

Implementation of the TCFD's Recommendations – Overview

The chemical sector supplies a broad range of products that serve a range of markets and industries. The sector is also a large energy user and greenhouse gas (GHG) emitter, and faces risks associated with climate change and other sustainability issues. It is linked across entire value chains and across almost all other industries, and is a key enabler of the low-carbon economy.

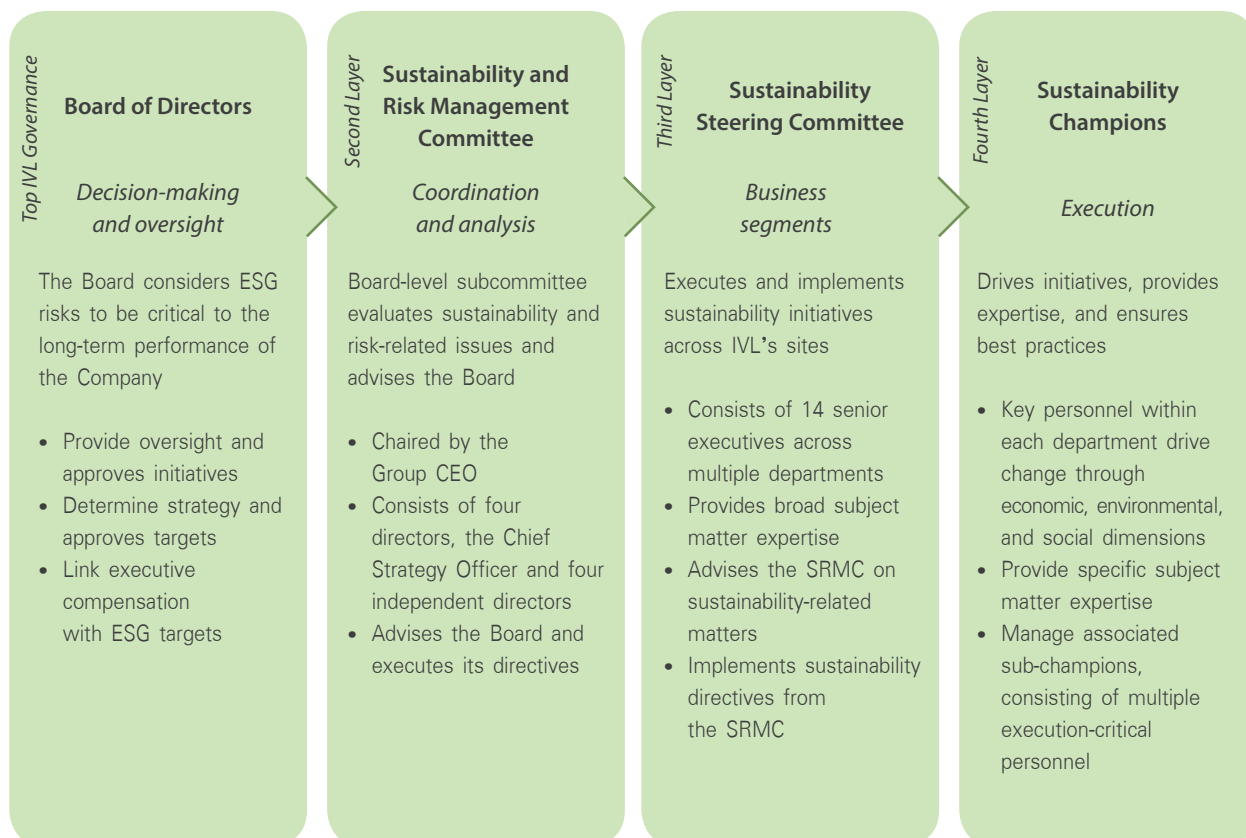
The TCFD's recommendations serve as a global foundation for effective climate-related disclosures. IVL's disclosures are in line with the TCFD's recommendations which enhance their consistency, robustness, and comparability. Our activities and contributions are detailed and clearly demonstrate how they support each of the four frameworks.



IVL has implemented the following core elements of recommended climate-related financial disclosures:

1. Governance

The Board of Directors oversees and reviews climate-related risks and opportunities, directly as well as through the Sustainability and Risk Management Committee (SRMC). The SRMC, one of three board sub-committees which meets semi-annually, works with a variety of departments including finance, risk, strategy, corporate governance and sustainability, in dealing with the broad and multidisciplinary nature of sustainability issues and concerns.



2. Strategy

Climate-Related Risks

Transition Risk	Technology	Market
	<p><i>Medium-term (3-10 years)</i></p> <ul style="list-style-type: none"> - Higher costs from increased energy consumption - Unsuccessful investments in new technologies - Upfront costs to transition to lower emissions technologies - Substitution of existing products with low emissions options 	<p><i>Medium-term (3-10 years)</i></p> <ul style="list-style-type: none"> - Changes in customer preferences from high carbon intensive to low carbon products - Increased cost of raw materials
Physical Risk	Policy and Legal	Reputation
	<p><i>Medium-term (3-10 years)</i></p> <ul style="list-style-type: none"> - Increased operational costs due to changes in environmental legislation - Implementation of cap-and-trade or a carbon tax in some countries - Exposure to litigation - Enhanced emissions reporting obligations 	<p><i>All timeframes</i></p> <ul style="list-style-type: none"> - Global focus on plastic pollution - Movements on fossil fuel avoidance - Change in consumer preferences - Increased stakeholder/investor concerns
Transition Risk	Acute	Chronic
	<p><i>Medium- and long-term (3+ years)</i></p> <ul style="list-style-type: none"> - Increased severity of extreme weather events such as cyclones, floods, and droughts 	<p><i>Medium- and long-term (3+ years)</i></p> <ul style="list-style-type: none"> - Risk of sea level rise and riverine flooding for sites located in high risk areas - Rising mean temperatures - Changes in precipitation patterns and extreme weather variability - Impact of water stress on production

Climate-Related Opportunities

Transition Risk	Technology	Market
	<p><i>Medium-term (3-10 years)</i></p> <ul style="list-style-type: none"> - Increased production of low carbon intensive products - Meeting changing consumer preferences - Meeting customer requirements 	<p><i>Medium-term (3-10 years)</i></p> <ul style="list-style-type: none"> - Development of new products - New markets
Physical Risk	Policy and Legal	Reputation
	<p><i>Medium-term (3-10 years)</i></p> <ul style="list-style-type: none"> - Technological improvements - Process innovations - Improving resource efficiency - Increasing recycling capacities - Emergence of new technologies, especially in the recycling business 	<p><i>All timeframes</i></p> <ul style="list-style-type: none"> - Opportunities from increased recycling - Opportunities from increased investments in renewable energy - Increased demand for low carbon products and products with recycled materials - Opportunities to attract investors with strong ESG performance
Transition Risk	Acute	Chronic
	<p><i>Medium- and long-term (3+ years)</i></p> <ul style="list-style-type: none"> - Utilizing advanced technologies - Improving efficiency - Zero liquid discharge - Production of low water and low carbon intensive products 	<p><i>Medium- and long-term (3+ years)</i></p> <ul style="list-style-type: none"> - Finding safe and suitable properties to set up new sites - Increasing water recycling capacity - Improving water efficiency

3. Risk Management

IVL manages risks at the corporate and subsidiary levels around the world through integrated work processes and group-wide risk management, applying the Enterprise Risk Management (ERM) framework using top-down and bottom-up approaches. On an initial assessment, we identify risks and opportunities associated with climate change through the use of an ERM framework to anticipate any issues to mitigate their impacts in advance.

Shadow Carbon Pricing

We considered the IEA 450 scenario for financial analysis by using internal shadow carbon prices and the carbon taxes for countries where we operate. We conducted stress-testing analysis assuming carbon prices of USD 100 and 75 per ton for OECD and non-OECD countries respectively for 2030 to anticipate the impacts on production, EBITDA, and revenue as part of our risk management process.

Water Stress Analysis

IVL uses the WRI's AQUEDUCT Water Risk Atlas, Climate Resilience Evaluation & Awareness Tool (CREAT), and Climate Information Portal (CLIPC) to examine current and projected climate related issues. We also conducted a high-level study based on the Intergovernmental Panel on Climate Change (IPCC)'s 5th Assessment Report (AR5) on changes in regional weather phenomenon and changes in annual mean temperatures up to 2040.

Sustainability-Driven Investments

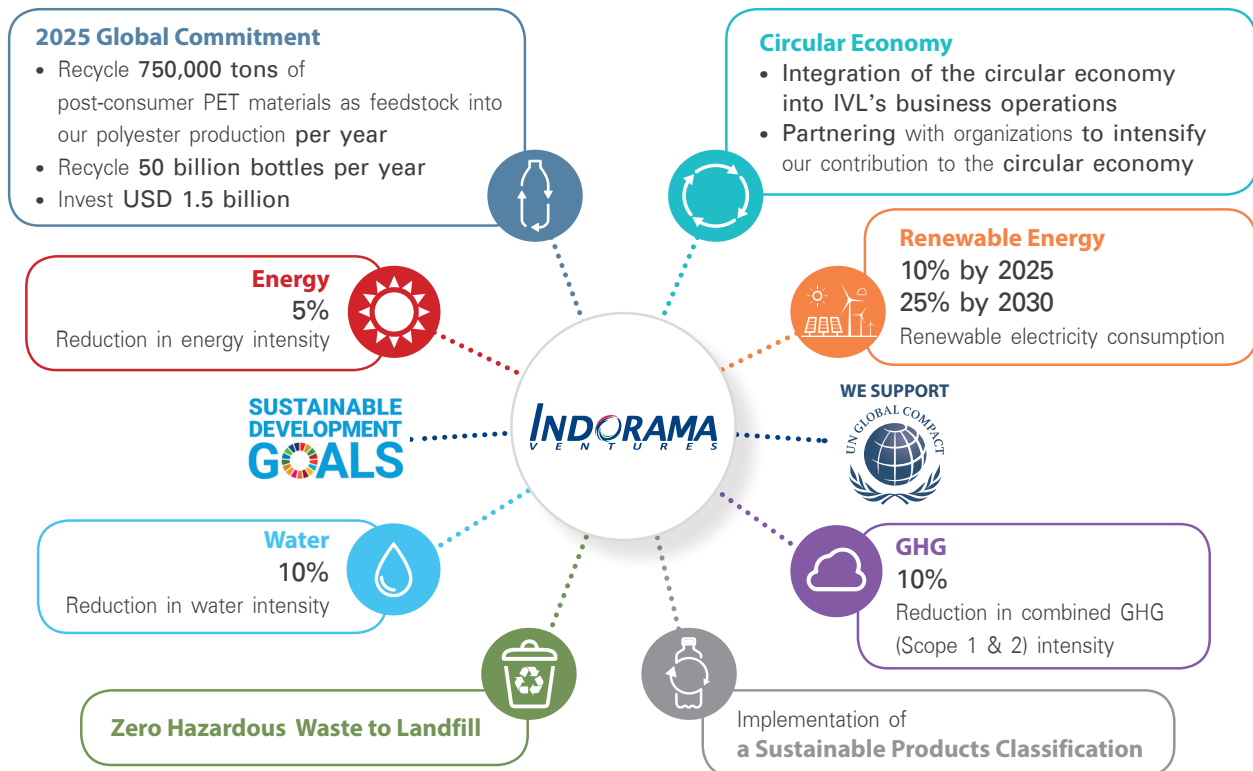
IVL is investing in numerous initiatives to achieve a more sustainable product portfolio. We are in the process of transitioning towards low carbon-intensive fuels, and aim to invest USD 1.5 billion in recycling systems by 2025. Furthermore, we aim to improve our ESG performance in order to attract additional investments from the rapidly growing sustainable finance sector.



Indorama Ventures Poland Sp. Z.O.O., Poland

4. Metrics and Targets

We support all plants in reducing GHG emissions by utilizing renewable energy, conducting energy efficiency projects and monitoring energy consumption in every country where IVL sites are located. We also support the Paris Agreement for which many countries have pledged to reduce their GHG emissions through Nationally Determined Contributions (NDCs). We set the following key sustainability ambitions for 2025:



In addition, in line with the TCFD, we applied the AQUEDUCT Water Risk Atlas to forecast the change in future water stress and to identify sites that face the most significant risk in future water demand and supply. The results of these studies, which were presented under Water Management in this report, have been incorporated in our long-term adaptation measures which allows management to make informed and long-range decisions for IVL's sustainability.



For More Information