



IVL Water Risk Assessment Summary Report 2022



REIMAGINING CHEMISTRY TOGETHER TO CREATE A BETTER WORLD

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Introduction

Water is a very essential and important natural resource for all life functions on Earth. It sustains the functioning of human health, ecosystems, food security, energy supply, and human habitats. IVL is committed to the responsible use and sustainable water management practices in the entirety of our production processes, while complying with all relevant regulations.

We have geared our global operations towards achieving our water intensity reduction targets of 10% by 2025, and 20% by 2030 compared to the 2020 baseline. We report transparently on our water use and management and aim to continuously improve our overall water performance. Water mismanagement / unregulated water consumption is a risk that we must manage across our operations through effective water management practices, acknowledging that each site works within its own unique operating context.

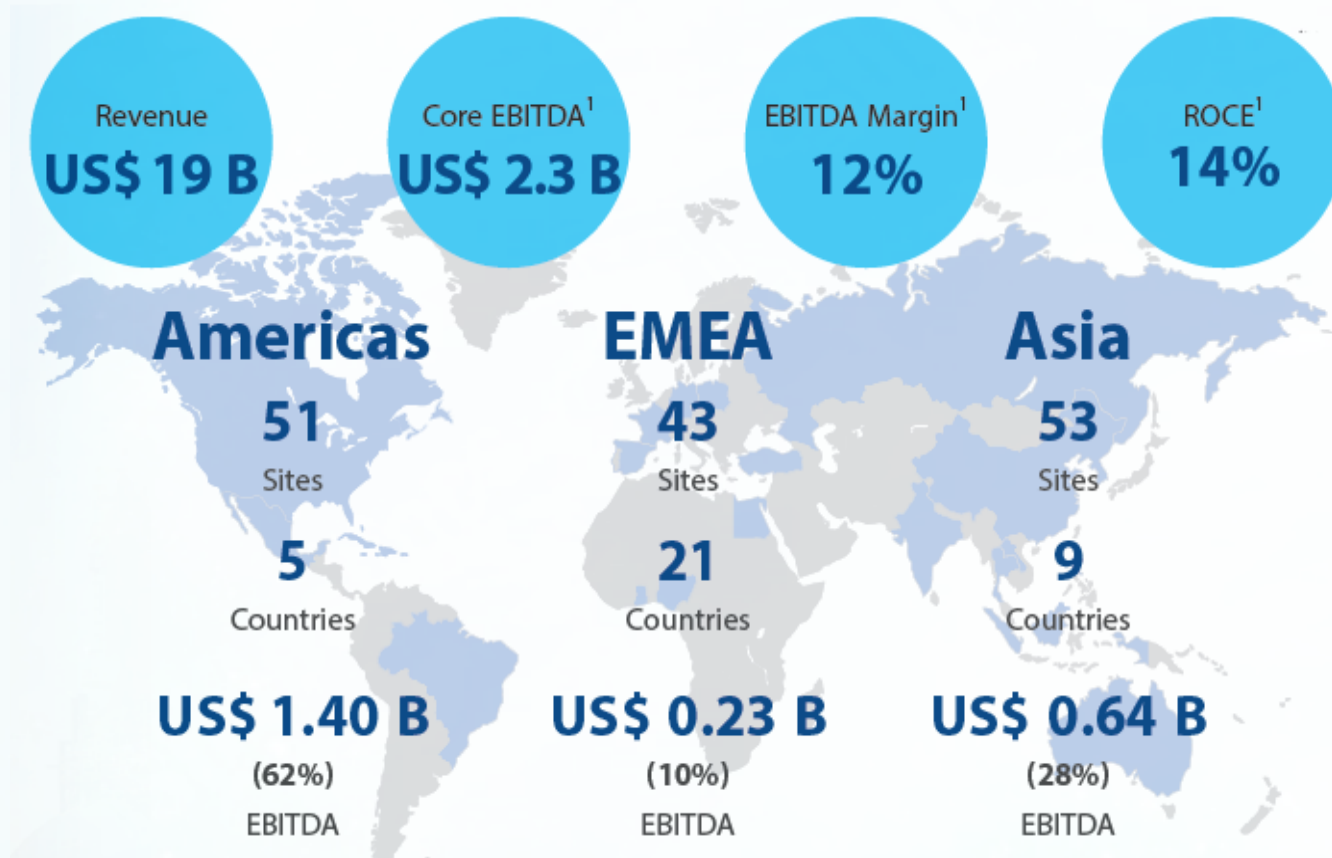
Our water sensitivity analysis was conducted using the AQUEDUCT 3.0 Water Risk tool developed by WRI which combines 12 indicators to create a clear picture of relative water risks, total water availability and total withdrawal. Through this tool, we conduct local water risk assessments and regularly assess both the limitations and opportunities related to water. In 2022, the effects from water risks did not occur. However, we continued to monitor and analyze its effects while estimating the expenditures that would be incurred if this scenario were to occur based on the production, water, and cost of goods sold from 2022.

As a responsible corporate citizen, we engage with the local communities where we operate, participate in multi-stakeholder initiatives, and are considering a more all-inclusive approach that better includes all our relevant stakeholders along the value chain, specifically local communities.

By valuing water and committing to water conservation and efficient usage of water and are progressively contributing towards the achievement of SDG 6: Clean Water and Sanitation.

IVL at a Glance

IVL is a world-class sustainable chemical company and a global integrated leader in PET and fibers serving major customers in diversified end-use markets. In following our core strategies, we develop innovative products that meet the needs of our customers, making great products for society.

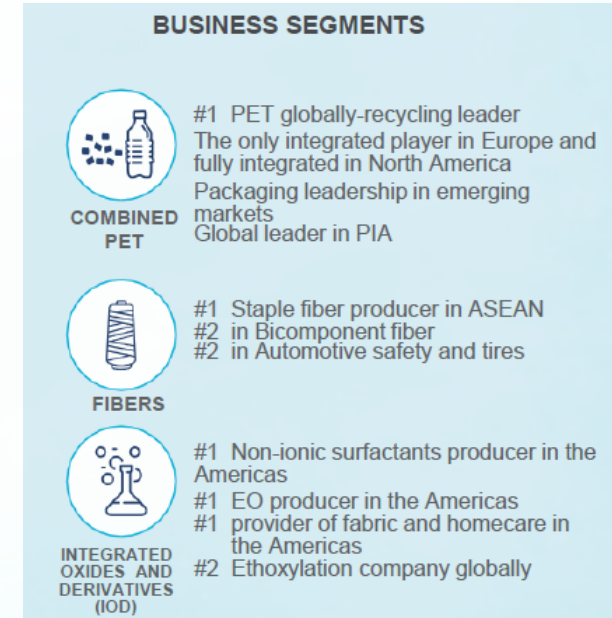


IVL OPERATIONS

As of 31 December, 2022



*The Sustainability Report 2022 consists of data from 141 sites. Further details are provided under 'About This Report' in the full Sustainability Report 2022.



Water Risks Globally and to IVL

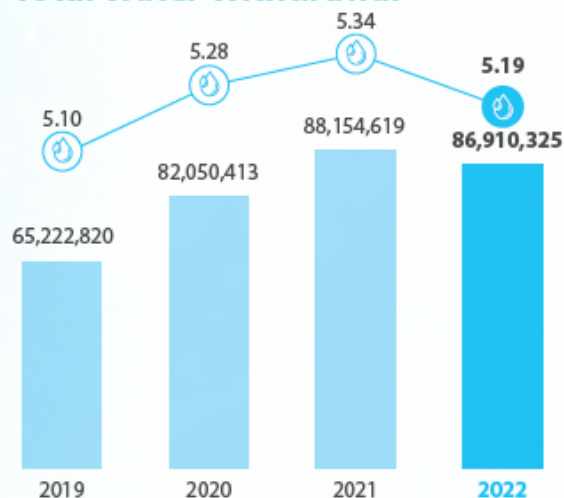


Anthropogenic interference (exploitation of groundwater reservoirs, water pollution from disposal of untreated waste in water bodies, etc.) and anthropogenically-driven climate change (droughts, floods, etc.) are exacerbating the water crisis around the world. About one-third of the global population are currently exposed to water risks as they live in water-stressed regions experiencing water scarcity. Governments, businesses and communities must adopt a more responsible approach to water consumption and sustainable water management practices to solve the global water crisis.

Businesses wanting to remain operational and profitable in the face of a changing climate must play a proactive and integral role in solving the climate crisis. IVL, having identified the risks that climate change poses on its business operations, has taken action. As our operations are water-reliant, water risk can detrimentally affect our business; therefore, water risk analysis as one of several climate change resilience strategies. We practice responsible water consumption, sustainable water management, and the 3Rs in our operations, in addition to ensuring compliance with all applicable legislation. The water risk analysis, therefore, helps us identify both water risks and opportunities to be managed across our operations.

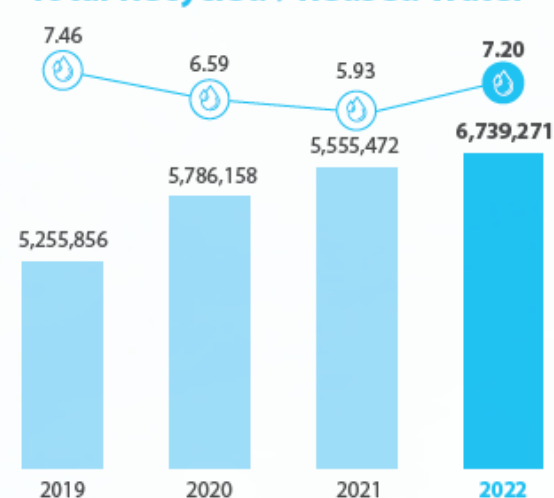
2022 IVL's Water Performance

Total Water Withdrawal



■ Total water withdrawal (m³)
 ● Intensity (m³ / ton of production)

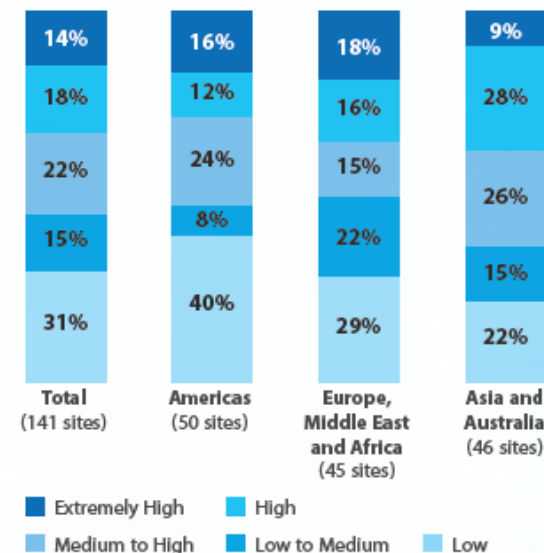
Total Recycled / Reused Water



■ Total volume of recycled / reused water (m³)
 ● Recycled / Reused water (%)

2022 Water Stress Assessment

(% of IVL's operations identified in water stress areas using the AQUEDUCT Water Risk Tool)



Water Intensity Reduction (2020 baseline)

Target

10% by 2025 and **20%** by 2030

Performance

In 2022, IVL recorded a water intensity of

5.19 m³/ton of production,

a **1.70%** reduction against 2025 target.



2022 HIGHLIGHTS



5 projects with actual water savings and implemented CAPEX



US\$ 1.68 million implemented CAPEX in water consumption reduction projects



178,200 m³ water consumption reduction

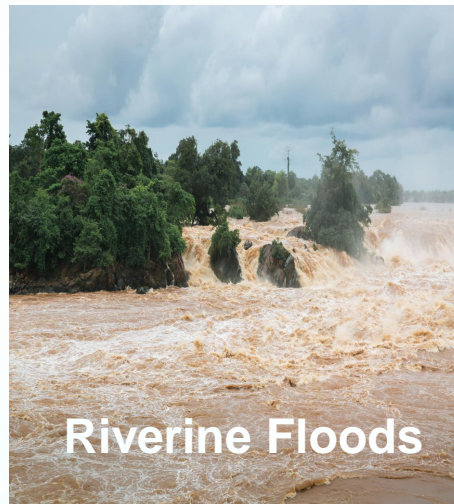
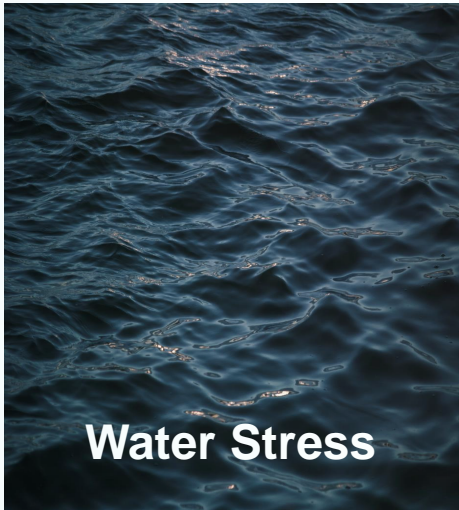


5 sites have achieved Zero Liquid Discharge

Objective of this Report

We analyzed the latest water status across IVL's global network using the WRI AQUEDUCT water tool to address the following:

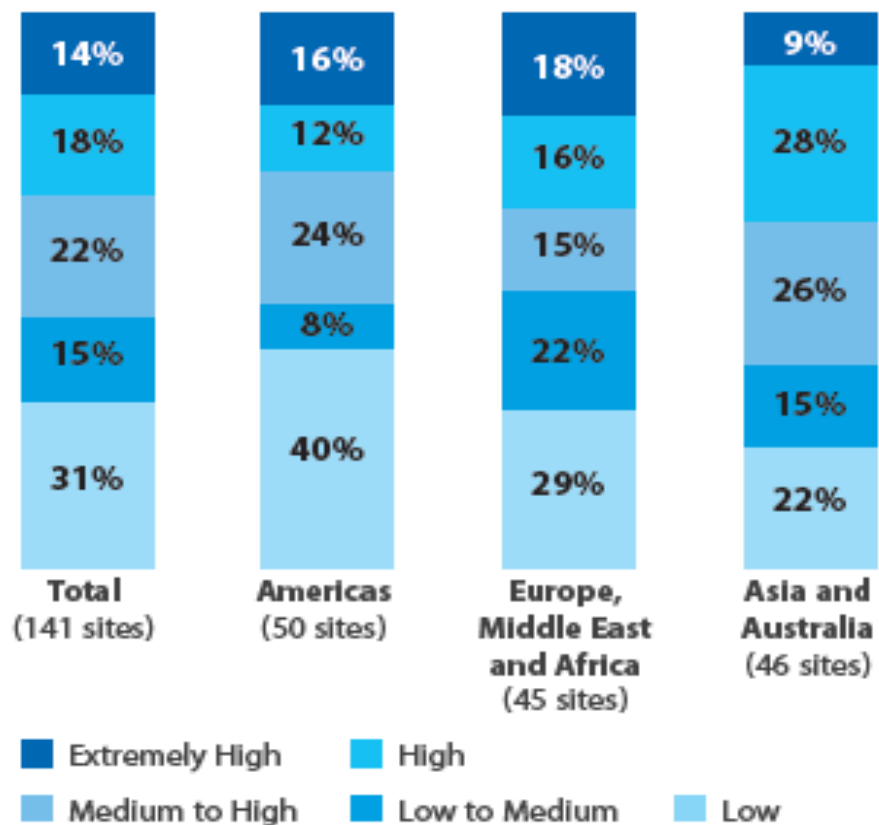
- ❑ Status in current water stress (2022) and Change in future water stress (2030)
- ❑ Status in current drought (2022)
- ❑ Status in current riverine floods (2022)
- ❑ Status in current coastal floods (2022)
- ❑ Status in current sea level rise (2022)



Summary Water Risk Analysis

2022 Water Stress Assessment

(% of IVL's operations identified in water stress areas using the AQUEDUCT Water Risk Tool)



Numbers of Sites	Water Stress		Drought	Coastal flood	Riverine Flood
	2022	2030*	2022	2022	2022
Extremely High	20	19	0	10	23
High	26	18	2	13	20
Medium	0	0	64	0	0
Medium – High	31	44	62	12	13
Low - Medium	21	29	10	18	30
Low	43	30	3	88	55
Total Sites	141	141*	141	141	141

*1 operating location of IVL falls under “Arid and Low” Water Stress are

Summary

Water Stress

- Status in current water stress(2022)
- Change in future water stress (2030)

No. of Sites	Water Stress		Regions (2022)
	2022	2030	
Extremely High	20	19	EMEA (8), The Americas (8), Asia (4)
High	26	18	EMEA (7), The Americas (6), Asia (13)
Medium High	31	44	
Low to Medium	21	29	
Low	43	30	
Arid and Low water use	0	1	
Total	141	141	

Impacts to IVL (2022)

Sites in	Production Compared to IVL's total production	Water Withdrawal Compared with IVL's total Water
Extremely High	2.8 M tons (16.52%)	10.12 M m ³ (11.65%)
High	3.4 M tons (20.26%)	27.44 M m ³ (31.57%)

*NOTE: IVL total production = 16.74 million tons (including intercompany sales)
IVL total water withdrawal = 86.91 million m³*

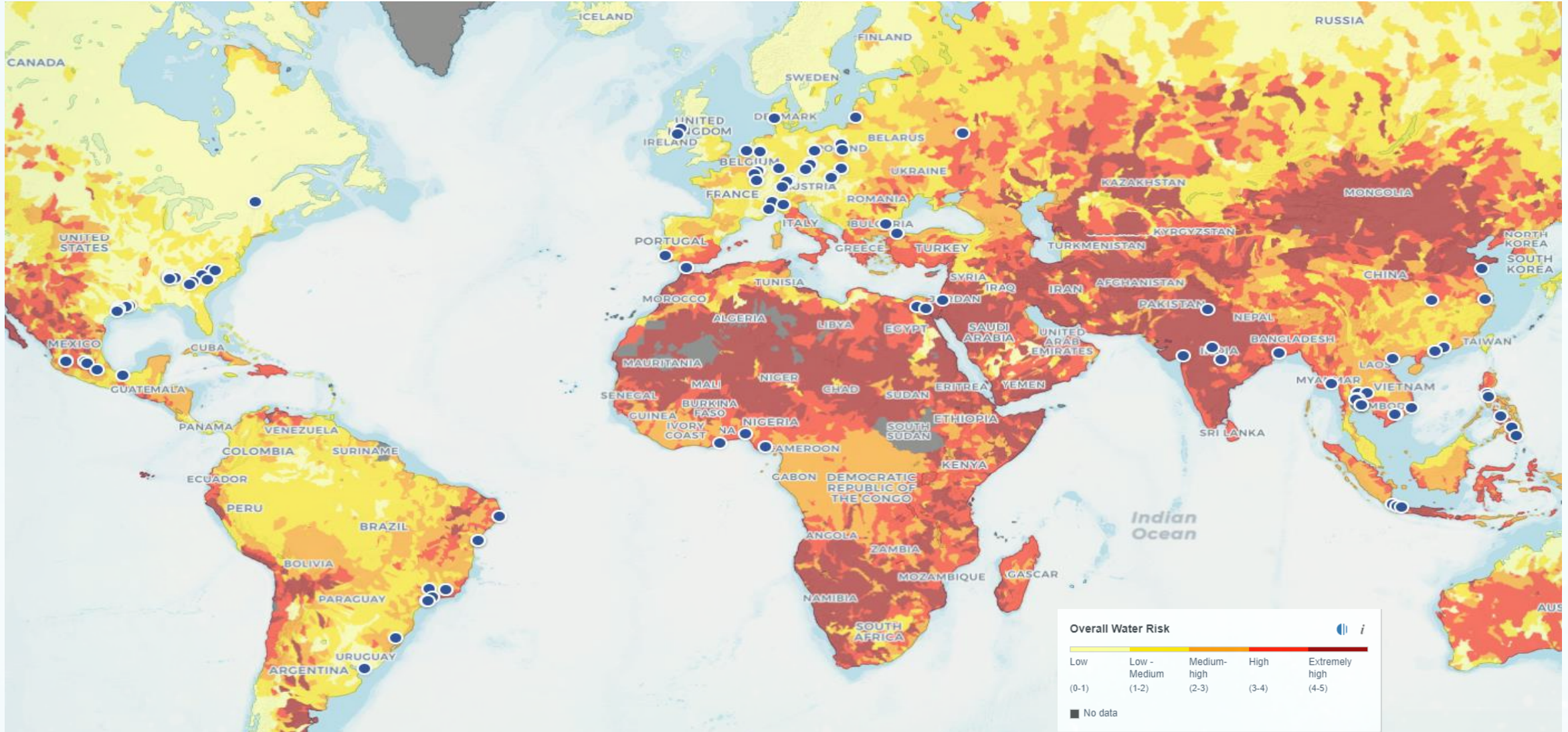
Total cost of water = US\$ 32.12 million in 2022 (actual)

IVL CURRENT CONDITIONS - 2022

No of. Manufacturing Sites
141

2022 Water Consumption
86.91 million m³

2022 Water Cost
US\$ 32.12 million



Estimated impacts to IVL in 2030

PROJECTION – 2030 Water Cost

2022 Water Cost
US\$ 32.12 million

2030 Estimated Water Cost
US\$ 35.35 million

% of Increase
↑ 9.13%

Stress Level	# Sites	% of sites	Estimated Water Cost 2030 - US\$ million
Extremely High (>80%)	20	14.18%	6.75
High (40-80%)	26	18.44%	6.12
Medium High (20-40%)	31	21.99%	10.14
Low-Medium (10-20%)	21	14.89%	0.95
Low (<10%)	43	30.50%	11.39
Total	141	100%	35.35

2030 increased water cost assumption	
Extremely High (>80%)	30%
High (40-80%)	20%
Medium High (20-40%)	10%
Low-Medium (10-20%)	5%
Low (<10%)	0%

Estimated impacts to IVL in 2022 –from extremely high and high stress areas

2022 Water Cost US\$ 10.98 million (29%) (out of total water costs = US\$ 32.12 M)	Estimation of Production Subject to risk of Loss (Actual no loss) 6.16 M tons, 37% (out of IVL's total production = 16.7 M tons)	Cost of Goods Sold US\$ 20,645 million
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Estimated Financial Impact (Loss of EBITDA): based on the current 2022 water stress assessment (US\$ Million)

Stress Level	No. of Sites	30 days Shutdown	60 days Shutdown	90 days Shutdown
Extremely High	20	30.14	60.28	90.43
High	26	51.77	103.55	155.32
Subtotal		81.91	163.83	245.75
Total of all stress levels		185.05	370.10	555.14

Climate-related scenarios for physical risks :

RCP4.5 and RCP8.5 2030 2040

Description:

Optimistic	The "optimistic" scenario (SSP2 RCP4.5) represents a world with stable economic development and carbon emissions peaking and declining by 2040, with emissions constrained to stabilize at ~650 ppm CO ₂ and temperatures to 1.1–2.6°C by 2100
Business as usual	The "Business as usual" scenario (SSP2 RCP8.5) represents a world with stable economic development and steadily rising global carbon emissions, with CO ₂ concentrations reaching ~1,370 ppm by 2100 and global mean temperatures increasing by 2.6–4.8°C relative to 1986–2005 levels.
Pessimistic	The "pessimistic" scenario (SSP3 RCP8.5) represents a fragmented world with uneven economic development, higher population growth, lower GDP growth, and a lower rate of urbanization, all of which potentially affect water usage; and steadily rising global carbon emissions, with CO ₂ concentrations reaching ~1,370 ppm by 2100 and global mean temperatures increasing by 2.6–4.8°C

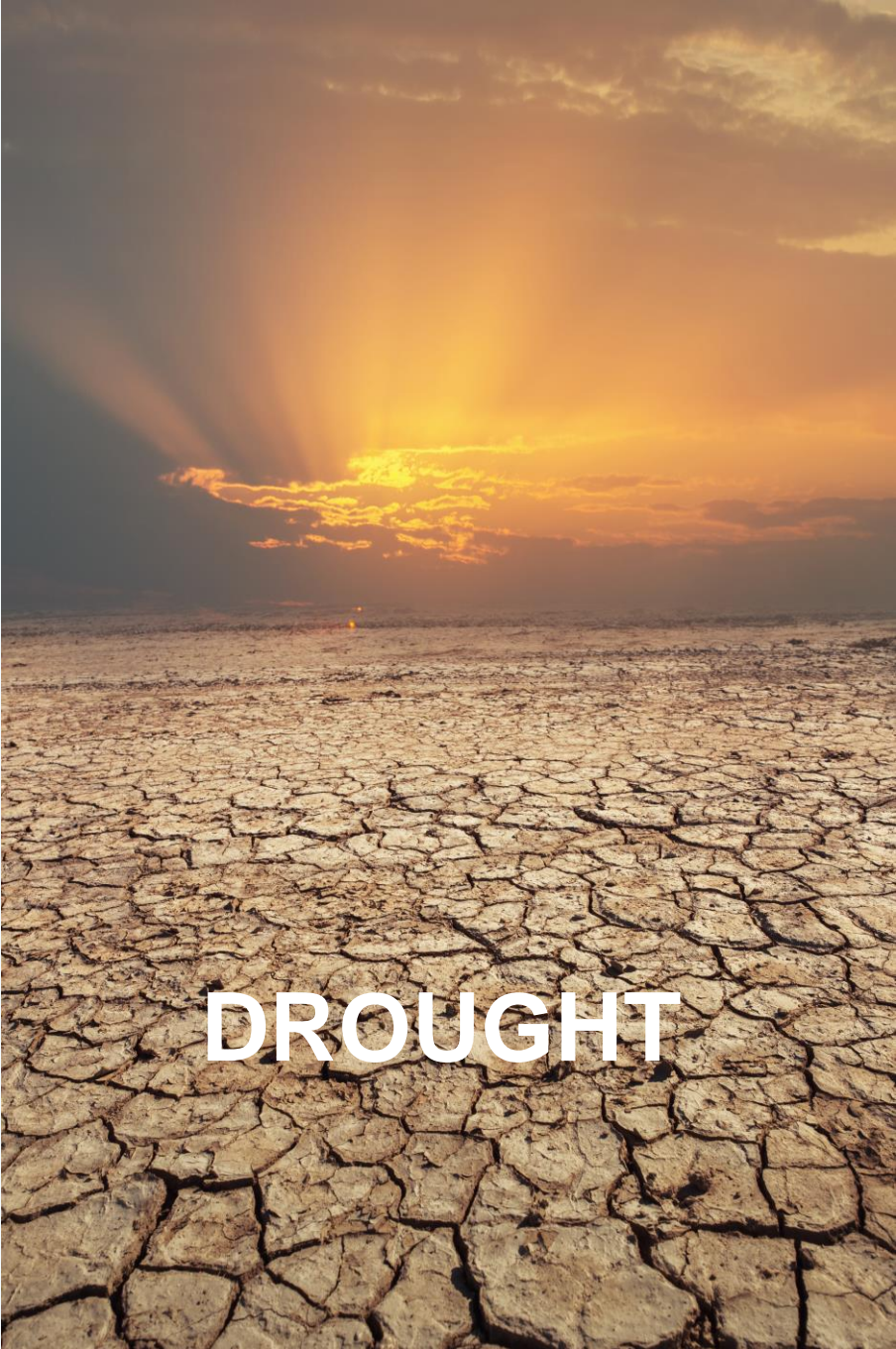
Scenario	2030						2040					
	Optimistic		Business as usual		Pessimistic		Optimistic		Business as usual		Pessimistic	
	Sites	%	Sites	%	Sites	%	Sites	%	Sites	%	Sites	%
Low	44	31%	30	21%	31	22%	27	19%	27	19%	24	17%
Low-medium	29	21%	29	21%	31	22%	26	18%	26	18%	30	21%
Medium-high	30	21%	44	31%	42	30%	46	33%	50	36%	48	34%
High	18	13%	18	13%	17	12%	20	14%	16	11%	19	13%
Extremely high	19	13%	19	13%	19	13%	22	16%	22	16%	19	13%
Arid and low water use	1	1%	1	1%	1	1%	0	0%	0	0%	1	1%
TOTAL	141	100%	141	100%	141	100%	141	100%	141	100%	141	100%

Estimated financial impact (Loss of EBITDA) to IVL in 2030 and 2040

The financial impact from extremely high- and high- water stress areas has been continued to monitor and analyze while estimating the expenditures that would be incurred if this scenario were to occur based on the production, water, and cost of goods sold figures. The calculation for impact in 2030 and 2040 was based on 2022 financial numbers in the same basis in pg. 11.

Estimated financial impact (Loss of EBITDA): 2030 & 2040 water stress assessment (US\$ Million)

Stress Level	2030				2040			
	Shutdown				Shutdown			
	No. of sites	30 days	60 days	90 days	No. of sites	30 days	60 days	90 days
Extremely High	19	29.39	58.79	88.18	22	32.4	64.81	97.21
High	12	10.29	20.57	30.86	16	9.17	18.33	27.5
Total	31	39.68	79.36	119.04	38	41.57	83.14	124.71



Summary

No. of Sites	2022	Regions (2022)
Extremely High	0	
High	2	Asia (2)
Medium High	62	
Medium	64	
Low to Medium	10	
Total	138*	

*Three sites' data is not available with WRI software

Impacts to IVL

Sites in	Production Compared to IVL's total production	Water Withdrawal Compared with IVL's total Water
Extremely High	-	-
High	0.21 M tons (1.39%)	0.19 M m ³ (0.22%)

NOTE: IVL total production = 16.74 million tons

IVL's total water withdrawal = 86 million m³

Total cost of water = US\$ 32.12 million in 2022 (actual)



RIVERINE FLOODS

Summary

No. of Sites	2022	Regions (2022)
Extremely High	23	Africa (4), The Americas (4), Asia (15)
High	20	Africa (2), The Americas (6), Asia (12)
Medium High	13	
Low to Medium	30	
Low	55	
Total	141	

Impacts to IVL

Sites in	Production Compared to IVL's total production
Extremely High	2.80 M tons (16.72%)
High	1.62 M tons (9.68%)

NOTE: IVL total production = 16.74 million tons



COASTAL FLOODS

Summary

No. of Sites	2022	Regions (2022)
Extremely High	10	Asia (10)
High	13	EMEA (5), The Americas (3), Asia (5)
Medium High	12	
Low to Medium	18	
Low	88	
Total	141	

Impacts to IVL

Sites in	Production Compared to IVL's total production
Extremely High	1.20 M tons (7.17%)
High	3.19 M tons (19.06%)

NOTE: IVL total production = 16.74 million tons



Summary

Impacts to IVL

7 Impacted Sites
1 Site in USA
2 sites in the Netherlands
1 site in the Philippines
3 site in Spain
Total Production : 1.91 million tons

Therefore: 7 sites with 1.91 million tons of production against overall IVL production (16.95 million tons) would be impacted if this scenario of sea level rise were to occur.

SEA LEVEL RISE

Mitigation Measures – Corporate

Water-related business risks are generally physical, regulatory or reputational in nature:



- **Physical:**
A business facing physical water-related business risks is ineffective in managing its operations due to a lack of water supplies or services. This can be the result of prolonged water scarcity due to droughts, damage to infrastructure and/or water supply disruptions due to floods, or polluted water that is unfit for operational use.
- **Regulatory:**
Corporate water consumption and management is challenged by regulatory risks that arise from changes in laws, regulations, or management practices. The regulatory changes are bound by issues like water scarcity, sectoral conflict, or a negative public image of the company regarding its business operations.
- **Reputational:**
A business suffers reputational risks from its unethical and harmful activities, such as the water-related impacts on water sources, ecosystems and communities. Such risks diminish the loyalty of stakeholders, reduce the company's brand value, and can result in regulatory concerns over the company's legal and social license to operate.

Mitigation Measures – Corporate

The following mitigation actions are ongoing with regards to the water crisis:

- The risk management committees of plants and business segments regularly monitor potential regulatory changes and evaluate water risks and opportunities by conducting scenario analyses with those changes.
- We undertake natural disaster risk assessment of our plants and sites to determine the risk level, mitigations and intervention required, by developing risk assessment standards in collaboration with Environmental, Health & Safety, and Group Insurance.
- We establish "minimum expectations" on assessment, preparedness, and response planning including emergency procedure for natural disasters such as hurricanes, winter freeze, and flooding
- We conduct a water sensitivity analysis using the AQUEDUCT Water Risk tool in evaluating changes in water demand, water supply, risks from stakeholders and changes in regulations based on current and future conditions, for 2022 with forecasts for 2030 and 2040. These results are analyzed and discussed during meetings held by the Risk Assessment Committees to identify necessary mitigation measures or initiatives on a quarterly basis, with a focus on plants in areas facing high risks of water stress or locations with significant risks to water usage.
- We evaluate the potential options to reduce water consumption, increase the recycling and reuse , and collecting rainwater to achieve our goal of zero effluent discharge at as many sites as possible, and establish targets at the entity and group level.
- We are committed to sustainable water management (including water withdrawal and discharge) by complying with all applicable environmental laws, international standards, and regulations in the countries where we have operations, and will be proactive in demonstrating our leadership and responsibility in line with our values.

Water Issues and SDGs



Water Issues and SDG 6

The increasing global population will place tremendous pressure on freshwater sources, which are expected to decline by 40% by 2030, leading to a global water crisis.

As freshwater is a finite resource, many regions are already experiencing water scarcity.

Leading global water concerns are related to:

- Healthcare facilities lacking basic water services.
- People lacking access to safe drinking water and sanitation facilities.
- The prevalence of open defecation.
- A majority of women and girls in charge of collecting water in households that do not have access to water on the premises.
- The lack of basic sanitation facilities.
- The lack of wastewater treatment before being discharged into rivers or seas.
- The death of children due to preventable water and sanitation-related diseases.
- The loss of lives due to floods and other water-related disasters.

The UN Sustainable Development Goals address global sustainability challenges.

SDG 6 addresses water-related issues including access to clean drinking water and sanitation.

Our Contributions to SDG 6

6 CLEAN WATER AND SANITATION



Our Contributions

The water crisis (water stress, droughts, floods, and a rise in sea levels) is a growing concern around the world.

IVL is committed to sustainable water management and ensuring the most efficient water consumption by analyzing global water risk at all our operating sites in addition to implementing the 3Rs (reduce, reuse, recycle).

We also collaborate with the authorities on issuing collective actions on water issues to improve the efficiency of water supply management and avoid potential conflicts with stakeholders.

Additionally, we provide safe drinking water and systems to communities and schools in rural areas.

2022 PERFORMANCE

SDG 6 Target 6.3.1 Water Consumption and Conservation

178,200 m³ water consumption reduction
1.70% reduction against 2020 baseline

SDG 6 Target 6.3.2 Water Quality

Wastewater returned to sources at the acceptable quality and level of local laws and regulations

SDG 6 Target 6.4.1 Water Use Efficiency

Water intensity = 5.19 m³/ton of production
Water reused & recycled = 7.20%

SDG 6 Target 6.4.2 Water Stress

Water stress assessment is conducted every year
14% of sites are in extremely high-water stress area
18% of sites are in high water stress area

SDG 6 Target 6.5.1 Integrated Water Management

US\$ 1.68 million implemented CAPEX in water consumption reduction projects
5 sites have achieved Zero Liquid Discharge

SDG 6 Target 6.5.2 Transboundary Cooperation

Ocean Clean Sweep project
Deja Carbon Neutral supports the Safe Water project in Rwanda which provides safe drinking water to communities.



Thank you