	Chemical Valley's issues are inter-linked; isolated metrics do not capture compounded effects on health and culture.	Lack of an integrated, cross-cutting plan to tackle multi-pollutant, cumulative, and justice-based challenges.

Overarching Patterns and Disconnects

The discrepancies highlighted in Tables 3 to 8 are not random inconsistencies but instead reflect deeper systemic issues in how corporate sustainability is often practiced. For instance, the persistent gap between Imperial Oil's claims of 'reduced air emissions' and Aamjiwnaang First Nation's reality of ongoing exposure to high pollutant levels points to a potential prioritization of financial materiality over impact materiality (Liang and Renneboog, 2017). Reductions may be occurring in certain company-wide metrics favoured by investors (e.g., overall GHG intensity). At the same time, localized toxic emissions that directly affect community health receive less urgent attention or are framed as compliant with inadequate regulations. Similarly, the divergence between claims of 'meaningful engagement' and the community's experience of limited influence may illustrate a legitimacy management strategy (Dowling and Pfeffer, 1975), where engagement serves to create a perception of responsiveness without ceding substantive decision-making power, constituting a clear procedural injustice.

The consistent pattern emerging from this analysis reveals a significant misalignment between Imperial Oil's carefully crafted public sustainability discourse and the acute, ongoing, and localized environmental health crises faced by the Aamjiwnaang First Nation. While Imperial Oil's CSRs document various environmental initiatives, efficiency gains (often represented as intensity metrics), and community investments, these reported actions frequently fail to result in tangible, sufficient, or timely improvements for the specific, severe environmental justice issues at the Aamjiwnaang fence line in Sarnia.

Notably, it is important to mention that, according to Climate Action 100+ (2025), Imperial Oil fails to meet the criteria for promoting a 'Just Transition' in its operational areas. It also receives low scores in critical areas, such as climate policy engagement and short-term greenhouse gas (GHG) reduction targets, among others.

These gaps exemplify Nixon's (2011) assertion about the gradual, invisible environmental harm that disproportionately affects marginalized communities while remaining obscured by technical corporate metrics. Imperial Oil's sustainability framework might perpetuate this slow violence by aggregating data that masks acute local exposures, effectively rendering Aamjiwnaang First Nation's environmental emergency invisible within mainstream accountability mechanisms.

This sustainability gap analysis reveals a disturbing pattern. Imperial Oil's adherence to international sustainability frameworks appears to enable, rather than prevents environmental injustice. The company's technical compliance with ESG reporting standards obscures ongoing toxic exposure that disproportionately affects the Aamjiwnaang First Nation. This finding necessitates fundamental reconceptualization of corporate accountability, the focus of the following environmental justice analysis.

4. Socio-Environmental Justice Gap Analysis

The sustainability gap analysis in the previous section revealed significant disconnects between Imperial Oil's corporate sustainability claims and the lived realities of the Aamjiwnaang First Nation in Sarnia's Chemical Valley. These disconnects can be comprehensively understood through the lens of environmental justice theory as discussed in previous sections (Schlosberg, 2007; Walker, 2012).

Applying Schlosberg's (2007) tripartite framework reveals how Imperial Oil's sustainability approach likely fails across all dimensions of environmental justice: distributive failures through disproportionate toxic exposure; procedural failures through consultation without authority; and recognition failures through the systematic exclusion of Indigenous environmental knowledge and territorial relationships.

Distributional Justice Gaps

The analysis revealed notable distributional justice failures characterized by several critical disparities. First, despite Imperial Oil's claims of consistent emissions reductions and improved environmental performance (Imperial Oil, 2022), ambient air quality monitoring demonstrates persistent exceedances of provincial standards for benzene, sulphur dioxide, and other pollutants in areas adjacent to Aamjiwnaang First Nation lands (SAEHP, 2024). For instance, despite Imperial Oil's claims of 27% VOC reductions (2015-2021), benzene levels at Aamjiwnaang First Nation fence-line monitors exceeded Ontario's Ambient Air Quality Criteria by 300-2000% between 2017 and 2023, directly contradicting corporate narratives of environmental improvement.

ESG metrics systematically fail to capture the localized toxic exposures documented through community monitoring and epidemiological studies showing elevated asthma rates (Radhakrishnan et al., 2021) and cancer risks up to three times provincial averages (Larsen et al., 2022) in the disproportionately burdened Aamjiwnaang community.

Procedural Justice Gaps

The gap analysis also revealed significant shortcomings in procedural justice. Despite Imperial Oil's claims of strengthening collaboration and partnerships with Indigenous communities through consultation and community relations programs (Imperial Oil, 2022: 38), community perspectives reveal that these engagements are primarily informational and ambiguous, rather than offering genuine decision-making influence. One typical alert from Imperial Oil read: "A CAER Information Code 8 has been issued by Imperial. There was an equipment malfunction during the startup of a process unit. Downwind air monitoring so far has not detected elevated

readings" (Yellowhead Institute, 2023: 13). Aamjiwnaang recipients of this message were left with more questions than answers: "What does Code 8 mean? What equipment malfunctioned? What kind of chemicals are being monitored? What counts as an elevated reading? What is the impact on the community?" (Yellowhead Institute, 2023: 13).

This deliberately vague alert typifies procedural inequity because it is engagement that fails to provide marginalized communities with the authority to meaningfully influence decisions affecting their environmental well-being.

Further procedural injustice is evident in information asymmetry between the corporation and the community. While Imperial Oil emphasizes transparency and alignment with reporting frameworks such as the Global Reporting Initiative (GRI) and Sustainability Accounting Standards Board (SASB) (Imperial Oil, 2022), community members report difficulties in accessing timely, granular data about emissions and incidents relevant to their daily lives (Yellowhead Institute, 2023).

The analysis also revealed significant gaps in accountability mechanisms. Imperial Oil's grievance process, which is claimed to follow International Finance Corporation (IFC)/ International Petroleum Industry Environmental Conservation Association (IPIECA) good practice (Imperial Oil, 2022: 60), is described by community members as dismissive and potentially intimidating, thereby discouraging substantive engagement (Land and Refinery, 2023). This position links well with Walker's (2012) assertion that formal participation mechanisms often fail to address underlying power imbalances, resulting in spaces of participation that reinforce rather than challenge existing power relations.

Recognition Justice Gaps

Perhaps most profound is the recognition justice failures present. Imperial Oil's sustainability framework appears to demonstrate a fundamental failure in recognizing the distinct environmental, cultural, and spiritual relationships of the Aamjiwnaang First Nation with their territory. While the company frames environmental improvement through technical metrics, such as emissions intensity reductions and regulatory compliance (Imperial Oil, 2022), Aamjiwnaang community members experience impacts in terms of cultural practices, spiritual obligations, and intergenerational responsibilities disrupted by industrial contamination (Wiebe, 2016; McIntosh, 2025).

This divergence exemplifies what Whyte (2011) identifies as the failure to recognize Indigenous peoples' distinctive spiritual relationship with their traditionally owned or otherwise occupied and used lands, territories, waters and coastal seas. This misrecognition is evident in Imperial Oil's water management approach, which emphasizes technical compliance with discharge permits (Imperial Oil, 2022: 13) while neglecting community concerns about cultural impacts and traditional uses of the St. Clair River (Wiebe, 2016).

Furthermore, Imperial Oil's sustainability narrative excludes acknowledgment of environmental racism and colonial legacies that shape the current situation in Chemical Valley. This erasure violates Indigenous environmental rights by failing to recognize Indigenous peoples' distinctive spiritual relationships with traditional territories and their authority over environmental decision-making rights that predate and supersede corporate sustainability frameworks (Whyte, 2017). Imperial Oil's sustainability reporting enables this erasure by framing ecological issues in ahistorical terms that obscure the colonial processes through which the community became encircled by petrochemical facilities.

Finally, Imperial Oil's sustainability metrics demonstrate a failure to acknowledge the specific identities, values, and ways of knowing that shape Aamjiwnaang's understanding of environmental well-being. The standardized corporate metrics prioritize quantifiable, aggregated data over the qualitative, place-based, and relational knowledge systems through which community members understand environmental harm (Wiebe, 2016).

These distributional, procedural, and recognition gaps collectively constitute the gradual unfolding of environmental harm that disproportionately affects marginalized communities while remaining invisible within dominant accountability frameworks. The sustainability gap analysis exposes profound environmental justice failures that disadvantage the Aamjiwnaang First Nation.

Theoretical Implications of Identified Gaps

The identified gaps between Imperial Oil's sustainability claims and the lived realities of the Aamjiwnaang First Nation have profound implications for theoretical frameworks in corporate sustainability, environmental justice, and Indigenous environmental rights. These findings challenge dominant corporate sustainability paradigms while confirming critical perspectives on the limitations of conventional ESG frameworks.

Challenging Corporate Sustainability Paradigms

The analysis confirms Banerjee's (2008) and Levy and Newell's (2004) critiques: Imperial Oil's sustainability approach represents strategic corporate environmentalism that accommodates environmental concerns while preserving harmful core operations.

Moreover, the findings challenge the 'business case for sustainability' perspective popularized by Porter and Kramer (2011), which posits a natural alignment between corporate interests and societal needs. Despite decades of corporate sustainability programs, the persistent environmental health impacts in the Aamjiwnaang community demonstrate that market mechanisms alone are insufficient to drive the transformative changes needed in heavily industrialized contexts like Chemical Valley.

The case study also supports Cho et al.'s (2015) concept of corporate hypocrisy in corporate sustainability. Imperial Oil's reporting emphasizes positive initiatives and aggregate improvements while minimizing or excluding information about ongoing toxic emissions, persistent health impacts, and environmental justice concerns. This pattern mimics symbolic compliance by adopting sustainability language and reporting practices without corresponding material changes to core business operations.

Confirming Critiques of ESG and Sustainability Reporting

As Rossi et al. (2024) argue, standardized ESG metrics often reflect a bias toward financial materiality, focusing on how environmental factors impact corporate value rather than how corporate activities affect communities and ecosystems. Imperial Oil's sustainability reporting exemplifies this bias by emphasizing metrics relevant to investors (e.g., GHG intensity, regulatory compliance) while excluding metrics relevant to community well-being (e.g., fence-line benzene concentrations, cumulative health impacts).

In essence, Aamjiwnaang First Nation's air quality assessments, emphasizing the frequency of respiratory distress during ceremonial gatherings, are fundamentally incompatible with Imperial Oil's technical reporting frameworks, revealing an epistemic injustice embedded in corporate sustainability paradigms.

Furthermore, the case study confirms Li's (2023) analysis of corporate power as shaping the ability to define which issues are considered relevant to sustainability discourse. Imperial Oil's sustainability framework consistently excludes consideration of cumulative impacts, historical contamination, and colonial legacies that community members identify as central to their environmental experience, exemplifying corporate control over the scope of environmental knowledge production.

Extending Indigenous Environmental Rights Theory

The findings extend theoretical frameworks of Indigenous environmental rights by demonstrating how corporate sustainability paradigms marginalize Indigenous sovereignty and knowledge systems. The case study supports the inseparability of environmental protection from Indigenous sovereignty and governance. Imperial Oil's sustainability framework, by focusing on technical compliance and incremental improvements rather than Indigenous authority over environmental decision-making, fundamentally fails to engage with this dimension of environmental rights.

The findings also highlight environmental repossession (Big-Canoe and Richmond, 2014) by illustrating how corporate sustainability frameworks can impede Indigenous communities' efforts to reclaim physical territories, cultural practices, knowledge systems, and governance structures essential for environmental well-being. While Imperial Oil highlights investments in Indigenous

communities (Imperial Oil, 2023), these efforts fail to address the fundamental question of land sovereignty and environmental authority that Big-Canoe and Richmond (2014) identify as central to Indigenous environmental health.

Overall, these theoretical implications suggest that the gaps identified in Imperial Oil's sustainability approach are not merely implementation failures but rather reflect fundamental limitations in the dominant corporate sustainability paradigms. These limitations stem from epistemological biases and power imbalances that conventional ESG frameworks are inadequately equipped to address.

Legitimacy Theory and Corporate Environmental Narratives

Imperial Oil's sustainability approach exemplifies Dowling and Pfeffer's (1975) legitimacy theory. The company employs strategic environmental reporting to maintain social acceptance while avoiding fundamental operational changes. This legitimacy management explains how Imperial Oil references SDG alignment and ESG frameworks to project environmental responsibility while benzene levels exceed provincial standards by up to 2000% at community monitors. Therefore, Imperial Oil's sustainability reporting exemplifies what Lindblom (1994) identifies as strategic legitimation, which involves the selective disclosure of environmental information to demonstrate congruence with societal expectations while deflecting attention from problematic practices.

This approach is evident in Imperial Oil's emphasis on positive environmental initiatives (e.g., furnace retrofits, LDAR programs) while minimizing discussion of persistent air quality exceedances, health impacts, and cumulative effects. Such selective disclosure constitutes the use of sustainability reporting to manage stakeholder perceptions rather than drive substantive operational changes (Bowen, 2014). This is further evidenced by the company's emphasis on community investments and Indigenous business development, while limiting discussions of fence-line pollution impacts.

Furthermore, legitimacy theory could explain Imperial Oil's strategic use of third-party frameworks and certifications to bolster credibility. The company's references to alignment with International Petroleum Industry Environmental Conservation Association (IPIECA) guidelines, Global Reporting Initiative (GRI) Standards, Sustainability Accounting Standards Board (SASB), and third-party certification of its Operations Integrity Management System (Imperial Oil, 2022: 57) exemplify institutional isomorphism, where the adoption of standardized practices is used to gain external validation from would-be investors. This strategy allows the company to claim sustainability leadership while avoiding the more transformative changes that address community concerns.

Stakeholder Theory and Power Asymmetries

Stakeholder theory provides additional insights into the accountability challenges in Chemical Valley, particularly regarding the power dynamics between Imperial Oil and the Aamjiwnaang First Nation. As articulated by Freeman (2010), conventional stakeholder theory advocates balancing the interests of various stakeholders affected by corporate operations. However, as critics such as Banerjee (2008) note, stakeholder management often reproduces rather than challenges power asymmetries, prioritizing the concerns of economically influential stakeholders over those of marginalized communities.

Imperial Oil's stakeholder engagement reflects these power asymmetries. While the company reports engagement grounded in principles of inclusion, respect, and accountability (Imperial Oil, 2022: 60), community perspectives reveal limited decision-making influence and persistent environmental concerns (McIntosh, 2025). This disconnect enables corporations to define the terms of engagement in a manner that is advantageous to their interests.

Moreover, stakeholder theory helps explain Imperial Oil's strategic prioritization of different stakeholder groups. The company's emphasis on Indigenous business development, procurement spending, and workforce initiatives (Imperial Oil, 2022: 38) reflects a form of stakeholder management that addresses economic concerns while deflecting attention from more challenging environmental justice issues. This approach aligns with what Pelosi and Adamson (2016) identify as a typical corporate strategy for managing Indigenous relations, emphasizing economic benefits while minimizing engagement with concerns related to sovereignty and environmental health.

This dynamic confirms Banerjee's (2008) critique that corporate sustainability privileges incremental improvements within existing business models rather than the transformative changes needed for environmental justice. Imperial Oil's approach of emphasizing community investments while maintaining toxic emissions typifies how stakeholder management can reproduce rather than challenge fundamental power asymmetries.

Information Asymmetry and Technical Expertise

A critical accountability challenge stems from information asymmetry between Imperial Oil and the Aamjiwnaang community. The company's control over environmental monitoring data, emissions information, and technical expertise creates a system that advantages corporate interests in environmental governance. This asymmetry is evident in Imperial Oil's sustainability reporting, which provides aggregated, corporate-wide emissions data rather than the real-time, facility-specific information most relevant to community health and safety.

Furthermore, Imperial Oil's framing of environmental issues in highly technical terms privileges expert knowledge over community experience. This technical complexity creates barriers to meaningful public engagement as community members struggle to translate corporate metrics

into lived impacts. As one Aamjiwnaang resident noted: “I have to go to all these meetings to hear and learn [about what’s going on] because you are not taught [any] of this in school around here at all” (cited in Kramer et al., 2015, p. 388).

Industry control over environmental monitoring in Chemical Valley further reinforces the information asymmetry. The Bluewater Association for Safety, Environment, and Sustainability (BASES) is funded and comprised of 28 member companies, out of which 19 are connected to the oil industry. Similarly, Community Awareness Emergency Response (CAER), an association responsible for issuing community notifications maintained a 2021 board membership including Imperial Oil, Shell, Suncor etc. (Yellowhead Institute, 2023). Despite Imperial Oil’s claims of transparency, the region’s primary air monitoring network has historically been operated by industry-funded organizations, such as BASES, raising questions about independence and the public accessibility of raw data (Jackson, 2020; Temby, 2020). This arrangement likely results in industry control over the means of environmental knowledge production, enabling strategic management of information about pollution impacts.

Regulatory Capture and Corporate Influence

Regulatory challenges further complicate accountability in Chemical Valley. Imperial Oil, through its membership in industry groups like the Canadian Association of Petroleum Producers and the Chemistry Industry Association of Canada, has historically advocated for regulatory approaches that evaluate facilities individually rather than cumulatively (Temby, 2020). This approach undermines accountability for the aggregate environmental impacts in heavily industrialized regions, such as Sarnia.

The effects of this influence are evident in Ontario’s regulatory framework for air quality. The provincial regulatory system evaluates facilities on an individual basis, failing to account for cumulative impacts in areas with multiple emission sources. This approach leads to the strategic narrowing of relevant knowledge in environmental decision-making. Imperial Oil benefits from this regulatory structure, as it allows the company to claim compliance with individual permits despite contributing to area-wide exceedances of health-based standards.

Furthermore, corporate influence extends to the temporal dimensions of regulation. This allows Imperial to influence regulatory timelines in a manner that defers meaningful action. Such extended timelines enable companies to claim environmental leadership while continuing to emit harmful substances in the near term, a strategy that provides economic benefits to the corporation while prolonging community exposure.

Market-Based Mechanisms and Their Limitations

Finally, the analysis reveals fundamental limitations in market-based accountability mechanisms, where financial performance is prioritized over addressing the most serious environmental harms.

My research demonstrates limitations in investor-driven ESG mechanisms. Despite the growing prominence of ESG ratings and sustainability indices, Imperial Oil has maintained investment attractiveness while continuing operations that contribute to significant environmental health impacts.

The limitations of market mechanisms are evident in Imperial Oil's approach to benzene emissions. Despite being a known human carcinogen with documented health impacts in the community, benzene receives less attention in the company's sustainability reporting than greenhouse gas emissions, which have greater financial implications through carbon pricing and investor pressure. Benson and Kirsch (2010) identify this phenomenon as the translation of environmental issues into financial terms that disadvantage concerns without clear market value.

These corporate accountability challenges collectively demonstrate the need for more robust governance mechanisms that address power asymmetries, information gaps, and regulatory limitations in contexts like Chemical Valley. Conventional corporate sustainability frameworks, although potentially valuable in specific contexts, are often an enabler of flawed sustainability performance due to their emphasis on economic considerations.

SDG Implementation Challenges

The gap analysis reveals significant challenges in implementing SDGs in contexts like Chemical Valley, regarding measurement approaches, implementation processes, integration with Indigenous perspectives, and alignment with local priorities.

How Standard Metrics Fail to Capture Community Impacts

Imperial Oil's SDG alignment claims exclude the localized impacts most relevant to Aamjiwnaang First Nation, demonstrating how standardized measurement frameworks systematically marginalize place-based environmental justice concerns.

For SDG 3.9 hazardous air pollutants, Imperial Oil's aggregate VOC reduction claims obscure persistent benzene concentrations exceeding provincial standards near Aamjiwnaang (SAEHP, 2024). Similarly, SDG 6.3 water quality metrics exclude cumulative river impacts and specific effluent chemistry data essential for community health assessment.

This measurement approach exemplifies how quantification frameworks shape which aspects of development receive attention and resources (Fukuda-Parr and McNeill, 2019). The

standardized, aggregated metrics favoured by corporate sustainability frameworks marginalize the place-based, culturally specific impacts that most directly affect communities. To Pintér et al. (2018), such top-down measurement approaches risk reducing complex realities to simplified indicators that distort rather than improve the conditions they aim to represent.

Furthermore, the temporal dimensions of SDG metrics pose significant challenges. The long latency periods associated with many pollution-related health impacts, make it challenging to connect current corporate practices to health outcomes within conventional SDG reporting timeframes. This temporal disconnect allows Imperial Oil to claim progress toward SDG 3 while community members continue to experience the health impacts of historical and ongoing exposures.

Disconnects Between Global Frameworks and Local Realities

Beyond measurement challenges, the analysis reveals significant implementation gaps between global Sustainable Development Goals (SDGs) frameworks and local environmental realities.

The implementation gap is evident in Imperial Oil's approach to SDG 11.6, which aims to reduce the adverse per capita environmental impact of cities. While the company highlights community beautification initiatives and localized improvements (Imperial Oil, 2023), these efforts fail to address the structural factors that have made Sarnia one of Canada's most polluted urban areas.

Furthermore, the implementation gap extends to questions of accountability and enforcement. The voluntary nature of corporate SDG commitments enables Imperial Oil to selectively engage with targets that align with its existing business strategies, while devoting less attention to more challenging aspects of the goals. As Buhmann et al. (2019) argue, this voluntary approach risks a sort of blue-washing where superficial alignment with the goals is merely for public relations purposes without substantive operational changes.

Internal contradictions within the SDG framework itself further complicate the implementation gap. As Eisenmenger et al. (2020) document, tensions exist between economic growth objectives (SDG 8) and ecological sustainability (SDGs 13, 14 and 15), or between industrial development (SDG 9) and health protection (SDG 3). These contradictions are acute in Chemical Valley, where Imperial Oil's economic contributions to the region have historically been achieved at significant environmental and health costs. The company's sustainability reporting fails to acknowledge these tensions, presenting economic and environmental goals as naturally aligned rather than potentially conflicting.

Indigenous Perspectives on SDGs: How SDGs Might Be Reframed to Incorporate Indigenous Worldviews

A critical challenge to implementing the SDGs in Chemical Valley concerns the integration of Indigenous perspectives and knowledge systems. While the SDGs include references to Indigenous peoples, their underlying frameworks remain predominantly Western and technocratic, potentially marginalizing Indigenous ways of understanding sustainability.

Imperial Oil's SDG implementation epitomizes this epistemological bias. The company's sustainability reporting frames progress toward goals like SDG 6 (Clean Water and Sanitation) in terms of technical compliance with discharge permits and water efficiency metrics (Imperial Oil, 2022: 15), while Aamjiwnaang community members understand water quality through cultural, spiritual, and relational dimensions that extend beyond conventional water quality parameters (Wiebe, 2016).

Reframing the SDGs to incorporate Indigenous perspectives would require fundamental shifts in measurement approaches and implementation processes. Drawing on Whyte's (2017) work on Indigenous environmental justice, an Indigenous-informed approach to SDG 3 (Good Health and Well-being) would recognize health not merely as the absence of disease but as the maintenance of cultural practices, intergenerational knowledge transmission, and spiritual relationships with the land.

Similarly, an Indigenous approach to SDG 6 (Clean Water and Sanitation) would recognize water not merely as a resource to be managed but as a living entity with spiritual significance and inherent rights, as articulated in many Indigenous legal traditions (Borrows, 2010; McGregor, 2012).

The gap analysis reveals how conventional SDG implementation frameworks ignore these Indigenous perspectives. While Imperial Oil highlights engagement with Indigenous communities as part of its sustainability approach (Imperial Oil, 2022), this engagement occurs within parameters defined by corporate priorities rather than Indigenous governance systems. As Latulippe and Klenk (2020) argue, meaningful incorporation of Indigenous perspectives requires moving beyond inclusion toward recognition of Indigenous sovereignty and self-determination as foundational to sustainable development.

For the Aamjiwnaang First Nation specifically, reframing the SDGs would entail centring Anishinaabe concepts of environmental relationship and responsibility. Aamjiwnaang's understandings of environmental well-being emphasize the interconnection between human health, ecosystem integrity, and cultural continuity. This holistic perspective transcends the compartmentalized approach of conventional Sustainable Development Goals (SDG) frameworks.

Furthermore, an Indigenous-informed approach would address the temporal limitations of conventional Sustainable Development Goals (SDG) frameworks. While the SDGs operate on a

15-year timeline (2015-2030), Indigenous perspectives emphasize much longer temporal horizons, including responsibilities to past and future generations. Imperial Oil's SDG implementation is likely to fail to engage with the intergenerational dimensions of sustainability that are central to Aamjiwnaang's environmental concerns.

Integration with Local Priorities: Tensions Between Corporate SDG Priorities and Community Needs

The final SDG implementation challenge involves integrating global goals with local priorities. The gap analysis reveals significant tensions between Imperial Oil's SDG priorities and the environmental concerns most pressing to the Aamjiwnaang community. While the company emphasizes SDG 13 (Climate Action) through reductions in GHG intensity and investments in renewable energy (Imperial Oil, 2022), community members prioritize immediate reductions in toxic exposures that directly impact daily health and well-being.

This misalignment exemplifies a primary challenge in SDG governance, which is balancing universal goals with context-specific implementation. Imperial Oil's approach to the SDGs reflects corporate and investor priorities (e.g., climate change, water efficiency) while giving less attention to the localized toxic exposures that most directly impact fence-line communities.

The tension between global and local priorities is evident in Imperial Oil's approach to Sustainable Development Goal 3 (Good Health and Well-being). While the company frames its contributions to this goal in terms of occupational safety metrics and community wellness programs (Imperial Oil, 2022), Aamjiwnaang community members articulate health priorities in terms of ambient air quality, cumulative exposures, and cultural well-being (Wiebe, 2016).

Addressing these integration challenges would require fundamental shifts in how SDGs are interpreted and implemented in contexts like Chemical Valley. Effective SDG implementation requires moving beyond siloed approaches to recognize the interconnections between different goals and their varied impacts across different populations (Pradhan et al., 2017). For Imperial Oil, this would entail centring the experiences and priorities of the most environmentally vulnerable stakeholders in defining what constitutes meaningful progress toward the SDGs.

Moreover, effective integration would require more context-based sustainability assessment that considers ecological, social, and economic factors specific to particular places and communities. This approach would evaluate Imperial Oil's SDG contributions against the specific environmental conditions and community needs in Sarnia-Lambton and not lofty global metrics.

The profound distributional, procedural, recognition, and epistemic injustices identified, alongside the systemic challenges in corporate accountability and SDG implementation, collectively paint a picture of the disconnect between Imperial Oil's sustainability assertions and the lived realities in Aamjiwnaang. These are not isolated failures but symptoms of broader structural issues within contemporary corporate sustainability paradigms when confronted with

entrenched industrial sacrifice zones and Indigenous sovereignty. The concluding section of this thesis will synthesize these findings to propose a framework for better integrating Environmental Justice (EJ) into Environmental, Social, and Governance (ESG) frameworks, as well as actionable recommendations aimed at fostering such transformative change towards more just and equitable environmental futures in Chemical Valley and similar contexts.

5. Rethinking ESG Frameworks: Centering Environmental Justice in Industrial/Extractive Settings

As the global shift towards cleaner energy sources progresses, society has yet to fully embrace this transition due to the structural limitations of economies and the persistent reliance on resource-intensive consumer demands. Consequently, it is imperative to undertake proactive initiatives in the interim to substantially enhance and fundamentally reimagine contemporary corporate sustainability endeavors, particularly within industrialized regions such as Chemical Valley.

This section presents an integrated framework that directly addresses the specific disconnects identified in this research, while providing a comprehensive roadmap for extractive companies to incorporate environmental justice principles into their core operations, governance, and reporting practices.

Overview and Rationale of Proposed Framework

This framework explicitly centers environmental justice within ESG dimensions, directly addressing the limitations demonstrated in Imperial Oil's case where standard frameworks fail to capture localized Indigenous community impacts.

The framework is structured around four integrated pillars that reconceptualize traditional ESG elements through the lens of environmental justice theory's emphasis on distributive, procedural, and recognition justice. Each component directly addresses specific gaps identified in the analysis of Imperial Oil's sustainability practices in Sarnia's Chemical Valley.

Pillar 1: Governance for Environmental Justice (G-EJ)

This pillar integrates the environmental justice principles of accountability, meaningful involvement, recognition of Indigenous rights, and procedural justice into corporate governance structures.

Key Components

Industrial or resource extractive companies should implement the following:

a) **Board-Level Environmental Justice Oversight**: Establish a dedicated board committee or mandate an existing committee (e.g., sustainability, risk) with explicit responsibility for overseeing environmental justice performance, strategy integration, and grievance redressal. Membership must include expertise in environmental justice and Indigenous rights, potentially including independent community representatives or advisors.
b) **Implement a Community Co-Governance Council modeled with enhanced authority**: The Council would have decision-making power over emergency response protocols, facility expansion approvals, and community benefit spending, funded independently by the company (minimum $500K annually) but operating under local community (or Indigenous) governance principles. Unlike purely advisory models, this Council's recommendations on environmental health matters would be binding unless Imperial Oil can demonstrate technical impossibility.
c) **Executive Accountability**: Link executive compensation directly to specific, measurable environmental justice performance targets, including reduction of disproportionate impacts, successful implementation of community agreements, and grievance resolution rates. This transforms executive incentives from focusing primarily on financial metrics or broad sustainability goals to specifically addressing justice-oriented outcomes.
d) **Environmental Justice Policy and Commitment**: Develop and publicly disclose a comprehensive environmental justice policy that explicitly acknowledges principles such as Free, Prior, and Informed Consent (FPIC) for Indigenous Peoples, the precautionary principle, and commitments to fair treatment and preventing disproportionate harm. This policy must be integrated into corporate codes of conduct and supplier standards.
e) **Grievance Mechanisms**: Establish culturally appropriate, accessible, and independent grievance mechanisms specifically for environmental justice concerns, co-designed with affected communities. Ensure transparency in process and outcomes, and link grievance trends to risk management and operational improvements.
f) **Ethics and Anti-Corruption**: Implement robust measures to prevent undue influence on regulatory processes and ensure ethical engagement with government and community leaders, recognizing that strong legal frameworks bolster ESG performance

Addressing Identified Gaps

This governance structure directly addresses the procedural justice gaps identified in Imperial Oil's sustainability approach and the limited decision-making influence experienced by the Aamjiwnaang First Nation. The Community Co-Governance Council provides a mechanism to shift from consultation to meaningful influence, while the grievance mechanism addresses the lack of accessible accountability channels reported by community members.

The governance pillar also addresses recognition justice gaps by requiring board-level expertise in Indigenous rights and environmental justice, thereby helping to counter possible colonial histories and environmental racism in corporate sustainability discourse, as observed in Imperial Oil's reporting. While governance structures establish accountability frameworks, environmental performance metrics must translate these commitments into measurable community outcomes.

Pillar 2: Environmental Performance through an Environmental Justice Lens (E-EJ)

This pillar reconceptualizes environmental performance through the principles of fair treatment and prevention of disproportionate harm, cumulative impact assessment, precaution, and data justice.

Key Components

a) **Cumulative Impact Assessment (CIA)**: Mandate regular CIAs in operating regions, conducted by independent third parties with community participation (including Indigenous knowledge holders). Where relevant, focus on combined impacts of the company's operations and regional industrial activity on air, water, soil, biodiversity, and human health, particularly in environmental justice communities. This requirement would require Imperial Oil to fund valley-wide monitoring that attributes its specific contribution to cumulative benzene and SO_2 loading, with reduction targets proportional to its emission share.
b) **Disproportionate Impact Monitoring and Mitigation**: Utilize hyperlocal monitoring, including community-based monitoring initiatives supported by the company, in fence-line and vulnerable communities to track exposure to key pollutants (e.g., benzene, particulates). Set specific targets for reducing emissions at the community level, prioritizing reductions that benefit the most impacted groups.
c) **Pollution Index**: Develop a bespoke Pollution Burden Index for environmental justice communities near operations, integrating multiple pollutants and health vulnerability data, and set targets to reduce and eliminate this index score.
d) **Precautionary Chemical Management**: Adopt a precautionary approach to chemical use and emissions, phasing out or substituting high-hazard substances where feasible alternatives exist, even without full scientific certainty of harm, especially for substances linked to health concerns in environmental justice communities.
e) **Transparent Environmental Data**: Implement real-time, publicly accessible online platforms for emissions data, verified monitoring results, and incident reports, presented in user-friendly formats that support multiple languages and visual aids. Ensure data sovereignty for Indigenous communities regarding data collected on their territories.
f) **Climate Justice**: Integrate environmental justice into climate transition plans, ensuring that decarbonization efforts do not create new pollution hotspots in environmental justice

communities (e.g., the siting of carbon capture or biofuel facilities) and that the benefits of the transition (e.g., jobs, clean energy) are shared equitably.

Addressing Identified Gaps

This pillar directly addresses the distributive justice gaps revealed in the analysis, where Imperial Oil's aggregate emissions reduction claims obscured persistent benzene hotspots and exceedances that affected the Aamjiwnaang community. The hyperlocal monitoring and Pollution Burden Index directly confront the issue of disproportionate exposure by shifting the focus from facility-wide metrics to actual community-level impacts.

The Cumulative Impact Assessment component addresses the critical regulatory gap identified in the analysis, where corporate and regulatory frameworks assess facilities individually rather than cumulatively, despite the clear evidence that the Aamjiwnaang First Nation experiences the combined effects of over 60 industrial facilities. This approach transforms environmental measurement from a compliance-oriented exercise to a justice-oriented assessment of actual community burden.

The transparent environmental data element addresses the information asymmetry identified between Imperial Oil and the Aamjiwnaang community, where corporate control over environmental monitoring data created barriers to meaningful public engagement. Environmental monitoring and impact reduction require complementary social performance measures that center community well-being and cultural continuity.

Pillar 3: Social Performance Centred on Equity (S-EJ)

This pillar reconceptualizes the social dimension of ESG through the environmental justice principles of meaningful involvement, recognition of Indigenous rights, fair treatment, restorative justice, and procedural justice.

Key Components

a) **Community Benefit Agreements (CBAs) and Indigenous Partnerships**: Negotiate and implement robust, legally binding CBAs co-designed with affected communities, including distinct agreements with Indigenous Nations that respect the principles of Free, Prior, and Informed Consent (FPIC). Agreements should address local hiring, procurement, infrastructure investment, health support, environmental stewardship funds, and capacity building, with clear provisions for monitoring and enforcement.
b) **Health Impact Assessment and Support**: Conduct regular Health Impact Assessments (HIAs) that focus on communities affected by environmental justice, utilizing community health data and addressing local concerns. Support local health infrastructure and programs that tackle environmentally linked health issues identified in CIAs/HIAs.

c) **Cultural Heritage Protection**: Implement procedures co-developed with Indigenous Nations and local communities to identify, protect, and avoid impacts on tangible and intangible cultural heritage sites and practices.
d) **Land Use and Access**: Ensure land acquisition and use practices respect tenure rights, including customary rights, and provide fair compensation and resettlement support where displacement is unavoidable (applying FPIC principles).
e) **Restorative Practices**: Where historical operations have caused contamination or community harm, actively participate in and fund remediation and restoration efforts, guided by community priorities and potentially involving reconciliation initiatives.
f) Establish a Community Restoration Fund co-managed by the company and community representatives to address legacy impacts.

Addressing Identified Gaps

This pillar addresses the recognition justice gaps identified in Imperial Oil's sustainability approach, particularly the failure to acknowledge the distinct environmental, cultural, and spiritual relationships of the Aamjiwnaang First Nation with their territory. The cultural heritage protection component directly responds to the analysis finding that corporate sustainability frameworks systematically exclude Indigenous epistemologies and values.

The Health Impact Assessment component addresses the gap between corporate sustainability metrics and community health outcomes, particularly regarding the disproportionate health burdens faced by environmental justice communities that remain unaddressed in corporate reporting. By placing community health at the centre of social performance, this approach shifts conventional social metrics from a focus on philanthropy and economic contributions to a more comprehensive assessment of community well-being.

The Restorative Practices component addresses the historical justice gap identified in the analysis, where corporate sustainability frameworks typically focus on present and future impacts without addressing historical harms that continue to shape community experiences. True sustainability requires confronting past injustices, not merely preventing future ones.

These governance, environmental, and social commitments require transparent disclosure mechanisms that enable community verification and accountability.

Pillar 4: Disclosure and Reporting for Accountability (D-EJ)

This pillar reconceptualizes corporate disclosure and reporting through the environmental justice components of data justice, accountability, and transparency.

Key Components

a) **Integrated Environmental Justice Reporting**: Move beyond standalone sustainability reports. Integrate environmental justice performance data and narrative directly into mainstream financial reporting (where material under double materiality) and annual reports.
b) **Standardized Environmental Justice Metrics**: Report on specific, standardized environmental justice metrics, including:
    i. Pollutant concentrations at fence-line/community monitors versus regional background levels
    ii. Performance against the Pollution Burden Index (if applicable)
    iii. Number and type of environmental justice-related grievances received, resolved, and resolution time
    iv. Status of FPIC processes and CBA implementation (key milestones, funds disbursed, outcomes achieved)
    v. Results of Cumulative Impact Assessments and Health Impact Assessments, including mitigation actions taken
    vi. Demographic breakdown of workforce and local procurement spend, focusing on environmental justice communities
    vii. Data on spills/incidents impacting environmental justice communities, including response times and remediation status
c) **Double Materiality Assessment**: Conduct and disclose a double materiality assessment that explicitly evaluates the company's impacts on environmental justice communities and the environment, alongside traditional financial risks, as a pathway to better integrate environmental justice concerns (Ballan, 2025).
d) **Independent Assurance**: Obtain independent third-party assurance for reported environmental justice data and performance claims, with the assurance provider having specific expertise in environmental justice and human rights.
e) **Accessible Formats**: Publish reports and key data summaries in formats and languages accessible to affected communities, not just investors (Ballan, 2025).

Addressing Identified Gaps

This pillar addresses the epistemic justice gaps identified, where standardized corporate reporting frameworks systematically exclude Indigenous knowledge and community-defined impacts. By requiring accessible formats and community-relevant metrics, this component transforms reporting from an investor-focused exercise to one that serves the information needs of affected communities.

The double materiality assessment directly addresses the materiality gap identified in the analysis, where Imperial Oil's sustainability reporting prioritized financial materiality (impacts on the company) over impact materiality (the company's impacts on communities and ecosystems). This shift in perspective aligns with environmental justice theory's emphasis on recognizing the disproportionate impacts experienced by marginalized communities.

The standardized environmental justice metrics address the measurement gap identified, where conventional ESG metrics fail to capture the specific environmental justice concerns most relevant to fence-line communities. This component enables more meaningful accountability by establishing consistent, transparent metrics focused on community-level impacts.

Economic Incentives for Adoption

Corporate adoption requires aligning environmental justice with business interests. Three incentive pathways emerge:

a) Proactive environmental justice integration reduces regulatory penalties, litigation costs, and operational disruptions from community protests
b) Strong environmental justice leadership creates competitive advantage in ESG-conscious supply chains and financing
c) Community co-governance can improve emergency response, reduce opposition to operational changes, and enhance social license to operate. Imperial Oil's $1.125M fine for the 2021 spill demonstrates the financial materiality of environmental justice failures.

Implementation Approach

Recognizing the complexity and scope of this framework, implementation should follow a phased approach, with companies prioritizing areas of highest risk/impact and most significant community concern:

Phase 1 - Assessment and Baseline (first 6 months):

- Conduct comprehensive environmental justice assessments aligned with federal environmental racism legislation (Bill C-226) and UNDRIP implementation requirements, establishing baseline metrics that connect to emerging regulatory frameworks and Indigenous rights recognition.
- Identify priority areas based on risk assessment and community input
- Develop and adopt environmental justice policy and governance structures

Phase 2 - Priority Implementation (next 3 months):

- Implement governance changes, including board-level oversight and Community Co-Governance Council in priority locations
- Coordinate implementation with Ontario's cumulative effects assessment pilots and federal benzene emission controls, positioning Imperial Oil as an industry leader rather than regulatory slacker. This approach reduces compliance costs while building regulatory goodwill.
- Establish fence-line monitoring and community health assessment programs

- Initiate cumulative impact assessments in the highest-risk areas
- Begin renegotiation of Community Benefit Agreements with the most affected communities

Phase 3 - Full Implementation and Continuous Improvement (10 months onwards):

- Scale successful initiatives across operations
- Implement comprehensive disclosure and reporting
- Establish formal review mechanisms with affected communities
- Develop an industry leadership position through transparent sharing of lessons learned

Throughout implementation, companies should:

- Pilot test innovative elements (e.g., Community Co-Governance Council, Pollution Burden Index) in specific locations before broader rollout
- Establish regular review cycles involving community stakeholders to assess framework effectiveness
- Adapt based on feedback and changing contexts
- Benchmark performance against peers who adopt similar environmental justice-integrated frameworks.

Feasibility Considerations

Full implementation likely requires several years, acknowledging corporate change management realities. However, crisis events like Aamjiwnaang First Nation's benzene emergency declarations create implementation windows where community pressure and regulatory attention can accelerate adoption timelines. For example, the 2021 Imperial Oil spill and subsequent $1.125M penalty demonstrates how environmental incidents can rapidly shift corporate priorities toward community relations.

Transformative Potential

This framework transforms corporate sustainability by shifting from expert-dominated to community-inclusive governance, emphasizing justice-oriented community impact evaluation over compliance metrics, focusing on community well-being and historical justice rather than philanthropy, and democratizing environmental knowledge access.

It also provides a comprehensive roadmap for extractive companies to integrate environmental justice into their core operations, transforming ESG from a reporting exercise into a driver of equitable and sustainable development.

Economic Feasibility Assessment

Framework implementation costs are significant but manageable relative to Imperial Oil's scale. Estimated annual costs are likely to represent a tiny fraction of annual revenue (Imperial Oil's 2023 revenue was $46.7B). This is better compared to penalty costs and potential litigation expenses. More importantly, early implementation reduces future compliance costs as regulatory frameworks tighten around environmental racism and Indigenous rights.

Implementation Challenges and Corporate Resistance

While this framework offers a pathway toward environmental justice, implementation faces predictable corporate resistance. Imperial Oil's decade-long pattern of prioritizing efficiency metrics over community health suggests that voluntary adoption is unlikely without regulatory mandate or market pressure. However, three emerging factors create implementation opportunities:

a) Federal environmental racism legislation and UNDRIP implementation create compliance drivers
b) ESG-focused investment funds increasingly scrutinize social performance authenticity
c) Community-led monitoring and advocacy amplify corporate accountability gaps through social media and regulatory channels, creating reputational risks

Framework Transferability and Global Applicability

The Environmental Justice-ESG framework developed here addresses patterns evident across global industrial-Indigenous interfaces. Core transferable elements include:

a) Community Co-Governance structures are applicable wherever Indigenous communities neighbor extractive operations,
b) Cumulative Impact Assessment requirements are relevant to any industrial cluster affecting marginalized communities,
c) Real-time monitoring with community authority transferable to fence-line contexts globally,

Louisiana's Cancer Alley exhibits similar corporate sustainability claims alongside disproportionate African American exposure (Smith et. al, 2025)). Similarly, Alberta's oil sands and Nigeria's Niger Delta operations face comparable Indigenous environmental justice challenges, showing how multinational ESG reporting can obscure local environmental harm (Karmakar, 2024: Dubé et al, 2021). However, context-specific factors limiting direct transfer may include varying regulatory frameworks, different Indigenous legal systems, and distinct corporate-community power dynamics.

Conversely, the systematic exclusion of local knowledge from corporate sustainability frameworks, the gap between aggregated corporate metrics and localized community impacts, and the potential for ESG compliance to legitimize rather than remedy environmental injustice appear consistent across all contexts.

Conclusion

This research has uncovered systematic disconnects between Imperial Oil's sustainability claims and Aamjiwnaang's environmental justice realities. The comprehensive gap analysis shows how conventional ESG frameworks can often obscure rather than address environmental injustice, failing across distributional, procedural, and recognition aspects of justice in industrial settings affecting Indigenous communities. These crucial gaps, from ongoing toxic exposures to consultation without authority, necessitated the development of the transformative framework presented in the preceding section, which reconceptualizes corporate accountability by emphasising environmental justice principles within mainstream sustainability paradigms.

Research Contributions

My research makes several significant contributions to scholarship at the intersection of environmental justice, corporate sustainability, and Indigenous environmental rights.

The empirical evidence uncovered in my research, provides extraordinary documentation of how ESG frameworks can systematically obscure environmental injustice while maintaining corporate legitimacy. These finding challenges fundamental assumptions about the relationship between sustainability reporting and community protection.

First, this research contributes to environmental justice scholarship by providing an empirical analysis of how corporate sustainability frameworks can perpetuate rather than alleviate environmental injustice. By applying Schlosberg's (2007) tripartite model of environmental justice, comprising distributional, procedural, and recognition dimensions, to a specific corporate-Indigenous relationship, the study demonstrates how standardized sustainability approaches can systematically fail to address each dimension of justice. The research also advances Nixon's (2011) concept of "slow violence" by illustrating how corporate sustainability reporting can obscure gradual, cumulative harms through technical language and aggregated metrics.

Second, the study makes a theoretical contribution to corporate sustainability literature by demonstrating the limitations of conventional ESG frameworks within contexts of historical

environmental injustice. It extends critiques from scholars such as Banerjee (2008) and Levy and Newell (2004) by providing a detailed case study of how corporate sustainability practices can address environmental concerns while preserving existing power dynamics. The analysis of Imperial Oil's sustainability reporting from 2015 to 2024 reveals patterns of strategic legitimation (Lindblom, 1994) through selective disclosure, impression management, and symbolic engagement with Indigenous communities. Thus, the study contributes to emerging work on the politics of ESG by demonstrating how sustainability frameworks can serve as tools for maintaining, rather than challenging, corporate power.

Third, this research advances understanding of Indigenous environmental rights by examining the intersection of corporate sustainability with Indigenous sovereignty and self-determination. It demonstrates how corporate sustainability frameworks, even those referencing Indigenous engagement, can systematically marginalize Indigenous ways of knowing. It builds on the work of Whyte (2017) and Borrows (2010) by illustrating how technical approaches to environmental assessment and corporate sustainability effectively displace Indigenous legal orders and relationships with the land.

Fourth, the study makes a significant contribution to critical ESG studies by providing an in-depth examination of how ESG metrics can systematically obscure localized environmental justice issues. The analysis reveals patterns of the systematic exclusion of non-dominant knowledge systems (de Sousa Santos, 2015) in corporate sustainability frameworks. By contrasting Imperial Oil's ESG reporting with community experiences, the research demonstrates how conventional sustainability metrics favour financial materiality over impact materiality (Liang and Renneboog, 2017), thereby reinforcing power imbalances between corporations and affected communities.

Finally, my research exposes fundamental flaws in SDG implementation frameworks, demonstrating how corporations selectively engage with global sustainability goals to legitimize local environmental harm. The proposed Environmental Justice-SDG integration model provides the first systematic approach to preventing such misapplication.

Collectively, these contributions establish a fresh exemplar for corporate accountability in environmental justice contexts, with immediate applicability to similar industrial-Indigenous interfaces globally. The framework's implementation could transform how extractive industries operate in marginalized communities worldwide.

Policy Implications

The research findings and proposed ESG framework have significant implications for policy development across multiple domains, suggesting specific reforms to address the systemic gaps identified between corporate sustainability and environmental justice.

For corporate governance and ESG reporting standards, the findings underscore the urgent need for fundamental reform of existing frameworks to integrate environmental justice principles better. Current voluntary reporting standards, such as GRI and SASB, fail to adequately capture the localized impacts on fence-line communities or address historical injustices. Policy reforms should include mandatory disclosure of facility-specific emissions data, real-time fence-line monitoring accessible to the community, requirements for cumulative impact assessments, and explicit consideration of the impacts on Indigenous rights and cultural practices. The Securities and Exchange Commission (SEC) in the United States and the Canadian Securities Administrators (CSA) should incorporate requirements for place-based materiality assessments and disaggregated reporting of environmental impacts, particularly for corporations operating in heavily industrialized areas, such as Chemical Valley.

Provincial and federal regulatory frameworks for industrial emissions require significant strengthening to address the gaps identified. Regulatory reforms should include the development of area-based standards for cumulative contaminant loading, fence-line monitoring requirements with health-based thresholds, and explicit consideration of environmental justice in facility siting and permitting decisions. The recent federal intervention in Sarnia, through an emergency order to control benzene emissions (Government of Canada, 2024a), should be expanded into a comprehensive regulatory approach addressing the full range of toxic substances affecting the Aamjiwnaang community.

Indigenous-Crown relationships in environmental governance require transformative change in recognizing Indigenous authority within industrial contexts. Current approaches, such as the duty to consult and accommodate, frame Indigenous peoples as stakeholders instead of rights-holders with inherent governing authority. Policy reforms should include the legal recognition of Indigenous environmental co-governance, the transfer of resources to enhance monitoring and assessment capacity, and revisions to the environmental assessment process that integrate Indigenous legal principles and knowledge systems. Implementing the UNDRIP in Canadian law should include specific provisions for Indigenous authority over environmental decision-making in their territories, moving beyond consultation to a consent-based governance model.

The findings also have implications for the implementation of UNDRIP and the UN Sustainable Development Goals, demonstrating the need for more justice-oriented approaches to sustainable development in industrial contexts. Policy reforms should include the development of Indigenous-specific indicators for SDG implementation, recognition of Indigenous definitions of well-being within sustainable development frameworks, and explicit attention to distributional, procedural, and recognition dimensions of environmental justice in SDG reporting. The Canada-United States Air Quality Agreement should be revised to incorporate environmental justice provisions and community-based monitoring requirements, particularly in transboundary pollution hotspots like Sarnia-Port Huron.

Community-based environmental monitoring programs require policy reforms that enhance community authority over the production of environmental knowledge. The Sarnia Area Environmental Health Project (SAEHP) demonstrates collaborative approaches to environmental assessment; however, it necessitates stronger community governance, the integration of Indigenous knowledge, and binding regulatory outcomes. Policy reforms should include funding for independent Indigenous-led monitoring initiatives, legal recognition of community-generated data in regulatory decisions, and corporate accountability in response to community concerns. The pilot project between Environment and Climate Change Canada and the Aamjiwnaang First Nation should be formalized and broadened to cover all aspects of environmental quality assessment and regulatory enforcement.

These policy implications, while ambitious, represent necessary reforms to address the environmental justice gaps identified in this research. They move beyond incremental improvements to existing frameworks toward transformative change in how industrial activities are governed in contexts of historical ecological injustice.

Final Reflections

As my research concludes, I return to the fundamental question that motivated this investigation: How might the disconnect between corporate sustainability frameworks and environmental justice be addressed in contexts like Chemical Valley? The answer necessitates confronting the extent of historical injustice and the potential for transformative change.

The case of Imperial Oil and the Aamjiwnaang First Nation reveals the persistence of unbalanced power relations in contemporary environmental governance. The marginalization of Indigenous knowledge, authority, and well-being in corporate sustainability frameworks reflects deeper patterns of strategies that position corporations as environmental stewards while evading accountability for historical and ongoing harms. True reconciliation requires moving beyond symbolic acknowledgment toward material transformation of the relationships between extractive industries and Indigenous peoples.

The environmental injustices documented in Chemical Valley are not unusual but exemplify broader patterns across industrial zones globally. Similar dynamics of environmental racism, epistemic exclusion, and regulatory failure can be observed in ‘Cancer Alley’ in Louisiana (Human Rights Watch, 2024), the petrochemical corridor along Texas’s Gulf Coast (Zhang, 2024), and industrial zones worldwide. These commonalities suggest that the framework proposed here has potential applicability beyond Sarnia-Lambton to other contexts where extractive industries operate adjacent to marginalized communities.

This research has several limitations that suggest avenues for future study. The analysis focused primarily on corporate sustainability claims and community perspectives, with limited direct engagement with regulatory officials who shape the governance context in which corporations

and communities operate. Future research should examine the regulatory decision-making processes that enable or constrain corporate accountability in Chemical Valley. Additionally, comparative studies examining similar industrial-Indigenous relationships in other contexts could help refine and extend the framework proposed here. Longitudinal studies tracking the evolution of corporate-Indigenous relationships over time would provide valuable insights into processes of change and resistance.

As I look toward the future of Chemical Valley, there are reasons for concern and grounds for hope. These gaps demonstrate systematic environmental justice failures across Schlosberg's (2007) three dimensions (see Section 4). The persistence of these gaps suggests that corporate sustainability is malfunctioning in its bid to promote transformative and holistic sustainability.

Nevertheless, the growing recognition of environmental racism, Indigenous rights, and corporate accountability creates openings for more fundamental transformation of industrial-Indigenous relationships. The framework proposed here offers one pathway toward that transformation: a vision of corporate sustainability grounded in justice and collective well-being rather than risk and reputation management.

The struggle for environmental justice in Chemical Valley is ultimately about fundamental questions of whose knowledge counts, whose health matters, and whose futures are prioritized in decisions about industrial development and environmental governance. It is my hope that modern ESG practice contributes to getting this right.

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