

Water Risk Assessment

Pupuk Indonesia Group

2026

Latar Belakang dan Urgensi / Background and Urgency

Bagi Pupuk Indonesia Group, air merupakan sumber daya penting dalam berbagai aktivitas operasional, termasuk proses produksi, sistem pendinginan, serta utilitas. Ketergantungan tersebut menyebabkan perubahan ketersediaan maupun kualitas air di wilayah operasi berpotensi mempengaruhi keandalan proses produksi, efisiensi operasional, hingga kemampuan fasilitas dalam memenuhi standar pengelolaan lingkungan. Risiko seperti penurunan debit sumber air, kekeringan, peningkatan kebutuhan air akibat perubahan kondisi operasional, maupun penurunan kualitas air baku dapat meningkatkan kebutuhan pengolahan, biaya operasional, dan dalam kondisi tertentu membatasi kapasitas atau kontinuitas produksi.

For Pupuk Indonesia Group, water is a critical resource across various operational activities, including production processes, cooling systems, and utilities. This dependency in water availability or quality within operational areas can potentially affect production reliability, operational efficiency, and the facilities' ability to meet environmental management standards. Risks such as declining water source discharge, droughts, increased water demand due to changing operational conditions, and deteriorating raw water quality can escalate treatment requirements, raise operational costs, and, under certain conditions, constrain production capacity or continuity.

Pupuk Indonesia menyadari kegiatan operasional juga berpotensi mempengaruhi kualitas sumber daya air apabila pengelolaan air limbah tidak dilakukan secara optimal, yang pada akhirnya dapat berdampak terhadap ekosistem perairan serta masyarakat yang bergantung pada sumber air. Sehingga Pupuk Indonesia mengutamakan pengelolaan dampak terhadap penggunaan air seiring dengan meningkatnya tuntutan investor, regulator, dan mitra bisnis terhadap transparansi perusahaan dalam mengidentifikasi, mengukur, mengelola, dan mengungkapkan risiko serta dampak terkait air.

Pupuk Indonesia recognizes that its operational activities also have the potential to affect water resource quality if wastewater management is not optimal, which could ultimately impact aquatic ecosystems and communities reliant on these water sources. Consequently, Pupuk Indonesia prioritizes managing its water-use impacts in line with increasing demands from investors, regulators, and business partners for corporate transparency in identifying, measuring, managing, and disclosing water-related risks and impacts.

Pupuk Indonesia melaksanakan kajian Water Risk Analysis untuk mengidentifikasi dan menilai berbagai faktor risiko air, untuk menjadi dasar bagi Pupuk Indonesia dalam merumuskan langkah mitigasi serta strategi pengelolaan sumber daya air secara berkelanjutan.

Pupuk Indonesia conducted a Water Risk Analysis to identify and assess various water risk factors, serving as a basis for the company to formulate mitigation measures and sustainable water resource management strategies.



Metodologi *Methodology*



WWF Water Risk Filter (WRF) v3.0
(Basin Risk dan Operational Risk)



WRI Aqueduct Water Risk Atlas
(Baseline Water Stress)



Cakupan *Coverage*



Operasional Pabrik (termasuk anak perusahaan)
Own Operations (incl. subsidiaries)

PKG

PT Petrokimia Gresik *Gresik, East Java*

PKC

PT Pupuk Kujang *Karawang, West Java*

PSP

PT Pupuk Sriwidjaja Palembang *Palembang, South Sumatera*

PIM

PT Pupuk Iskandar Muda *Aceh*

PKT

PT Pupuk Kalimantan Timur *Bontang, East Kalimantan*

Penilaian risiko air Pupuk Indonesia menggunakan WWF Water Risk Filter yang mengevaluasi dua faktor utama: risiko tingkat cekungan air (basin-level risk) untuk menilai kondisi sumber daya air di sekitar lokasi operasional dan area pengambilan air, serta risiko operasional untuk menilai pemanfaatan air di dalam lokasi tersebut. Asesmen ini mencakup tiga kategori risiko utama, yaitu risiko fisik, regulasi, dan reputasi.

Pupuk Indonesia's water risk assessment utilizes the WWF Water Risk Filter to evaluate two primary factors: basin-level risk, which assesses water resource conditions surrounding operational sites and water intake areas, and operational risk, which evaluates internal water usage at those locations. This assessment covers three main risk categories: physical, regulatory, and reputational risks.



Basin Risk



Risiko Fisik Physical Risk

Ketersediaan Air
Water Availability

Kekeringan
Drought

Banjir
Flooding

Kualitas Air
Water Quality

Aksesibilitas Air
Water Accessibility

Status Jasa Ekosistem
Ecosystem Services Status



Risiko Regulasi Regulatory Risk

Penerapan Kebijakan
Application

Cakupan Regulasi
Scoping

Hak, Akses, dan Perizinan
Rights, Access and
Entitlements

Kelembagaan dan Tata Kelola
Institutions and Governance

Instrumen Pengelolaan
Management Instruments

Hukum Air Subnasional
Subnational Water Law

Risiko Implementasi
Implementation Risk



Risiko Reputasi Reputational Risk

**Tekanan terhadap Sumber
Air Tawar**
Pressures on Freshwater

Faktor Lingkungan
Environmental Factors

Faktor Sosial Ekonomi
Socioeconomic Factors



Operational Risk



Risiko Fisik Physical Risk

Kelangkaan Air
Water Scarcity

Kualitas Air
Water Quality



Risiko Regulasi Regulatory Risk

Lingkungan Regulasi
Enabling Environment

Kelembagaan dan Tata Kelola
Institutions & Governance



Risiko Reputasi Reputational Risk

Sorotan Media
Media Scrutiny

Konflik
Conflict

Penilaian Risiko Air terkait Ketergantungan dan Dampak

Water Risk Assessment Related to Dependencies and Impacts

Berikut merupakan hasil penilaian risiko air yang memberikan dampak yang tinggi atas ketergantungan Pupuk Indonesia terhadap air:

The following are the results of the water risk assessment highlighting high-impact water dependencies for Pupuk Indonesia:

- **Risiko Akibat Ketergantungan Air**, pada risiko kualitas air dan ketersediaan air untuk risiko fisik mengacu pada kurangnya ketersediaan dan tidak sesuai kualitas sumber daya air bagi lokasi tertentu untuk memenuhi kebutuhan penggunaan air perusahaan
- **Dependency-Related Water Risks**, *for physical risks regarding water availability and quality, this refers to the lack of availability and unsuitable quality of water resources at specific locations to meet the company's operational needs*
- **Risiko Dampak Penggunaan Air**, pada risiko banjir untuk risiko fisik akibat meluapnya air ke pabrik/lokasi operasional yang biasanya kering. Peristiwa banjir dapat berdampak pada operasional bisnis maupun keseluruhan rantai nilainya dengan menyebabkan penghentian operasi, gangguan rantai pasok dan transportasi. Selain itu terdapat risiko tekanan sosial penggunaan air untuk risiko reputasi yang mengacu pada persepsi negatif dari masyarakat atau pemangku kepentingan terkait tingginya konsumsi air oleh perusahaan untuk kegiatan operasional
- **Impact-Related Water Risks**, *for physical risks such as flooding, this results from water overflowing into factory or operational sites that are typically dry. Flooding events can affect business operations as well as the entire value chain by causing operational shutdowns, supply chain disruptions, and transportation delays. Additionally, under reputational risk, there is a risk of social pressure regarding water use, which refers to negative perceptions from local communities or stakeholders concerning the company's high water consumption to support its operations*

Penilaian Risiko Ketersediaan Kuantitas Air di Masa Depan (1/2)

Assessment of Future Water Quantities Available

Pupuk Indonesia mengevaluasi ketersediaan air di masa depan dengan menganalisis hasil penilaian risiko WWF dan skenario WRI untuk tahun 2030, 2050 dan 2080 pada kelangkaan air. Analisis proyeksi water stress dilakukan untuk melihat tingkat tekanan terhadap sumber daya air pada lokasi operasional dan titik pengambilan air Pupuk Indonesia dalam horizon waktu 2030, 2050, dan 2080. Hasil analisis digunakan untuk mengidentifikasi lokasi dengan tingkat tekanan air yang relatif lebih tinggi serta melihat konsistensi pola risiko dalam jangka panjang.

Water stress projection analysis is conducted to evaluate the level of pressure on water resources at Pupuk Indonesia's operational sites and water intake points across the time horizons of 2030, 2050, and 2080. The results of the analysis are used to identify locations with relatively higher water stress levels and to assess long-term risk pattern consistency.

Hasil penilaian menunjukkan bahwa lokasi dalam kategori “Low” dan “Low-Medium” diproyeksikan memiliki tekanan ketersediaan air yang relatif rendah dalam jangka panjang. Sebaliknya, lokasi dengan kategori “High” menandakan adanya tekanan pemanfaatan air yang tinggi, sehingga memerlukan perhatian khusus dalam strategi pengelolaan sumber daya air jangka panjang.

Results of the future water quantity risk assessment indicate that locations in the “Low” and “Low-Medium” categories are projected to maintain relatively low water stress in the long term. Conversely, locations categorized as “High” reflect higher water pressure, requiring focused attention in long-term water resource management strategies.

Location	2030	2050	2080
PIM – Intake, Factory & Wastewater	Low	Low	Low
PSP – Factory & Wastewater	Low	Low	Low
PKC – Intake I, Intake II, Factory & Wastewater	High	High	High
PKG – Intake II, Factory & Wastewater	Low–Medium	Low–Medium	Low–Medium
PKG – Intake I	High	High	High
PKT – Sea Water Intake, Factory & Wastewater	Low	Low	Low

Penilaian Risiko Ketersediaan Kuantitas Air di Masa Depan (2/2)

Assessment of Future Water Quantities Available

Berikut langkah mitigasi yang dilakukan pada masing-masing anak perusahaan terhadap pengelolaan risiko ketersediaan air:

Below are the mitigation measures implemented across subsidiaries regarding water availability risk management:

Location	Mitigation Action Plan
PIM	<p>Penerapan sistem sirkulasi dan daur ulang air pada proses produksi, adanya tim khusus efisiensi air yang melakukan audit rutin, serta penguatan skenario kontingensi yang mencakup ambang debit kritis, opsi sumber air cadangan, dan sistem peringatan dini kondisi DAS (daerah aliran sungai)</p> <p><i>Implementation of water circulation and recycling systems in the production process, the presence of a dedicated water efficiency team conducting regular audits, and the strengthening of business continuity plan including critical discharge thresholds, alternative water source options, and early warning systems for watershed conditions</i></p>
PSP	<p>Mengoptimalkan pemanfaatan <i>Backwash Recovery Pond</i> dan <i>reuse blowdown Cooling Tower</i> secara spesifik untuk menjaga kontinuitas pasokan air ke proses produksi utama, guna melindungi keberlangsungan produk vital perusahaan</p> <p><i>Optimizing the utilization of the Backwash Recovery Pond and the reuse of Cooling Tower blowdown specifically to maintain a continuous water supply to the primary production process in order to safeguard the continuity of the company's vital products</i></p>
PKC	<p>Penerapan praktik reuse-recycle pada air demineralisasi, kondensat, dan air pendingin termasuk pemanfaatan kondensat PCT sebagai recycled water di unit Carbon Filter serta perlindungan infrastruktur pasokan air melalui modifikasi proteksi perpipaan air baku</p> <p><i>Implementation of water reuse and recycling practices for demineralized water, condensate water, and cooling water including the utilization of PCT condensate as recycled water in the Carbon Filter unit alongside raw water infrastructure protection through piping protection modifications</i></p>
PKG	<p>Penerapan efisiensi air secara menyeluruh pada tahap <i>Cradle to Grave</i>, pembangunan kapasitas cadangan air sebagai buffer ketahanan pasokan (mengurangi ketergantungan air sungai/PDAM), serta perluasan kapasitas <i>recycle/reuse</i> air proses</p> <p><i>Prioritizing water efficiency across the Cradle-to-Grave life cycle, constructing water storage/backup capacity as a buffer against reliance on river/PDAM water supplies, and expanding process water recycle/reuse capacity</i></p>
PKT	<p>Pemanfaatan 100% air laut (desalinasi) sebagai sumber air baku untuk seluruh proses operasional pabrik dan pendukung, sehingga PKT tidak memiliki ketergantungan pada air tawar dan terbebas dari risiko kelangkaan air tawar</p> <p><i>100% utilization of seawater (desalination) to support plant operations and utility processes, eliminating reliance on freshwater resources and mitigating freshwater scarcity risks</i></p>

Penilaian Risiko Kualitas Air di Masa Depan (1/4)

Assessment of Future Water Quality-Related Risks

Pupuk Indonesia melakukan penilaian berbasis lokasi terhadap risiko kualitas air di masa depan pada lokasi operasional utama dan sumber air yang digunakan. Penilaian ini mengintegrasikan risiko kualitas air pada tingkat basin yang diidentifikasi melalui WWF Water Risk Filter dengan proyeksi water stress dan water supply dari WRI Aqueduct Water Risk Atlas untuk tahun 2030, 2050, dan 2080. Proyeksi WRI Aqueduct digunakan untuk menilai potensi perubahan tekanan hidrologis di masa depan yang dapat mempengaruhi kerentanan kualitas air. Indikator tersebut tidak diperlakukan sebagai proyeksi langsung terhadap kualitas air di masa depan.

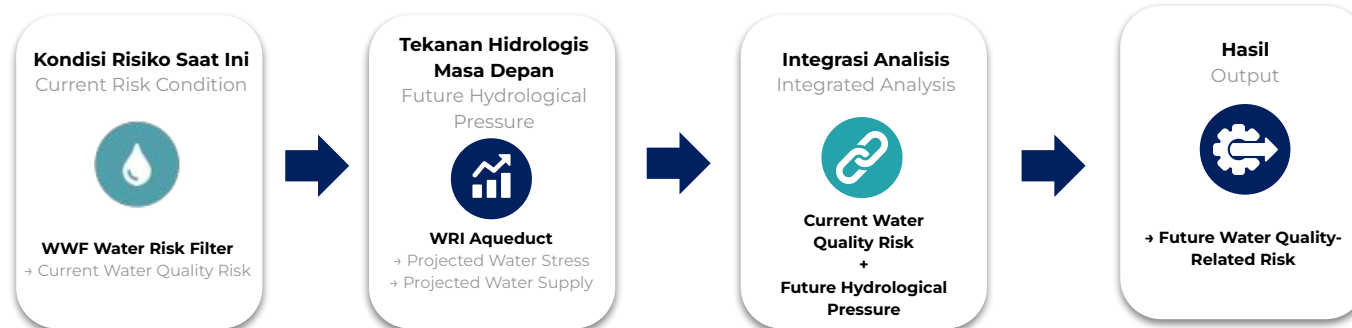
Pupuk Indonesia conducts a location-specific assessment of future water quality-related risks across its key operational sites and water sources. The assessment integrates current basin-level water quality risks identified through the WWF Water Risk Filter with projected water stress and water supply from the WRI Aqueduct Water Risk Atlas for 2030, 2050, and 2080. WRI Aqueduct projections are used to assess potential changes in future hydrological pressures that may influence water quality vulnerability. These indicators are not treated as direct projections of future water quality.

Pendekatan Asesmen

Assessment Approach

Kerangka Integrasi Penilaian Risiko Air Masa Depan

Future Water Risk Assessment Integration Framework

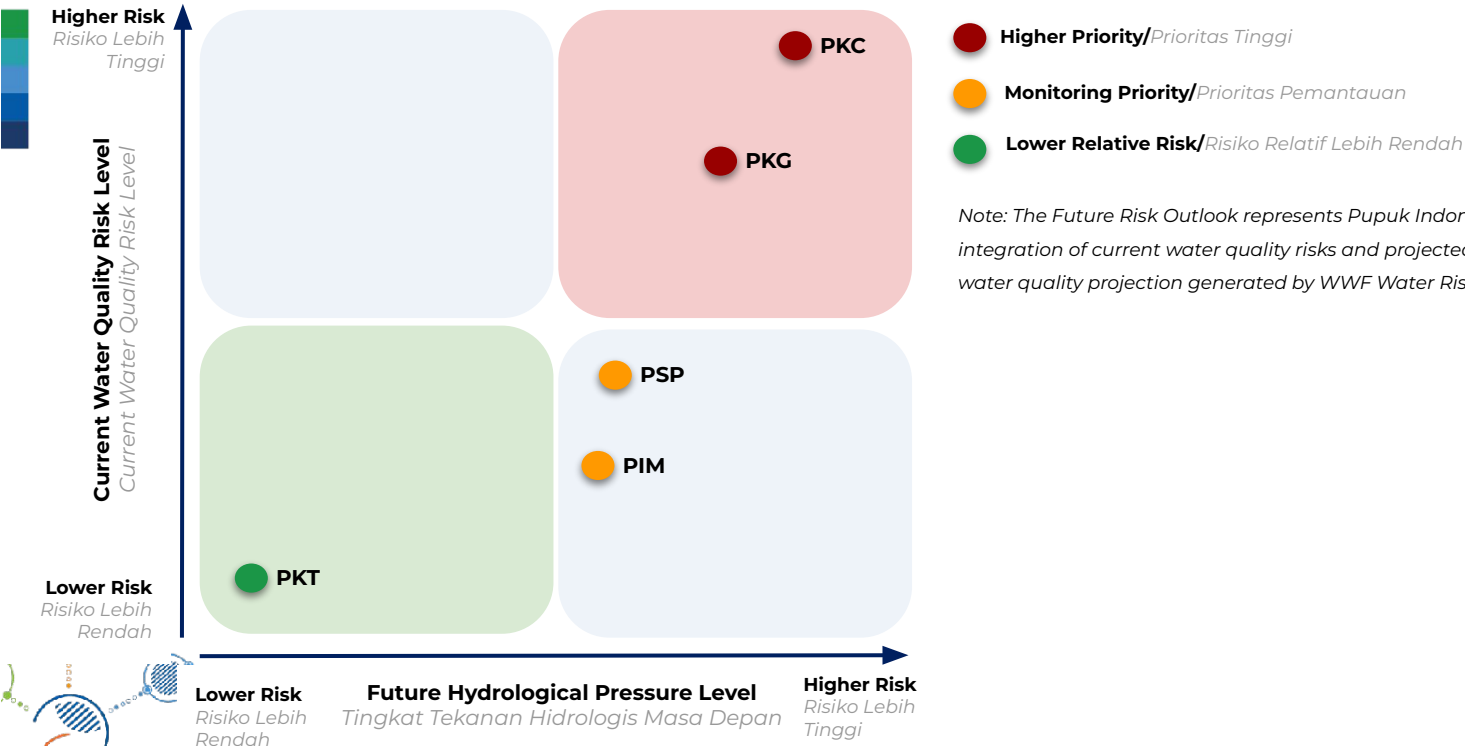


Penilaian Risiko Kualitas Air di Masa Depan (2/4)

Assessment of Future Water Quality-Related Risks

Gambaran Risiko di Masa Depan

Future Water Quality Risk Outlook



Penilaian Risiko Kualitas Air di Masa Depan (3/4)

Assessment of Future Water Quality-Related Risks

Temuan Utama

Key Findings

PKC dan PKG teridentifikasi sebagai lokasi dengan prioritas lebih tinggi dalam pengelolaan risiko kualitas air jangka panjang. PKC menunjukkan kombinasi risiko kualitas air saat ini pada kategori Sedang-Tinggi dengan proyeksi High Water Stress hingga 2080, serta pergeseran menuju kelas projected water supply yang lebih rendah pada beberapa titik intake. Sementara itu, PKG memiliki risiko kualitas air saat ini pada kategori Sedang-Tinggi hingga Tinggi, disertai tekanan hidrologis tambahan pada beberapa lokasi.

PSP dan PIM berada pada kategori pemantauan, karena meskipun terdapat risiko kualitas air Sedang-Tinggi pada beberapa lokasi, tekanan hidrologis yang diproyeksikan relatif stabil. PKT menunjukkan risiko relatif paling rendah dibandingkan entitas lain yang dinilai, didukung oleh karakteristik sumber air yang seluruhnya berasal dari air laut serta tingkat tekanan hidrologis yang relatif rendah. Meskipun demikian, pemantauan tetap diperlukan untuk mengantisipasi perubahan kualitas perairan laut dan pesisir serta kondisi pada titik intake dan outfall.

PKC and PKG are identified as higher-priority locations for long-term water quality risk management. PKC combines Moderate-High current water quality risk with projected High Water Stress through 2080 and a shift toward lower projected water supply classes at selected intake locations. Meanwhile, PKG shows Moderate-High to High current water quality risk, with additional hydrological pressures identified at selected locations.

PSP and PIM are categorized for monitoring, as projected hydrological pressures remain relatively stable despite Moderate-High water quality risks at selected locations. PKT shows the lowest relative risk among the assessed entities, supported by its reliance on seawater as its water source and relatively low hydrological pressure. Nevertheless, continued monitoring remains important to anticipate changes in marine and coastal water quality, including conditions at intake and outfall locations.



Penilaian Risiko Kualitas Air di Masa Depan (4/4)

Assessment of Future Water Quality-Related Risks

Respons Pengelolaan Management Response

Pupuk Indonesia menggunakan hasil penilaian tersebut untuk memperkuat pengelolaan risiko air yang spesifik sesuai kondisi masing-masing lokasi melalui langkah-langkah berikut:

Pupuk Indonesia uses the assessment results to strengthen location-specific water risk management through the following measures:



Pemantauan Kualitas Air Water Quality Monitoring

Pemantauan kualitas dan kuantitas air secara berkala pada sumber air utama.
Regular monitoring of water quality and quantity at key water sources.



Water Efficiency & Recycling Efisiensi dan Daur Ulang Air

Optimalisasi penggunaan kembali, daur ulang, dan efisiensi air proses.
Optimization of water reuse, recycling, and process-water efficiency.



Treatment Resilience Ketahanan Pengolahan

Penguatan kapasitas dan keandalan pengolahan air baku serta air limbah.
Strengthening raw-water and wastewater treatment capacity and reliability.



Site-Specific Adaptation Adaptasi Spesifik Lokasi

Adaptasi berdasarkan kondisi daerah aliran sungai dan risiko spesifik pada masing-masing lokasi.
Adaptation measures based on basin conditions and location-specific risks.

Penilaian Risiko Perubahan Regulasi Air di Masa Depan (1/3)

Assessment of Future Changes in Water Regulatory Risk

Pendekatan dan Kategori yang Dinilai

Assessment Approach and Risk Categories Applied

PI Group telah melakukan penilaian terhadap potensi perubahan regulasi terkait air melalui pemetaan regulasi (regulatory mapping) dan pemantauan perkembangan regulasi (regulatory horizon scanning) sebagai bagian dari Water Risk Assessment (WRA). Potensi perubahan regulasi dinilai berdasarkan perkembangan kerangka regulasi yang ada dan dikelompokkan berdasarkan horizon waktu jangka pendek (0–2 tahun), menengah (3–5 tahun), dan panjang (>5 tahun).

PI Group has assessed potential changes to water-related regulations through regulatory mapping and regulatory horizon scanning as part of its Water Risk Assessment (WRA). Potential regulatory changes were evaluated based on developments within the existing regulatory framework and grouped by time horizon: short term (0–2 years), medium term (3–5 years), and long term (more than 5 years).

Penilaian dilakukan dengan memetakan regulasi terkait air pada tingkat nasional dan subnasional, serta mengidentifikasi potensi perubahan terkait pengelolaan dan perizinan sumber daya air, data dan pelaporan lingkungan, persetujuan lingkungan, perizinan berbasis risiko, serta tata ruang laut untuk operasional yang menggunakan air laut. Hasil penilaian selanjutnya divalidasi melalui FGD bersama entitas PI Group untuk memahami potensi dampaknya terhadap operasi, perizinan, dan praktik kepatuhan di masing-masing lokasi.

The assessment was conducted by mapping water-related regulations at both national and subnational levels, and by identifying potential changes concerning water resource management and permitting, environmental data and reporting, environmental approvals, risk-based business licensing, and marine spatial planning for operations that use seawater. The results were subsequently validated through Focus Group Discussions with PI Group entities to understand the potential implications for operations, permitting, and compliance practices at each location.

Untuk mengantisipasi potensi perubahan regulasi, PI Group menyusun langkah mitigasi berupa pemantauan perkembangan regulasi, tinjauan regulasi tahunan, penyusunan regulatory compliance matrix, audit perizinan dan kepatuhan, serta integrasi kewajiban regulasi ke dalam risk register. PI Group juga mengidentifikasi peluang untuk memperkuat kesiapan regulasi dan *water stewardship* melalui partisipasi dalam TKPSDA, konsultasi publik, serta koordinasi dan pemberian masukan teknis kepada regulator terkait sebagai bentuk Penilaian Risiko Perubahan Regulasi Air di Masa Depan.

To anticipate potential regulatory changes, PI Group has established mitigation measures comprising ongoing monitoring of regulatory developments, annual regulatory reviews, preparation of a regulatory compliance matrix, permit and compliance audits, and integration of regulatory obligations into the risk register. PI Group has also identified opportunities to strengthen regulatory readiness and water stewardship through participation in river basin water resources coordination forums (TKPSDA), public consultations, and coordination with and provision of technical input to the relevant regulators as a mechanism of Risk Assessment of Future Changes in Water Regulations

Penilaian Risiko Perubahan Regulasi Air di Masa Depan (2/3)

Assessment of Future Changes in Water Regulatory Risk

Regulasi Pengelolaan Sumber Daya Air

Assessment Approach and Risk Categories Applied

Kategori Risiko	UU / UUD Constitution/Law	PP	Perpres	Permen	Time Horizon
7. Application	UUD 1945 Ps. 33(3) UUD 1945 Ps. 25A dan Ps. 33(4) UU 17/2019 jo. UU 6/2023 dan UU 32/2024 UU 32/2014 UU 27/2007 jo. UU 1/2014	PP 30/2024 PP 32/2019 PP 21/2021 PP 13/2022	Perpres 37/2023 Perpres 16/2017 Perpres 112/2025	Permen KKP 2/2025 Permen KKP 28/2021	Medium
8. Scoping	UU 17/2019 UU 32/2009 UU 32/2014 UU 27/2007 jo. UU 1/2014	PP 30/2024 PP 22/2021 PP 122/2015 PP 27/2021 PP 32/2019	Perpres 83/2020	Permen PUPR 28/PRT/M/2015 Permenkes 2/2023 Permen LHK 5/2021 Permen KKP 28/2021 Permen KKP 26/2021	Medium
9. Rights, Access and Entitlements	UUD 1945 Ps. 28H(1) dan Ps. 33(3) UU 17/2019 UU 32/2014 UU 27/2007 jo. UU 1/2014 UU 26/2007 UU 32/2009	PP 122/2015 PP 30/2024 PP 22/2021 PP 21/2021 PP 27/2021 PP 28/2025	Perpres 83/2020	Permen PUPR 27/PRT/M/2016 Permen PUPR 2/2024 Permen PU 6/2026 Permen KKP 28/2021 Permen LH/BPLH 22/2025 Permeninves/BKPM 5/2025	Long
10. Institutions and Governance	UU 17/2019 UU 23/2014 (Ps. 27) UU 32/2014 UU 27/2007 jo. UU 1/2014 UU 32/2009	PP 30/2024 PP 27/2021 PP 22/2021 (Lamp. VIII)	Perpres 53/2022 Perpres 112/2025 Perpres 16/2017 Perpres 83/2020	Permen PU 2/2024 Permen PU 3/2024 Permenko Marves 3/2023 Permen KKP 2/2025 Permen KKP 28/2021 Permen LH/BPLH 22/2025	Long
11. Management Instruments	UU 17/2019 UU 32/2009 UU 24/2007 UU 32/2014 UU 27/2007 jo. UU 1/2014	PP 30/2024 PP 22/2021 (Lamp. VIII) PP 37/2012 PP 26/2025 PP 27/2021 PP 32/2019	Perpres 87/2020 (Ps. 6) Perpres 39/2019 (Ps. 3) Perpres 83/2020 Perpres 83/2018	Permen LHK 5/2021 Permen LH/BPLH 14/2025 Permen LH/BPLH 1/2026 Permen KKP 26/2021 Permen KKP 28/2021	Medium

Penilaian Risiko Perubahan Regulasi Air di Masa Depan (3/3)

Assessment of Future Changes in Water Regulatory Risk

Regulasi Pengelolaan Sumber Daya Air

Assessment Approach and Risk Categories Applied

Kategori Risiko	UU / UUD	PP	Perpres	Permen	Time Horizon
12 Subnational Water Law	UUD 1945 Ps. 18 dan 18A UU 23/2014 UU 17/2019 UU 32/2014 UU 27/2007 jo. UU 1/2014 UU 26/2007	PP 30/2024 PP 22/2021 PP 21/2021 PP 27/2021	Perpres 16/2017 Perpres 83/2020	Permen PUPR 2/2024 Permen PU 2/2024 Permen PU 3/2024 Permen KKP 28/2021 Permen LH/BPLH 22/2025	Long
13 Offenses and Penalties	UUD 1945 Ps. 33(3) UU 32/2009 UU 17/2019 UU 5/1990 jo. UU 32/2024 UU 32/2014 UU 27/2007 jo. UU 1/2014 UU 17/2008	PP 22/2021 PP 30/2024 PP 21/2021 PP 27/2021 PP 28/2025	—	Permen LHK 5/2021 Permen LHK 14/2024 Permen KKP 26/2021 Permen KKP 28/2021	Long
14 Implementation Risk	UUD 1945 Ps. 1(3) UU 25/2004 UU 12/2011 jo. UU 13/2022 UU 30/2014 UU 14/2008 UU 28/1999 UU 32/2014 UU 32/2009	PP 60/2008 PP 22/2021 PP 28/2025	Perpres 39/2019 Perpres 16/2017	Permen LH/BPLH 1/2026 Permen LH/BPLH 22/2025 Permeninves/BKPM 5/2025	Medium

■ Kerangka Freshwater (PKG, PKC, PSP, PIM) atau berlaku pada keduanya
For Freshwater (PKG, PKC, PSP, PIM)

■ Khusus kerangka Seawater (PKT)
For Seawater only (PKT)

Penilaian Risiko Dampak Air Terhadap Masyarakat Sekitar (1/3)

Assessment of Impacts on Local Stakeholders

Pendekatan dan Kategori yang Dinilai

Assessment Approach and Risk Categories Applied

Penilaian dilakukan pada tingkat entitas sesuai karakteristik basin dan kondisi sosial masing-masing wilayah operasi, menggunakan tujuh kategori risiko WWF Water Risk Filter v3.0 yang berkaitan langsung dengan kepentingan masyarakat, yaitu Water Accessibility, Ecosystem Services Status, Pressures on Freshwater, Environmental Factors, Socioeconomic Factors, Media Scrutiny, dan Conflict. Hasil penilaian ditriangulasi dengan dokumen AMDAL/RKL-RPL, laporan TJSL, laporan keluhan masyarakat, DRKPL, PROPER, serta Life Cycle Assessment setiap entitas, dan divalidasi bersama perwakilan entitas melalui Focus Group Discussion.

The assessment is conducted at entity level, reflecting basin characteristics and social conditions at each operating area, using seven WWF Water Risk Filter v3.0 risk categories directly related to community interests: Water Accessibility, Ecosystem Services Status, Pressures on Freshwater, Environmental Factors, Socioeconomic Factors, Media Scrutiny, and Conflict. The results are triangulated with EIA/RKL-RPL documents, CSR reports, community grievance records, DRKPL, PROPER, and each entity's Life Cycle Assessment, and validated with entity representatives through Focus Group Discussions.

Pemangku Kepentingan yang Teridentifikasi

Identified Local Stakeholders

Kelompok yang berinteraksi langsung dengan pemanfaatan air Perusahaan mencakup masyarakat Ring 1 dan Ring 2 di sekitar area pabrik dan titik pengambilan air, petani pengguna air irigasi, nelayan dan masyarakat pesisir, penyedia layanan air minum daerah yang bersumber pada badan air yang sama, pemerintah daerah dan pengelola wilayah sungai, serta organisasi masyarakat sipil dan media. Pemetaan dilakukan secara spesifik per entitas, antara lain masyarakat Ring 1 Gresik dan nelayan terdampak aktivitas terminal khusus (PKG), masyarakat Pulau Kemaro di Sungai Musi (PSP), petani di sekitar water intake Sungai Peusangan (PIM), serta Kelompok Nelayan Karaka dan Kimasea di pesisir Bontang (PKT).

Groups interacting directly with the Company's water use include Ring 1 and Ring 2 communities around plant areas and water intake points, farmers relying on irrigation water, fishers and coastal communities, regional drinking water providers drawing from the same water bodies, local governments and river basin authorities, as well as civil society organisations and media. Mapping is performed specifically for each entity, including Ring 1 communities in Gresik and fishers affected by dedicated terminal activities (PKG), the Pulau Kemaro community along the Musi River (PSP), farmers near the Peusangan River intake (PIM), and the Karaka and Kimasea fisher groups on the Bontang coast (PKT).

Penilaian Risiko Dampak Air Terhadap Masyarakat Sekitar (2/3)

Assessment of Impacts on Local Stakeholders

Hasil Penilaian / *Assessment Results*

Kategori Water Accessibility dan Socioeconomic Factors berada pada klasifikasi Tinggi dengan skor 3,50 di seluruh entitas. Klasifikasi tersebut mencerminkan kondisi basin, yaitu belum meratanya akses masyarakat terhadap air minum dan sanitasi yang layak, bukan dampak langsung kegiatan operasional Perusahaan. Kategori Conflict berada pada klasifikasi Tinggi hingga Sangat Tinggi, bersumber dari kombinasi skala pemanfaatan air dan tingkat pengenalan publik atas merek Perusahaan, sehingga eksposurnya terletak pada potensi asosiasi dengan isu air di wilayahnya, bukan pada riwayat sengketa. Validasi FGD mengkonfirmasi tidak terdapat konflik pemanfaatan air maupun keluhan signifikan terkait akses air bersih pada kelima entitas.

Water Accessibility and Socioeconomic Factors are classified as High, scoring 3.50 across all entities. This classification reflects basin conditions, namely uneven community access to safe drinking water and sanitation, rather than direct impacts of the Company's operations. Conflict is classified as High to Very High, arising from the combination of water use scale and public recognition of the Company's brand; the exposure therefore lies in potential association with local water issues rather than in any history of disputes. FGD validation confirms that no water use conflicts or significant grievances regarding clean water access have arisen at the five entities.

Skor Kategori Risiko Terkait Pemangku Kepentingan Lokal per Entitas / *Score of Stakeholder-Related Risk Categories by Entity*

Entity	Water Accessibility	Pressures on Freshwater*	Environmental Factors*	Socioeconomic Factors	Conflict (Operasional)
PIM	3,50	2,64 – 3,32	2,75 – 3,00	3,50	4,20
PSP	3,50	3,29	1,75	3,50	4,20
PKG	3,50	4,04 – 4,33	1,75 – 2,00	3,50	3,00
PKT	3,50	3,25	3,25	3,50	4,00
PKC	3,50	4,11 – 4,15	2,00 – 2,25	3,50	4,20

*Skala penilaian 1,00–5,00; rentang skor mencerminkan perbedaan antara titik intake dan area pabrik.

**Scoring scale 1.00–5.00; ranges reflect intake and plant area differences.*

Penilaian Risiko Dampak Air Terhadap Masyarakat Sekitar (3/3)

Assessment of Impacts on Local Stakeholders

Respons terhadap Kelompok Terdampak

Response to Affected Groups

Hasil penilaian diterjemahkan menjadi program yang menasar langsung kelompok terdampak, antara lain pengolahan ulang air backwash unit pengolahan air yang didistribusikan kepada fasilitas umum dan permukiman (PIM: realisasi 58.430 m³ pada 2024), pemanfaatan overflow titik pengambilan air baku untuk irigasi lahan sawah, penyediaan sarana air bersih dan sanitasi bagi masyarakat yang belum terjangkau jaringan perpipaan, serta pelibatan kelompok nelayan sebagai mitra program konservasi laut dan pelaksana pemantauan kualitas perairan.

Assessment results are translated into programs directly targeting affected groups, including reuse of treated backwash water distributed to public facilities and settlements (PIM: 58,430 m³ realised in 2024), use of raw water intake overflow for paddy field irrigation, provision of clean water and sanitation facilities for communities not yet served by piped networks, and engagement of fisher groups as partners in marine conservation and as implementers of water quality monitoring.

Pemantauan Dampak dan Penguatan Lanjutan

Impact Monitoring and Further Strengthening

Pemantauan dijalankan melalui mekanisme pengaduan masyarakat yang aktif, survei kepuasan lingkungan berkala dengan capaian 92,12% pada 2024, pemetaan kelompok rentan di sekitar titik pengambilan air, penetapan indikator dampak program yang terukur, serta penyusunan impact report atas program TJSL berbasis air. Perusahaan menilai penguatan lanjutan diperlukan pada keterlibatan formal dalam tata kelola tingkat basin melalui kemitraan water stewardship bersama Balai Besar Wilayah Sungai, pemerintah daerah, perguruan tinggi, dan komunitas pengelola DAS.

Monitoring is carried out through an active community grievance mechanism, periodic environmental satisfaction surveys achieving 92.12% in 2024, mapping of vulnerable groups around water intake points, measurable program impact indicators, and the preparation of impact reports on water-related CSR programs. The Company considers further strengthening necessary in formal engagement at basin governance level through water stewardship partnerships with River Basin Authorities, local governments, universities, and watershed management communities.

Kesimpulan / Conclusion

1. Risiko fisik air pada PI Group terutama berkaitan dengan tingginya ketergantungan operasional terhadap kontinuitas pasokan air, bukan karena kelangkaan air pada seluruh wilayah operasi.

Physical water risk across PI Group is primarily driven by operational dependency on continuous water supply rather than widespread water scarcity across all operating areas.

2. Risiko regulasi cenderung bersifat sistemik pada tingkat basin, sementara rekam jejak kepatuhan entitas relatif konsisten. Oleh karena itu, pengelolaan risiko regulasi lebih tepat diperkuat melalui koordinasi di tingkat grup.

Regulatory risk is generally systemic at the basin level, while the entities maintain relatively consistent compliance records. Regulatory risk management should therefore be strengthened through group-level coordination.

3. Risiko reputasi umumnya berada pada kategori Tinggi hingga Sangat Tinggi, namun hasil FGD tidak menunjukkan adanya konflik pemanfaatan air yang aktual. Penguatan komunikasi, transparansi, dan keterlibatan pemangku kepentingan tetap menjadi prioritas.

Reputational risk is generally classified as High to Very High; however, FGD results indicate no actual conflicts related to water use. Continued focus on communication, transparency, and stakeholder engagement remains important.

4. Analisis WRI Aqueduct menunjukkan tekanan air yang lebih tinggi terutama pada PKC dan Intake IPA Babat PKG. Prioritas pengelolaan ke depan perlu mempertimbangkan kondisi spesifik setiap sumber air, kontinuitas pasokan, dan penguatan alternatif sumber air.

WRI Aqueduct analysis identifies relatively higher water pressure particularly at PKC and PKG's IPA Babat Intake. Future water management should prioritize source-specific conditions, supply continuity, and alternative water sources.



TERIMA KASIH

THANK YOU

