Clean Water and The Business and Human Rights Agenda: A Case Study of the Citarum River
Clean Water and The Business and Human Rights Agenda: A Case Study of the Citarum River
Access to Clean Water and the Business and Human Rights Agenda: A Case Study of the Citarum River is a report written by Mohamad Mova Al’Afghani and Sean Lees and supported by the United Nations Development Programme (UNDP) and the European Union (EU). The findings are based on an extensive literature review and an expert interview programme conducted by the research team between September 2022 and April 2024.

Access to safe and clean drinking water is recognized as both a human right and essential for the fulfilment of other rights, including the right to life, food, work and livelihoods. Still, approximately 844 million people worldwide live without access to clean water, 110 million in Southeast Asia alone. This report, “Clean Water and the Business and Human Rights Agenda: A Case Study of the Citarum River Basin in Indonesia”, provides an overview of the impact of water pollution in Asia on human rights, with a particular focus on the Citarum River. It is accompanied by “Human Rights and Environmental Due Diligence in Asia: A Clean Water Self-Assessment”, which outlines how a business enterprise might mitigate water pollution through a framework provided by the United Nations Guiding Principles on Business and Human Rights (UNGPs).

To this end, the due diligence guidance provided by the UNGPs has been extended to provide for human-rights-related environmental harms leading to the use of a new term, “human rights and environmental due diligence (HREDD)”. Although the idea is still in its infancy, this report leverages this term to reinforce the place of a clean, healthy and sustainable environment in ensuring human dignity.

The authors of this report believe that sustainable cleanup on the Citarum, and of water sources everywhere, will be more likely where wider recognition of the right to safe and clean water intersects with the emerging interest in HREDD in Asia.

Copyedited by Richard Pierce.
Design and layout by Lathifa Dinar.

Expert insights

Appreciation is extended to the following external experts and stakeholders (in alphabetical order by surname) for their time and insights:

- Nadia Astriani, lecturer, Faculty of Law, Universitas Padjajaran
- Ahmad Ashov Birry, program director, Trend Asia
- Rio Deswandi, national technical adviser, United Nations Industrial Development Organization
- Fajri Fadhillah, researcher, Indonesian Center for Environmental Law
- Sandhi Firmansyah, Secretariat of Citarum Harum Task Force
- Nani Hendiarti, deputy of environment and forestry coordination, Indonesian Coordinating Ministry of Maritime Affairs and Investment
- Endang Lukitaningsih, lecturer, Faculty of Pharmacy, Universitas Gadjah Mada
- Anindrya Nastiti, lecturer, Faculty of Civil and Environmental Engineering, Institut Teknologi Bandung
- Muhammad Saleh Nugrahadi, assistant deputy of environment and forestry coordination, Indonesian Coordinating Ministry of Maritime Affairs and Investment
- Devita Safitri Nur Akbar, policy analyst, Indonesian Coordinating Ministry of Maritime Affairs and Investment
- Dyah Paramita, researcher, Center for Regulation, Policy, and Governance
- Tio Septiono, researcher, Grid-Arendal
- Maj Gen (Ret) Dedi Kusnadi Thamim, executive chairman, Citarum Harum Task Force

Thanks are also due to the following UNDP colleagues and experts:

- Sagita Adesywi, business and human rights specialist, UNDP Indonesia
- Anderson Alves, technical specialist, UNDP Asia Pacific
- Apama Basnyat, program adviser - rule of law, security and human rights, UNDP Asia Pacific
- Belinda Hlatshwayo, project monitoring and evaluation officer, UNDP Asia Pacific
- Sofiane Mahjoub, regional technical advisor, water and oceans, UNDP Asia Pacific
- Jiahuan Yuan, business and human rights knowledge management and communication officer, UNDP Asia Pacific

While every effort has been taken to verify the accuracy of this information, authors cannot accept any responsibility or liability for reliance by any person on this report or any of the information, opinions or conclusions set out in this report. The findings and views expressed in the report do not necessarily reflect the views of the sponsor.

Asia has long been synonymous with economic dynamism, where decades of rapid economic growth, unleashed by private and public capital, have driven innovation, raised incomes and reduced poverty. However, the pace of economic growth have not come without significant trade-offs. In some countries, unfettered growth has resulted in large-scale environmental degradation with long-term consequences for public health, food security and livelihoods. Alarm is now growing over the adverse impacts that Asia’s industries are having on safe and clean water.

Access to safe and clean drinking water, hereinafter “right to water”, is recognized as both a human right and essential for the fulfilment of other rights, including the right to life, food, work and livelihoods. Still, approximately 844 million people worldwide live without access to clean water, 110 million in Southeast Asia alone. This Asia in Focus report, “Clean Water and the Business and Human Rights Agenda: A Case Study of the Citarum River”, provides an overview of the impact of water pollution in Asia on human rights, with a particular focus on the Citarum River. It is accompanied by “Human Rights and Environmental Due Diligence in Asia: A Clean Water Self-Assessment”, which outlines how a business enterprise might mitigate water pollution through a framework provided by the United Nations Guiding Principles on Business and Human Rights (UNGPs).

The Citarum River, in West Java province, Indonesia, provides a unique case study to understand the scale of the risk that water pollution poses to human rights. Two-hundred-and-seventy kilometres long, the Citarum supplies 80 percent of the water needs of Jakarta, home to 11 million. Yet it is also one of the most polluted rivers in the world and approximately 340,000 tonnes of untreated fluid waste might be dumped into the river every day. Some business leaders and policy-makers in Indonesia have now recognized that the risks posed by this are unsustainable and that collaboration on cleanup among industry, civil society and government is growing more necessary.

Despite progress made by the Government of Indonesia, businesses can do more to clean up the Citarum River, and to meet international standards.

In 2018, the Government thus developed an extensive cleanup plan for the Citarum with Presidential Regulation No. 15/2018, entitled the “Acceleration of Pollution and Damage Control on the Citarum Watershed”. The effort was notable for several reasons, such as inclusion of non-traditional partners like the Indonesian military. There has been progress.

Still, observers note that pollution in any given body of water can fluctuate substantially over time and if regulations are not adequately and evenly enforced, or if there is a lack of public commitment to sustainable practices, pollution levels may rise after initial improvements.

To maintain continued progress on clean water in Indonesia, businesses must thus ensure that their operations and those of their partners are in compliance with Indonesian environmental regulations, while also conducting human rights due diligence (HRDD) as proposed by the UNGPs.

The UNGPs are widely regarded as one of the world’s most authoritative, normative frameworks guiding responsible business practices. Under a three-pillar framework, they provide for shared but different responsibilities for both a government to protect, and for business to respect, human rights. Under Pillar 2, businesses are encouraged to conduct HRDD, which requires them to identify the human rights risks that their operations may pose, to mitigate those risks through action, to track their efforts and to communicate their findings to the public.

The UNGPs were not written to specifically address pollution-related risks, but to provide instead a framework to address a broad set of business-related human rights risks. These risks can include those that undermine the right to clean and safe drinking water, to life, to food, to livelihoods and also to the right to a clean, healthy and sustainable environment. To this end, the due diligence guidance provided by the UNGPs has been extended to provide for human- rights-related environmental harms leading to the use of a new term, “human rights and environmental due diligence (HRRED)”. Although the idea is still in its infancy, this report leverages this term to reinforce the place of a clean, healthy and sustainable environment in ensuring human dignity.

The authors of this report believe that sustainable cleanup on the Citarum, and of water sources everywhere, will be more likely where wider recognition of the right to safe and clean water intersects with the emerging interest in HRRED in Asia.
Introduction and background
The challenge of water pollution appears in every region of the world and in all development settings. The United Nations Special Rapporteur on the Right to Safe Drinking Water and Sanitation has reported crises involving contamination due to fracking in the United States, lead poisoning from to mining in Thailand, and cancer and other diseases allegedly due to the chemical industry in Slovenia, for example.6 Tragically, 2 billion people lack access to safely managed drinking water and 3.6 billion lack access to safely managed sanitation.7

Although there is still no agreed international definition of “safe and clean water”, the World Health Organization (WHO) finds that, at minimum safe water “does not represent any significant risk to health over a lifetime of consumption” and is “free of microbial pathogens, chemicals and radiological substances”.8 Unfortunately, many sources of freshwater in Asia fall short of this standard due to under-developed wastewater treatment systems, inadequate enforcement of existing water safety regulations and insufficient numbers of water safety inspectors, among other reasons.

A human rights declaration by the Association of Southeast Asian Nations (ASEAN) further holds that “every person has the right to an adequate standard of living for himself or herself and his or her family including. . . the right to safe drinking water and sanitation and the right to a safe, clean and sustainable environment”. Two countries in Southeast Asia have further codified the right to water in law: Cambodia has recognized the right to water in its water resources law of 2007 and Indonesia has codified this its 2019 “Water Law”.9

These national laws and regional instruments align with emerging norms at international levels too. In 2010, the United Nations General Assembly (UNGA) recognized the right to safe and clean drinking water and sanitation. Its Resolution 64/292 states that “the right to safe and clean drinking water and sanitation is a human right that is essential for the full enjoyment of life and all human rights”. The right to safe and clean water is also recognized in the International Covenant on Economic, Social and Cultural Rights (ICESCR), a human rights treaty ratified by 161 countries. Article 11(1) of the ICESCR states that “everyone has the right to an adequate standard of living for himself and his family, including adequate food, clothing and housing, and to the continuous improvement of living conditions”. The UNGA’s Committee on Economic, Social and Cultural Rights, which monitors implementation of the ICESCR, has interpreted this right to include the right to safe and clean water. On 26 July 2022, the right to safe and clean water was strengthened further still when the UNGA recognized the right to a clean, healthy and sustainable environment (hereinafter “right to a healthy environment”).10

This report provides an overview of the challenge of water pollution in Indonesia and offers direction on how businesses can assess and address adverse impacts on the community through the due diligence process outlined by the UNGPs. It is based on both a desk review of literature and on observations gathered from a series of focus group discussions with experts from Indonesian civil society, academia and government. Discussions were also held with businesses and with communities impacted.

Complementing this report, Human Rights and Environmental Due Diligence in Asia: A Clean Water Self-Assessment (hereinafter “self-assessment”), serves as a tool to assist business in conducting HREDD focused on water pollution risks. Taken together, this report and self-assessment provide a simplified and accessible means for businesses seeking to prevent and remedy adverse impacts of their operations on the right to safe and clean drinking water.

The term “safe and clean water” used in this report is meant to cover water for drinking and sanitation as emphasized in UNGA Resolution A/RES/64/292. It is also intended to be synonymous with a “clean”, healthy and sustainable environment – including water ecosystems – as emphasized by UNGA Resolution A/RES/76/300 on the human right to a clean, healthy and sustainable environment.11 As this report will demonstrate, the two rights are highly interrelated; fulfilment of a right to water and sanitation is highly dependent upon a healthy environment. In addition, water pollution can undermine the fulfilment of other human rights, including right to life, right to food, right to livelihoods, exercise of cultural rights and non-discrimination.

---

7 The human right to a clean, healthy and sustainable environment: a catalyst for accelerated action to achieve the Sustainable Development Goals, Report of the Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment, David R. Boyd, A/77/284.
9 Undang-Undang Republik Indonesia Nomor 17 Tahun 2019 Tentang Sumber Daya Air.
10 The human right to a clean, healthy and sustainable environment, UN General Assembly, 26 July 2022, A/76/L.75
11 A note on terminology: The UNGA A/RES/64/292 and General Comment 15 (E/C.12/2002/11) on the right to water lay emphasis on water and sanitation for daily human needs. The “core obligation” on the General Comment 15 is for states to guarantee access to the minimum essential amount of water or personal and domestic uses to prevent disease. This could be attained, for example, by developing water and sanitation infrastructure. On the other hand, the emphasis of UNGA Resolution 76/300 is on the protection of the environment, including ecosystems and the full enjoyment of all human rights. The terms “right to clean and safe water” seeks to denote those two meanings, i.e that human is entitled to both “safe” water (free from biological, radioactive and chemical contaminants for drinking and sanitation) and to a clean water ecosystem – which is broader than drinking and sanitation as it encompasses ecosystem health, sustainability and biodiversity.
The Citarum River

The Citarum River runs through several regions of Java, Indonesia’s largest and most populous island. Starting from Mount Wayang in Western Java, it flows over 290 kilometres before entering the Java Sea in the north. There are three major dams — the Saguling, Cirata and Jatiluhur—which can hold substantial amounts of water for irrigation, especially for the north coast of Java, which is known as one of Indonesia’s “rice estates”. The Citarum also delivers water for hydroelectric plants that provide electricity to the islands of Java and Bali.

The Citarum River supplies nearly 80 percent of Jakarta’s drinking water supply, a city of 11 million.

Just as importantly, the Citarum supplies nearly 80 percent of Jakarta’s drinking water. Given this, the health and safety of the water provided by this important river is of critical importance to Indonesia’s food security, livelihoods, public health and other sustainable development imperatives. Yet the Citarum has also had high levels of toxicity for years, putting human health, nature and ecosystems at grave risk.

A “river basin” is an area of land drained by a river and its tributaries. This means that in addition to one major river, the area also consists of many smaller rivers. A river basin can also be connected with groundwater basins. This implies that pollution occurring in one area of the basin can affect water quality elsewhere in the basin area or groundwater sources connected to it.

There are many different kinds of business enterprises operating in the Citarum basin, providing employment for thousands of people and critical revenues for the state. And many of these enterprises are taking a steep toll on public health, food safety, critical ecosystem services and biodiversity. According to one study, nearly 1,900 of the 3,000 businesses operating on or near the river are regularly dumping untreated or under-treated waste into the water. Another study found that only 10 percent of enterprises along the Citarum were equipped with wastewater treatment facilities, and the river has been found to have lead counts of over 1,000 times the safe limit for human consumption.

In 2018, the President of Indonesia, Joko Widodo, created a taskforce to control pollution on the Citarum through a national programme, Citarum Harum, led by the Coordinating Minister of Maritime Affairs and Investment. The taskforce was made up of members from the military, law enforcement and the civil service. The West Java Governor was appointed as the “Commander” of the taskforce and the chiefs of

---

13 According to the West Java environmental agency, there are around 2,347 industries currently under supervision. ‘Indeks Kualitas Air Citarum Lampau Target - Umum’ <https://citarumharum.jabarprov.go.id/indeks-kualitas-air-citarum-lampau-target/> 16 January 2023.
There are many different kinds of business enterprises operating in the Citarum basin, providing employment for thousands of people and critical revenues for the state. And many of these enterprises are taking a steep toll on public health, food safety, critical ecosystem services and biodiversity. According to one study, nearly 1,900 of the 3,000 businesses operating on or near the river are regularly dumping untreated or under-treated waste into the water. Another study found that only 10 percent of enterprises along the Citarum were equipped with wastewater treatment facilities, and the river has been found to have lead counts of over 1,000 times the safe limit for human consumption.

There are also unsafe levels of aluminium, manganese and iron in the water, and large amounts of pharmaceutical residues have also been identified, including paracetamol, nicotine and metformin. The scale of the pollution has in fact been intense enough that in 2013, researchers and the media dubbed the river one of the most polluted in the world. Government was then compelled to take action.

In 2018, the President of Indonesia, Joko Widodo, created a taskforce to control pollution on the Citarum through a national programme, Citarum Harum, led by the Coordinating Minister of Maritime Affairs and Investment. The taskforce was made up of members from the military, law enforcement and the civil service. The West Java Governor was appointed as the “Commander” of the taskforce and the chiefs of the Jakarta and West Java military commands as well as the chiefs of the Jakarta and West Java regional polices were appointed as vice-commanders. By some accounts, the taskforce took punitive measures against offending industries, including by closing off factory wastewater discharge pipes. Reportedly, by late 2022, the taskforce had surveyed 1,235 enterprises and served 81 of these with notices of criminal or civil liability, while levelling administrative sanctions against 110 of them.

Complementing these efforts, the Ministry of the Environment and the West Java provincial government introduced a voluntary environmental compliance programme known as the Program for Pollution Control, Evaluation, and Rating (PROPER). In 2015, the regional version of this program, “Properda” is also exercised by the Bandung Provincial Government.

The program involves assessing and rating the environmental performance of companies based on criteria such as environmental documents, water pollution control, air pollution control, and hazardous waste management. The goals are to increase stakeholder commitment to environmental conservation, raise awareness among businesses to comply with environmental laws, improve sustainable environmental management, enhance public participation in environmental law enforcement, and promote sustainable development. About 870 businesses have also now registered with this program, maintained by the national government and West Java provincial government. These and other enforcement initiatives, and public education programmes, have led to measurable improvement in water quality in the Citarum.

<table>
<thead>
<tr>
<th>Quality23</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2016</td>
</tr>
<tr>
<td>Good (Class II)</td>
<td>2.9</td>
</tr>
<tr>
<td>Light pollution</td>
<td>20.0</td>
</tr>
<tr>
<td>Medium pollution</td>
<td>25.7</td>
</tr>
<tr>
<td>Heavy pollution</td>
<td>51.4</td>
</tr>
</tbody>
</table>

Table 1: Development of Citarum River water quality, Purwandari, 2020

18 Peraturan Presiden Nomor 15 Tahun 2018 Tentang Percepatan Pengendalian Pencemaran Dan Kerusakan Daerah Aliran Sungai Citarum.
20 Mohammad Mona AlAfghani, ‘Notulen Diskusi Pakar (Virtual), Environmental and Human Rights Due Dilligence Dengan Fokus Pada Polusi Air Akibat Kegiatan Industri, November, 2022’.
21 In 2020, the task force found that more than half of 1,344 industries surveyed did not have the required environmental permits.
In 2016, 51 percent of the water bodies in the Citarum basin were heavily polluted, but by 2019 that number was down to 28 percent, while 48 percent were only “lightly polluted”. Research in 2022 then revealed that the river was carrying up to 1 tonne of debris into the sea each day (85% of which are plastic materials), while another 19 tonnes of all kinds of debris per day were held back by the Saguling, Cirata and Jatiluhur dams.

The Ministry of Environment and Forestry’s water quality online monitoring system is publicly accessible in https://ppkl.menlhk.go.id/onlimo-2022/


Robby Irfany Maqoma, ‘Pembersihan Citarum Sudah Habis-Habisan, Tapi Mengapa Sungainya Masih Kotor?’ (The Conversation, 17 February 2022) <http://theconversation.com/pembersihan-citarum-sudah-habis-habisan-tapi-mengapa-sungainya-masih-kotor-177367> accessed 28 May 2023. It is possible that the retaining of debris by the dam will cause the contamination of fish and other aquatic animals and ultimately find its pathway to human.

The fast-moving consumer goods industry is characterized by high-volume sales, quick inventory turnover, and various products catering to consumer needs. These goods include essential everyday items such as food and beverages, toiletries, cleaning supplies, and other low-cost household items.

Water pollution risks

As noted earlier, this report focuses on the risk that water pollution poses to human rights in the context of business activities, thus household-level water pollution related to Water, Sanitation and Hygiene (WASH) are excluded here. It also does not focus on plastic waste, or the impact of downstream impacts from consumer products, such as disposable water bottles. Instead, the risk profile below and supporting document, HREDD in Asia: A Clean Water Self-Assessment, are focused on effluents common to textile and pharmaceutical manufacturing. These industries have a significant environmental footprint in the Citarum basin.

Like any large river, the Citarum is subject to pollution from a multitude of sources, industrial effluent, domestic wastewater, agricultural run-off and solid waste including plastics. Industrial effluents include discharge from manufacturing, extractive industries, farming and agriculture, among others. Industrial effluents can also be pesticides, fertilizers, hydrocarbons, phenols, plasticizers, biphenyls, detergents, oils, greases and pharmaceuticals. As noted above, this report is primarily focused on effluents. Depending on location, the river may also contain pollution in higher concentrations of some substances over others, posing different kinds of risks to human health, natural habitats and biodiversity.

Textile and pharmaceutical industry contributions to water pollution

Indonesia is the world’s tenth largest textile producer, with a large concentration of manufacturers near or on the Citarum. Increases are likely too as the government aims to make Indonesia one of the top five textile
Textiles can contaminate the environment throughout their lifecycle, from the production process, product use and care (washing) to disposal and landfill. Used clothing that ends up in traditional landfills contains microfibers that contaminate ground and surface water and which are later ingested by aquatic animals, mammals and humans.

Chromium 6, a heavy metal commonly used in the manufacture of textiles, has been found in the Citarum at levels far exceeding regulatory limits.\(^{30,31}\) It has been found to increase the risk of cancer and tumours. Researchers have also found heavy metals in sediments of the Citarum estuary, and in the water found in wells near the river. Heavy metals are ingested by microorganisms and carried up the food chain.\(^{32}\) They may also delay skeletal development in children.\(^{33}\)

Other heavy metals like copper, zinc and nickel have also been detected in significant quantities in the river near Bandung, a city hosting 37 textile and 12 metal plating factories.\(^ {34}\) Copper and zinc have also been found in excess of safe limits in the soil of rice fields near Cikijing stream, which flows into the Citarum.\(^ {35}\) High levels of copper can cause gastrointestinal and neurological problems, and acute zinc toxicity can cause kidney failure.

Image 2: Citarum estuary at Muaragembong, Bekasi Regency, West Java. Husna Mubarok, 2016


31 The limit for Chromium VI is 0.05 ppm (Table 1 no. 33, Annex VI -- National Water Quality Standard, Government Regulation 22 Year 2021 regarding the Protection and Management of the Environment). https://peraturan.bpk.go.id/Home/Details/161852/jp-no-22-tahun-2021

32 Cd, Zn and Pb are found in the sediments at moderate levels. The study was conducted in 2018. See Nurul Fahimah and Katharina Oginawati, ‘Fate and Spatial Distribution of Pb, Cd, Cu and Zn in the Water Column and in the Surface Sediment of Indonesian Estuary (Citarum River Estuary)’, E3S Web of Conferences (EDP Sciences 2020).


Polyester, which includes polyethylene terephthalate, or PET, is commonly used in textiles and has been found in significant concentrations in the Citarum. It can degrade into nanoplastic, which is then ingested by catfish and tilapia. These fish are then consumed by people. And Indonesian drinking water utilities still employ conventional water treatment methods, which are not considered effective in reducing the risk of microplastics in humans. Although toxicological data on the effect on humans has been limited, microplastics have been shown to cause inflammation of the liver in laboratory animals. Some studies also reveal that biofilms on microplastic can contribute to antimicrobial resistance in humans. The World Health Organization (WHO) has concluded that more research is needed in order to understand the impacts of microplastics on human health.

Indonesia’s pharmaceutical market is also the largest in Southeast Asia, and in 2020 sales in the country were valued at US$7.6 billion with revenues forecast to expand to US$12 billion by 2025. The impact of this industry on the Citarum has been significant. As recently as 2022, parts of the river were found to contain heavy concentrations of paracetamol, nicotine, metformin and even antibiotics. Researchers also found the river to be polluted with caffeine and lidocaine.

Pharmaceutical discharge may impact human health when fish from the river are consumed. Consumption of antibiotics through food may also trigger antimicrobial resistance, which can lead to death or serious illness due to infection. Antibiotics in rivers can also lead to the development of antibiotic-resistant bacteria. Further, the combination of different pharmaceuticals in the water could be harmful to aquatic organisms, with adverse impacts on ecosystems and biodiversity.

The substances here—paracetamol, nicotine, metformin, antibiotics, caffeine, lidocaine, chromium VI, copper, zinc, nonylphenol, and phthalates—are also not an exhaustive list of the pollutants in the river, and this is not a list of pollutants that every business should look for as they seek to mitigate the human rights risks posed by their operations. Instead, this list demonstrates the potential scope of pollutants from industrial discharge that, left unregulated and untreated, pose salient risks to the right to clean water, the right to health and the right to a clean, healthy and sustainable environment.

The number of risks posed can be overwhelming, especially when an enterprise considers the operational profile of its entire value chain. The UNGPs recognize that business may struggle to address all human risks posed by their operations, including those involving the discharge of effluents. A business must consider which pollutants pose the greatest risks and adverse impacts to the right to safe and clean water.

Table 2 below shows “water source” and “pollutant” in the Citarum. It also links pollutants to the stakeholder group most at risk, as well as the human rights harms and environmental harms to which these groups are exposed. Section III outlines these risks in detail and Section IV elaborates on how these risks can be prevented and mitigated.

![Figure 3: Common microplastics found in wastewater treatment plants. Source: Radityaningrum, 2021](image)

38 ibid.
40 This study is to be treated with caution due limitation on study design P Marsden and others, ‘Microplastics in Drinking Water’ (World Health Organization 2019).
41 ibid.
42 Business Indonesia, <https://business-indonesia.org/pharmaceuticals>
44 The samples were taken from municipal wastewater plant. See Maryani Paramita Astuti and others, ‘Contaminants of Emerging Concerns (CECs) in a Municipal Wastewater Treatment Plant in Indonesia’ (2022) Environmental Science and Pollution Research <https://doi.org/10.1007/s11356-022-23567-8> accessed 30 October 2022.
Table 2: Mapping of human rights risks

<table>
<thead>
<tr>
<th>Water source</th>
<th>Pollutants commonly found</th>
<th>Human rights risks and impacts on rights holders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well water or ground water near the river</td>
<td>Chromium, cadmium</td>
<td>Chrome and cadmium can leach into the soil and pollute groundwater, contaminating this key resource. To avoid contaminants, communities and families may need to drill new, deeper wells. The high cost of this impacts the well-being of households. Contaminated water can impose a greater care-giving burden on women living in rural, more traditional settings, as they travel further for safe water. Contaminated water may also increase the risk of violence on women and girls as they travel these distances, or may lead to an increase in domestic violence.</td>
</tr>
<tr>
<td>Surface water (Citarum water)</td>
<td>Chromium, cadmium, pharmaceuticals, microplastics, organochlorine</td>
<td>These substances can have the same impacts as those above, but can also lead to stunting, autism and lower IQs in children.</td>
</tr>
<tr>
<td>Surface and well water</td>
<td>Phthalates, nonylphenol, mercury, lead, chromium, cadmium, arsenic</td>
<td>These contaminants can increase the risk of cancer and can adversely impact child development. Contaminants in surface and well water can also destroy plant life, including key agricultural products, impacting the right to food especially among subsistence farmers, increasing the cost of food, and can lead to reduced incomes for farmers. Dirty and/or contaminated water should also not be used for ablutions (wudhu) before prayers in the Islamic faith, undercutting the right to religious practice and belief. Potential contamination of wells used for cultural rituals, gatherings and activities can also impact cultural rights. Phthalates can affect how infants develop sexually and can lower women’s desire for sex. Exposure to nonylphenol during pregnancy can lead to infants being born smaller, premature birth or miscarriage.</td>
</tr>
<tr>
<td>Food and agricultural products</td>
<td>Heavy metals, microplastics, antibiotics, and persistent organic pollutants such as endosulfan, lindan, etc.48</td>
<td>Heavy metals can result in higher toxicity in rice, fish and chicken, with impacts on human health as described above. Toxicity found in fish can disturb settled fishing tenures and undercut livelihoods. These substances can also have adverse impacts on plant life, wildlife and biodiversity, with consequences for entire ecosystems.</td>
</tr>
<tr>
<td>Water sources in factories and on plantations</td>
<td>Gases containing hydrogen sulphide, methane, chlorine, etc.</td>
<td>Water used in industrial or agricultural settings can include pollutants and lead to irritation of airways, suffocation and other adverse health and safety impacts in workers.</td>
</tr>
</tbody>
</table>

48 For the distribution or organochlorine in the Saguling Dam (Citarum River), see Katharina Oginawati and others, ‘Distribution of Organochlorine Pesticide Pollution in Water, Sediment, Mollusk, and Fish at Saguling Dam, West Java, Indonesia’ (2022) 38 Toxicological Research 149. Endosulfan with the trademark name Akodan (containing 20% endosulfan) can still be found in small and online stores (see for example ‘Jual Insektisida Bahan Aktif Endosulfan Terbaru - Feb 2024 | Lazada.co.id’ <https://www.lazada.co.id/tag/insektisida-bahan-aktif- endosulfan/> accessed 18 February 2024.). In addition, Lindane, known as Gamexene (trade name), was registered by two companies with the Indonesian authority. They were imported from India. See MM AlAfghani and D Paramita, ‘Regulatory Challenges in the Phasing-Out of Persistent Organic Pollutants in Indonesia’ (2018) 1 International Chemical Regulatory and Law Review 12. There are at least two verdicts of the Indonesian court regarding the case on the distribution of unregistered pesticides containing endosulfan. This includes the Tegal Court Decision No. 24/Pid.Sus/2015/PNTgl and Malang Court verdict No. 505/Pid.Sus./2015/PN.Mlg.
Water pollution and the scale of human rights risks
In Indonesia, 46 percent of the water supply comes directly from groundwater sources while 9 percent comes from rivers and lakes,50 and water utilities supply only 9 percent of domestic demand.51 And even where they operate, many water utilities face limitations. Thus, Indonesia’s population is highly vulnerable to the adverse impacts of water pollution.

**Water stress and pollution**

Understanding water pollution as a business and human rights issue requires an analysis of both the chemical profile of water sources and of amounts of untreated wastewater, as well as levels of water that business abstracts from water sources. Water abstraction often leads to “water stress”, where the demand exceeds the available amount during a certain period or when poor quality restricts its use. Water stress causes deterioration of freshwater quantity and quality and can be exacerbated by competition over water use between industry and households. Water stress has become especially acute in some countries, given the impacts of climate change and increasingly irregular precipitation patterns.

Shortages in water volume in rivers and elsewhere can increase concentration of pollutants in water and can increase the cost of treating water for household use. Businesses must thus ensure that they use water efficiently and that abstraction of water does not deny the local community their right to access water. The human right to water requires that water allocation prioritizes clean water for daily, basic needs.52 Further, certain volumes of clean water must also be left for environmental needs, known as “environmental flow”, in order to sustain aquatic life and biodiversity.53

In 2019, five river basins in Indonesia were experiencing “severe” water stress and nine were experiencing “high” stress. The World Bank predicts that by 2045, 31 out of 128 river basins will experience a water supply-demand deficit where 27 percent of Indonesia’s GDP will be produced in these highly or severely stressed basins (see figure below).54

---

50 Khalil and others (n 49).
51 ibid; RPJMN 2020-2024.
54 Khalil and others (n 49).
denied the right to clean water and one study conducted in 2022 found that almost all of the 1,200 households at Ciwalengke village, Majalaya regency, suffered from skin rashes and nearby wells were found to be contaminated with toxins.

The section that follows provides an overview of the human rights that are adversely impacted by water pollution. It’s not an exhaustive list of the rights that might be implicated and it doesn’t cover all water pollution sources or substances that might lead to human rights abuses. But it does illustrate the scope and potency of water pollution risks common to rivers hosting large manufacturing facilities.

Right to water

As established earlier, industrial effluents in the Citarum can pose significant risks to the right to water and the right to health. UNGA Resolution A/RES/64/292 and ICESCR General Comment 15 on the right to water specify that each person must have sufficient and continuous supply of water for personal and domestic use. Such water must be free from microorganisms, chemical substances and radiological hazards and it must be affordable and physically accessible. As stated above, the human right to water requires also that water allocation priorities clean water for daily basic needs. Similarly, General Comment 14 requires the fulfilment of an adequate supply of safe and potable water as well as access to minimum essential food, which are both nutritionally adequate and safe. Yet under current conditions in the Citarum, entire communities can be prohibited from using the water.

Right to food

Water pollution may also have adverse impacts on the right to food. General Comment 12 on the right to food states that food must both be available and free from adverse substances. "Available" also implies the possibility of either feeding oneself directly from productive land or by obtaining it from the market. The United Nations Special Rapporteur on the Right to Food has raised concerns over land and water pollution caused by business activities notably from mining and palm oil.
Water pollution also decreases aquatic flora and fauna, threatening food safety, and there is evidence that pollution in the Citarum has damaged crops. In 2022, farmers in Padalarang, West Bandung regency, noticed plants decaying, which eventually led to crop failure. The irrigation water had become contaminated with waste that turned the water hazy white. In a 2018 documentary produced by Deutsche Welle, lab testing conducted on paddy plants near one textile factory also revealed chromium and lead at levels many times the international safety standard.

Another study found high levels of mercury in catfish caught at Cilampeni and Cimarangi villages, and in goldfish in Cisanti lake. One news report featured the complaints of fisherman and farmers that fish were dying due to the waste dumped into the Citarum. The report noted that even the common pleco fish (ikan sapu-sapu), a species known to be able to withstand significant levels of pollution, were reportedly dying in large numbers.

The right to equality and non-discrimination

According to the International Covenant on Economic, Social and Cultural Rights, “rights should be enjoyed by everyone without discrimination as to race, religion, sex, language, property, birth or other status”. This is further elaborated by General Comment 15 on the right to water, which also refers to the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) and Conventions on the Rights of the Child.

In Indonesia, the traditional division of labour has women tasked with washing, food preparation and childrearing in addition to bringing in additional income when necessary. In many rural areas women must wash their clothes in the river due to lack of sanitation facilities. Most families usually use water jugs or water from other sources for drinking. However, a 2021 paper showed that women in Sukamaju village also used the river water for washing clothes, bathing and other domestic activities. The report noted that even the common pleco fish (ikan sapu-sapu), a species known to be able to withstand significant levels of pollution, were reportedly dying in large numbers.

The UNGA Resolution on the Right to a Clean, Healthy and Sustainable Environment provides that:

**... the unsustainable management and use of natural resources, the pollution of air, land and water, the unsound management of chemicals and waste, the resulting loss of biodiversity and the decline in services provided by ecosystems interfere with the enjoyment of a clean, healthy and sustainable environment and that environmental damage has negative implications, both direct and indirect, for the effective enjoyment of all human rights.**

With the dramatic decline in several species of fish in the Citarum it’s clear that water pollution violates the right to a clean, healthy and sustainable environment. In 1985 in the upstream of the now-Saguling dam, there were 15 different species of fish in the tributaries of the Citarum. By 2011, in Cisanti and upstream leading to Saguling Dam, only 9 species were found, 5 of which had been introduced to the area.

**Diversity of fish species found in the Citarum is in continuous decline.**

In the upstream Citarum, the “cascade dam” (Saguling, Cirata and Jatiluhur) and downstream Citarum, researchers found that 8 of 34 native species had gone extinct. These species include Lika fish, Arengan, Jambal, Balitra, Keiting, Tilan, Tambakan and Gurame. Increases in pollution have also led to the loss of riparian vegetation, which in turn contributes to the depletion of fish populations.

**The right to equality and sustainable environment**

The right to equality and sustainable environment

The UNGA Resolution on the Right to a Clean, Healthy and Sustainable Environment provides that:

**... the unsustainable management and use of natural resources, the pollution of air, land and water, the unsound management of chemicals and waste, the resulting loss of biodiversity and the decline in services provided by ecosystems interfere with the enjoyment of a clean, healthy and sustainable environment and that environmental damage has negative implications, both direct and indirect, for the effective enjoyment of all human rights.**

With the dramatic decline in several species of fish in the Citarum it’s clear that water pollution violates the right to a clean, healthy and sustainable environment. In 1985 in the upstream of the now-Saguling dam, there were 15 different species of fish in the tributaries of the Citarum. By 2011, in Cisanti and upstream leading to Saguling Dam, only 9 species were found, 5 of which had been introduced to the area.

**Diversity of fish species found in the Citarum is in continuous decline.**

In the upstream Citarum, the “cascade dam” (Saguling, Cirata dan Jatiluhur) and downstream Citarum, researchers found that 8 of 34 native species had gone extinct. These species include Lika fish, Arengan, Jambal, Balitra, Keiting, Tilan, Tambakan and Gurame. Increases in pollution have also led to the loss of riparian vegetation, which in turn contributes to the depletion of fish populations.

**The right to equality and non-discrimination**

According to the International Covenant on Economic, Social and Cultural Rights, “rights should be enjoyed by everyone without discrimination as to race, religion, sex, language, property, birth or other status”. This is further elaborated by General Comment 15 on the right to water, which also refers to the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) and Conventions on the Rights of the Child.

In Indonesia, the traditional division of labour has women tasked with washing, food preparation and childrearing in addition to bringing in additional income when necessary. In many rural areas women must wash their clothes in the river due to lack of sanitation facilities. Most families usually use water jugs or water from other sources for drinking. However, a 2021 paper showed that women in Sukamaju village also used the river water for washing clothes, bathing and other domestic activities. The report noted that even the common pleco fish (ikan sapu-sapu), a species known to be able to withstand significant levels of pollution, were reportedly dying in large numbers.

The UNGA Resolution on the Right to a Clean, Healthy and Sustainable Environment provides that:

**... the unsustainable management and use of natural resources, the pollution of air, land and water, the unsound management of chemicals and waste, the resulting loss of biodiversity and the decline in services provided by ecosystems interfere with the enjoyment of a clean, healthy and sustainable environment and that environmental damage has negative implications, both direct and indirect, for the effective enjoyment of all human rights.**

With the dramatic decline in several species of fish in the Citarum it’s clear that water pollution violates the right to a clean, healthy and sustainable environment. In 1985 in the upstream of the now-Saguling dam, there were 15 different species of fish in the tributaries of the Citarum. By 2011, in Cisanti and upstream leading to Saguling Dam, only 9 species were found, 5 of which had been introduced to the area.
for drinking by placing the water in a bucket for several days until the sediment settled out.71 River water used for bathing also caused skin diseases in children in Sukamaju village, forcing women to pay for transportation to public health centres, as well as for medicine, and necessitating more time lost to care for them.72

Certain chemicals found in the Citarum also specifically affect women’s sexual and reproductive health. Research in 2020 revealed that water insecurity is associated with a greater risk of intimate partner violence (IPV) against women too.73

As noted earlier, phthalates can decrease sexual interest in pre-menopausal women74 and nonylphenol can lead to decreased foetal body length at birth, low maternal weight gain, implantation failure or pregnancy loss.75

For men there are risks too. High concentration of nonylphenol can decrease testosterone76 and exposure to phthalates may also lower testosterone, while exposure in the womb may decrease penis size in male infants.77 For adult men and especially children, prolonged exposure to mercury can also cause neurological, renal, cardiovascular and immunological problems. Pregnant women exposed to mercury are also at risk of passing on health issues to their unborn babies, leading to potential neuro-developmental problems.78

Right to education and the rights of the child

The Convention on the Rights of the Child (CRC) requires states to guarantee children the highest attainable standards of health and to facilitate treatment of illnesses in children. It also obliges states to combat disease and malnutrition in children, provide adequate nutrition and food, provide clean drinking water and take into consideration the dangers and risks of pollution.79 Yet water pollution from industry impedes the state’s ability to fulfil these obligations.

In the 2018 Deutsch Welle documentary mentioned earlier, hair samples taken from 45 children living near textile factories in the Citarum contained more than 54 different pollutants out of the 140 being tested for.80 The documentary crew found also that excessive rashes were common. In 2012, one study had also examined the prevalence of stunting and autism in the Citarum watershed as well, finding stunting in nearly 54 percent of those surveyed and autism risk at 68 percent.81 The exact cause of these findings was not determined, however the authors suggested that it could have been due to the consumption of chicken and fish bought from farms along the riverbanks.

Image 3: Women in Majalaya village wash clothes in a tributary of the Citarum. Source: Darren Whiteside/Reuters, republished by Republika

Image 4: Women in Majalaya village wash clothes in the Cikaro River, a tributary of the Citarum. Source: Detik.com

---

72 ibid.
74 Shanna H Swan and others, ‘Decrease in Anogenital Distance among Male Infants with Prenatal Phthalate Exposure’ (2005) 113 Environmental Health Perspectives 1056;
76 Knez J, ‘Endocrine-Disrupting Chemicals and Male Reproductive Health’ (2013) 26 Reproductive BioMedicine Online 440
77 Bustamante-Montes LP and others, ‘Prenatal Exposure to Phthalates Is Associated with Decreased Anogenital Distance and Penile Size in Male Newborns’ (2013) 4 Journal of Developmental Origins of Health and Disease 300
80 The World’s Most Polluted River | DW Documentary (n 17).
81 Sheila Rachmayanti, ‘The Preliminary Study: Profile of Food and Environmental Factors towards Stunting and Risk of Autism among Children on Citarum Watershed’ 37 BKM Public Health and Community Medicine. The study was conducted in the Gajahmokar and Andir villages at the Citarum riverbank, Bandung Regency.
The right to take part in cultural life

Water and water bodies are an inseparable part of many cultures, including for religious practices. Water bodies or water sources can be considered “holy”, such as the Ganges in India and the Zamzam Well at Mecca. And Article 15(a) of the International Convention on Economic, Social and Cultural Rights (ICESCR) guarantees the right to take part in cultural life, including the ability to access and enjoy cultural heritage. General Comment 15 of the ICESCR goes on to acknowledge the role of water in enjoying certain cultural practices as well, noting that “…water should be treated as social and cultural goods and not primarily as an economic good”.

Water pollution has thus put pressure on cultural norms, cultural rights and religious practices along the Citarum. The water often smells or tastes foul, or has a foul colour, rendering it unfit for religious ablutions before prayer. Before the 1970s, villagers at Kampung Mahmud still used the river water for ablutions but today they take it only from wells. In other religious ceremonies, in Kampung Mahmud, water is used for the washing of sacred weapons and farming tools, for “7 bulanan”, or the “gathering on the 7th month of pregnancy”, for ceremonies related to burial and mourning and for commencement and finishing of home building. These ceremonies can no longer be performed using the river water, and rely on well water. Yet digging of wells was also forbidden by local custom in Kampung Mahmud until recently, and with government encouragement and the need to access clean water, that injunction has lost its primacy. Kampung Mahmud residents have since reported that they started digging wells in the 1990s, though not without conducting rituals and prayers to their ancestors to seek permission for circumventing traditional law and custom.

87 Hadith from Ibn Majah, narrated from Abu Umamah Al Balhi Radiallahu ‘anhu. Some Islamic sects contested this hadith. Nevertheless, it a consensus of Islamic scholars (ijma’) that when the water change color, taste or odor, it is no longer fit for ablution.
88 FJS Wijsen and Haryani Saptaningtyas, ‘Pollution of Citarum River and Purification in Islamic Thought’, Teologi yang membebaskan dan membebaskan teologi (Fakultas Teologi Universitas Kristen Duta Wacana 2016). The author notes that there are people which considered the Citarum river water is still permitted for conducting ablution since it is considered a “running water” – which, according to some interpretation is still allowed to perform ablution. Nevertheless, most people felt doubtful and thus prefer to use water from wells.
91 Wijsen (n 92); Suciati (n 93). Wijsen note that the villagers have to ask “permission” from their grandparents by praying in their graves.
Water pollution and the United Nations Guiding Principles (UNGPs) on Business and Human Rights
As noted earlier, water pollution can have adverse impacts on human rights including: the right to safe and clean water; the right to health; the right to food; the right to education; the right to equality and non-discrimination; the rights of the child; the exercise of cultural rights; and the right to a clean, healthy and sustainable environment. Business enterprises can mitigate the risk that their operations pose to these rights by following the foundational and operational principles outlined in the UNGPs on Business and Human Rights.

Endorsed by the United Nations Human Rights Council in 2011, the UNGPs are widely considered one of the world’s most authoritative, normative frameworks guiding responsible business practice today.\(^{94}\) They consist of three pillars:

1. the state’s duty to protect human rights;
2. the corporate role in respecting human rights; and
3. the obligation of both the state and business to provide access to remedy.

The UNGPs provide that, to demonstrate respect for human rights, enterprises should prevent and address adverse human rights impacts stemming from their operations and from those of their supply chain partners.

### Human rights policy

A policy commitment is a critical component for a business to demonstrate respect for human rights. A human rights policy serves as the basis for embedding related processes and policies across a business’s operations and value chains.\(^{95}\) Under principles 15 and 16, the UNGPs provide that a human rights policy should set expectations for personnel, business partners, consumers and local communities, as well as for other parties linked to the company’s operations. The policy must (1) be approved by the most senior officers of the business, (2) be informed by relevant internal and/or external expertise, (3) be made publicly available and (4) be communicated to all relevant parties.\(^{96}\)

**UNGPs Principle 15:** “In order to meet their responsibility to respect human rights, business enterprises should have in place policies and processes appropriate to their size and circumstances, including: (a) a policy commitment to meet their responsibility to respect human rights...”

Specifically, they provide under Pillar 2 that businesses should:

1. develop a policy on respecting human rights;
2. carry out human rights due diligence (HRDD); and
3. provide for remedy when their operations have in fact had adverse impacts on human rights.

The UNGPs do not make reference to specific environmental issues like water pollution, climate change or biodiversity loss. Instead they state that businesses should consider the impacts of their operations on all human rights. This of course implies that relevant businesses should address risks that they may pose to the enjoyment of a clean, healthy and sustainable environment, including any impacts on the right to safe and clean drinking water. The entirety of the UNGPs is thus applicable to the issue of water pollution, with varying degrees of relevance.

The sections below explore applications of pillars 2 and 3, and to demonstrate respect for the right to clean and safe drinking water, businesses should develop a public policy commitment, which will also be explored below.

---


monitoring and reporting on water quality. It might also point to other policies and procedures that the enterprise maintains to prevent or mitigate the risks related to water pollution. Efforts to improve water use efficiency should also be covered and the policy should clearly outline how the enterprise will address human rights risks and what remedy will be made available to those who experience adverse impacts of water pollution.

In drafting this human rights policy, an enterprise should consider engaging all stakeholders, including affected communities, to ensure that their concerns are taken into account. Consultations with stakeholders can build trust and confidence in the business and can lead to regular information sharing, important to tracking performance of the company's water treatment facilities. An enterprise should also provide opportunities for stakeholders to participate in human rights and environmental due diligence efforts (explained in more detail below).

Publication and dissemination will also reinforce the enterprise's commitment to human rights and will allow stakeholders to hold the enterprise accountable for upholding these rights. Any policy must be communicated to the public in accessible language as well.

Human Rights and Environmental Due Diligence (HREDD)

Principles 17 to 21 of the UNGPs provide that business should conduct human rights due diligence in order to understand the risks ‘...that the business enterprise may cause or contribute to through its own activities, or which may be directly linked to its operations, products or services by its business relationships...’

The scope of due diligence practice is admittedly broad, and depth of sophistication will vary based on the size, nature and context of the enterprise in question. Furthermore, the scope of due diligence undertaken should cover business operations and/or services, as well as products, including those in a business's supply chain. The remaining sections of this report will further expand the use of human rights due diligence to signal the novelty and importance of applying HRDD to the environment. From this point forward, then, the term “human rights and environmental due diligence (HREDD)”, is employed.

To better understand how business enterprises can identify the risks they pose to human rights and the measures they can take to mitigate those risks, please see the tool accompanying this report, “HREDD in Asia: A Clean Water Self-Assessment”. Below is a summary of the four-step HREDD process with references to water pollution to illustrate relevance.

As noted in the UNGPs, HREDD requires:
(1) identify and assess actual and potential human rights impacts;
(2) integrate findings from impact assessments and take action;
(3) track effectiveness of responses; and
(4) communicate with the public on how human rights impacts are addressed.

1. Identify and assess actual or potential human rights and environmental impacts

A business enterprise should identify and assess its actual and potential human rights and environmental impacts associated with its operations, products and services. This would require that the enterprise map out its operational profile and that of its supply chain. Stakeholder engagement is also key, especially with affected communities. In the context of water pollution, enterprises should conduct an assessment of how their operations, products and packaging waste may pollute water sources, with human rights risks front and centre.

The first area of enquiry would involve assessment of the volume of water that an enterprise abstracts from local water resources. It should review its abstraction and use of water, and consider any potential risks associated with these activities. The enterprise should also consider the environmental flow, with adverse impacts on ecosystems. It should analyze impacts during periods of significant water stress, for example, during drought or dry season.

A second step would be to conduct a water tenure analysis to ensure that operations do not impede other stakeholders’ entitlement to water resources. These resources are not tied to administrative boundaries and water rights can involve longstanding traditional laws and cultural norms. Here an enterprise may need to look at water entitlements beyond the written law. Water tenure analysis can be employed to identify stakeholders and water use within a catchment or in the enterprise’s surrounding area.

The Food and Agriculture Organization (FAO) defines “water tenure” as “...the relationship, whether legally or customarily defined, between people, as individuals or groups, with respect to water resources...”

87 See Ruggie.
90 Ibid. For water tenure in Indonesia see Mohammad Mova AlAfghani, ‘Scoping Study on Water Tenure in Indonesia’ (FAO 2022).
A business should then conduct an assessment of the chemical composition of its industrial effluents and should also review any environmental impact assessments (EIAs), as well as determine whether the chemicals that it uses pose environmental and health risks according to the European Chemicals Agency (ECHA) database.\textsuperscript{101} They should then confirm that they do not use any persistent organic pollutants (POPs) throughout their value chain, unless otherwise permitted by the Stockholm Convention. They should also, of course, refrain from using substances proposed as POPs.\textsuperscript{102} If POPs are used, they must disclose how, and whether, they end up in products, packaging or effluent. Following this, a business should assess the adequacy of its wastewater treatment against industry standards. (This assessment would be unique to each industry and to the specific products produced and is thus beyond the scope of this report.)

The enterprise would then review and profile its disposal of solid waste in landfills. Solid waste may leach out powerful chemicals that can pollute water sources too.\textsuperscript{103} It would then detail the location of the landfill to understand its proximity and impact to communities and the environment.

2. Integrate the findings of your impact assessments into the corporate form and take action

Businesses should ensure that their findings are integrated across their operations, including: waste management; human resources; plant operation and maintenance; procurement; and compliance. What constitutes appropriate action will vary according to whether the enterprise causes, or contributes to, an adverse impact of water pollution, or whether it is involved because the impact is directly linked to its operations, products or services by a business relationship.

After a business conducts an impact assessment on water pollution, its findings should further inform corporate function and the results should drive action to prevent harms. For example, an impact assessment may lead a plant facilities manager to conclude that the enterprise must operate a wastewater treatment plant, update its current processes and/or develop emergency procedures.

An impact assessment may also lead a business to conclude that human resources must invest in finding qualified personnel for managing a treatment plant or new procedures. Or the assessment may require the procurement team to consider its use of any chemicals profiled in the Zero Discharge of Hazardous Chemicals (ZDHC) Manufacturing Restricted Substances List (MRSL). Any use of chemicals listed under the MRSL should be announced and an enterprise’s attempts to find substitutes for these chemicals should be disclosed. Cessation of use of chemicals listed under MRSL should then be communicated. The enterprise should then also consult the list regularly as well as consult REACH’s “Substances of Very High Concern” (SVHCs) related to their products and packaging.

Here, a business would also review handling, labelling and storage of chemicals, both raw materials and wastes, in accordance with the Basel, Rotterdam and Stockholm (BRS) Conventions.\textsuperscript{104} The “BRS Conventions” websites contain detailed guidance on how to handle chemicals listed. Specific chemicals may require specific handling and storage mechanisms, including to prevent water pollution.\textsuperscript{105}

3. Track the performance and effectiveness of your responses

An enterprise should monitor and track its human rights and environmental performance using appropriate indicators and metrics to ensure that it is meeting its policy commitments and addressing any issues that arise. With industrial effluents, appropriate systems must be in place to measure pollution levels and water stress levels. This data in turn must be interpreted to understand the risk that pollution poses to human health. Data might be further qualified by inputs from hospitals and other public health resources. In many jurisdictions, industry will have the legal obligation to check its effluent water quality onsite and to refer the collection to an independent laboratory.

Groundwater monitoring would normally be a part of an existing regulatory framework as well. Reports on this should be made public, including the coordinates of monitoring stations. And as with groundwater, monitoring the quality of effluents is mandatory. Co-coordinates of monitoring stations and discharge outlets should be made public too and enterprises should report on the sediments around the vicinity of its discharge outlets. There have been cases where discharges are hidden in order to make it difficult to monitor.\textsuperscript{106} These transparency measures aim to enable tracking spatial distribution of water quality data and ensure that enterprises are not selectively monitoring areas with favourable water quality while ignoring potential problem areas.

\textsuperscript{105} For example, storage facilities for Polychlorinated Biphenyls contaminated equipment should not be located at a site that is below the 100-year flood water elevation; at least 200m away from the nearest surface water body; built on surfaces where groundwater depth is at least 3m; preferring clay impermeable soil over fractured rocks. See https://cloud.crgp.info/docs/UNIDO%20PCB%20Final%20Report.pdf The rationale is to prevent ground and surface water pollution.
\textsuperscript{106} Mohamad Mova AlAfghani, ‘Field Note, Citarum Visit, January 30-31st, 2023’. Members of the Satgas (Task Force) from Citium Sector 7 told us that in the event of pollution, they had to find the hidden discharge outlet and track the outlets back to the factory.
achieving targets 6.1.1 (safe drinking water) and 6.2.1 (safely managed sanitation) of the SDGs. Consultation can also ensure that operations don’t impede the state’s efforts in achieving SDG 6.

4. Communicate how you are addressing human rights impacts

Businesses should communicate the findings of their HREDD efforts to their stakeholders and explain how they are addressing the impacts of pollution. Communication involves sharing information about an enterprise’s human rights policies, practices and impacts with the public, employees and affected communities. The chemicals and other materials discharged should be disclosed in all communication and the local community and downstream communities must know the contents of effluents. Managers of downstream drinking water utilities will need to adjust their sampling methods and will need to know whether they need to upgrade their technology.109

As mentioned above, businesses should disclose here the list of hazardous chemicals released by CAS number or common name.110 They should publicly disclose water recovery/recycling efforts too, to promote sustainable water use and relieve water stress, which includes calculating water footprint111 and disclosing that. The smaller the footprint the lower the environmental impact.

As a part of the fourth and final step of HREDD, a business should also publicize the permits it has. These are public documents, but they are also difficult to gain access too. But when they appear in corporate communications related to HREDD, the community can see these and can participate in decision-making when these permits are up for renewal.

Access to remedy

Where, in the course of conducting HREDD, a business finds that it has caused or contributed to adverse human rights impacts, the UNGPs provide that it should remedy those impacts. This might involve developing action plans to address systemic issues or compensating affected individuals and communities. This is especially important, for example, where effluents have led to illness, resulting in lost income or sudden health care costs or where toxins in the soil or water are discovered and traced to local industry, necessitating clean-up.

107 Certain kinds of chemicals can only be detected by certain sampling method.
108 Nearly 5000,000 chemicals are listed in the Chemical Abstracts Service (CAS) registry number. See https://commonchemistry.cas.org/.
109 Certain kinds of chemicals can only be detected by certain sampling method.
110 Nearly 5000,000 chemicals are listed in the Chemical Abstracts Service (CAS) registry number. See https://commonchemistry.cas.org/.
A grievance is defined by the UNGPs as a “perceived injustice evoking an individual or a group’s sense of entitlement, which could be based on law, contract, explicit or implicit promises, customary practice or general notions of fairness of aggrieved communities”.[112] Grievances could be deteriorating water quality, loss of livelihood, reduced quantity of water, odour, destroyed scenery, health impacts resulting from contamination or even increased tariffs due to higher treatment cost caused by pollutants. In those cases, rights holders affected have lost their access to safe water due to contamination by businesses. When this occurs, businesses should provide alternative water supplies or work together with authorities and drinking water utilities to provide the same.

Communities who do not have access to public water are especially vulnerable, as they have no choice but to abstract contaminated water directly from the environment. Businesses should remedy the harm committed here by immediately providing alternative supply, for example with tank trucks or by piping water in during cleanup, or by drilling boreholes.[113] Although these measures can never serve as offsets to polluted discharge elsewhere.

These measures should be standard operating procedures for businesses and in cases where it is not clear whether the grievances are caused by the business, they can refer complaints to local environmental regulators or to an independent party for clarity.[114] States or other institutions, such as human rights bodies, would normally provide recourse through judicial or non-judicial means, but these vehicles may not be accessible as they involve lengthy delays, involve high costs or require knowledge of arcane rules. Business should therefore offer operational-level grievance mechanisms that (1) identify adverse human rights impacts and (2) ensure immediate and direct remedy.

The UNGPs also provide criteria for “effective grievance mechanisms”, chief among them “accessibility”. [115] In order to be accessible, a mechanism for remedy must be known to the public and enterprises must offer a complaints line, or in remote areas a physical location in the local community.

---

112  UN Guiding Principle 25, commentary.
113  Note that the construction of deep wells will usually require permits and could be subject to environmental impact assessment.
114  Discussion during UNDP – Ministry of Maritime and Investment HREDD training in Bandung (February 7-8)
115  The full criteria are: legitimate, accessible, predictable, equitable, transparent, rights-compatible, a source of continuous learning and at operational level it should be based on engagement and dialogue.
Industrial activities and chemicals released in the Citarum pose significant risks to human rights including the right to clean and safe drinking water, right to food, right to health, right to education, rights of the children, right to culture and right to religious practice. Although industrial water pollution in the river has abated due in part to government efforts, more must be done. Without the support of the industries operating on the Citarum, it will be difficult to ensure that water pollution levels will stay at reduced levels. Unless industry internalizes respect for the human right to a clean, healthy and sustainable environment, there is always a risk that conditions will worsen especially when Citarum Harum ends in 2025. HREDD is thus critical for companies in Indonesia and their business partners abroad. The “HREDD in Asia: A Clean Water Self-Assessment” tool, supplementing this report, can provide an accessible means for companies to demonstrate respect for the human right to safe and clean water.¹¹⁶
