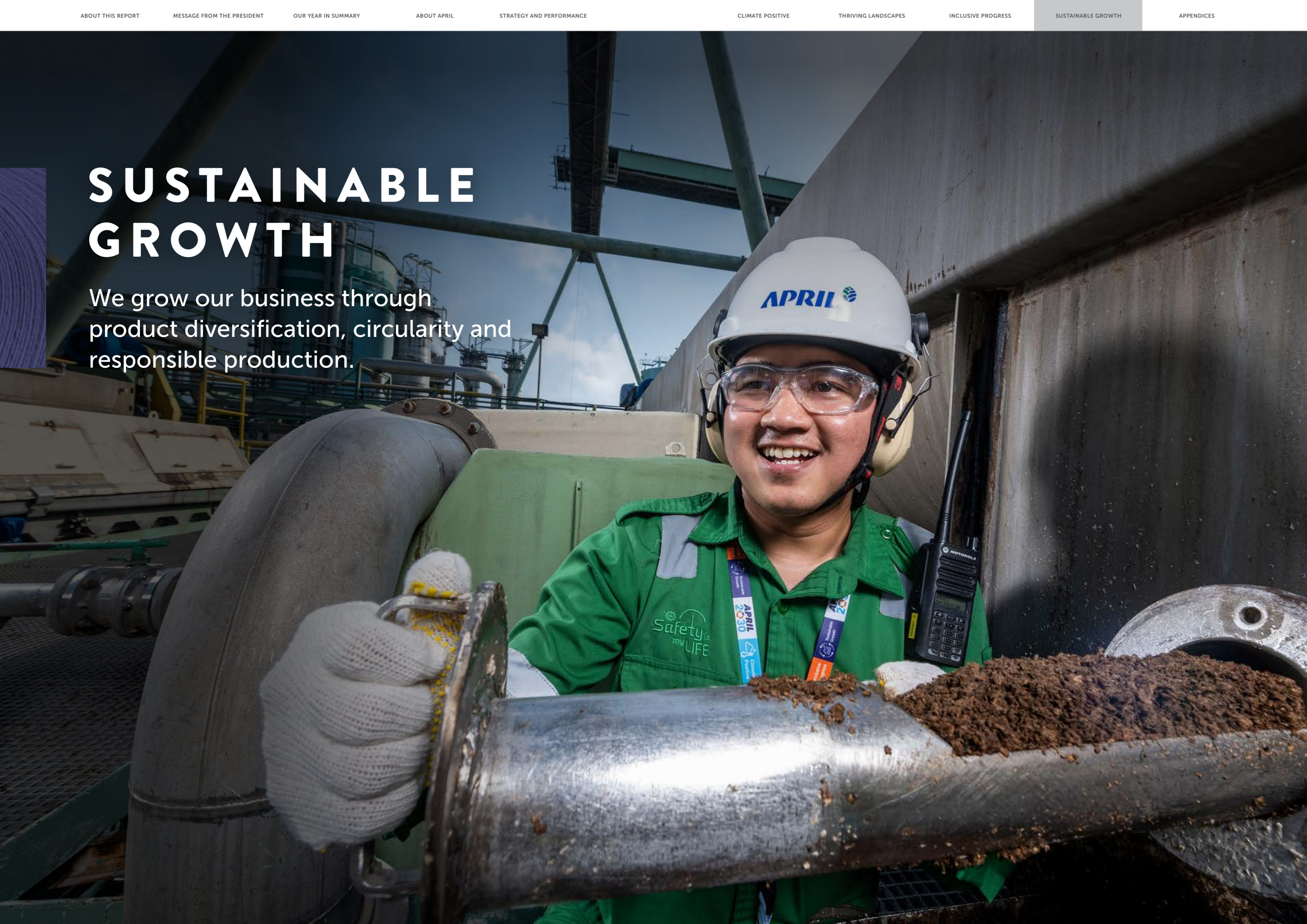


SUSTAINABLE GROWTH

We grow our business through product diversification, circularity and responsible production.



SUSTAINABLE GROWTH

Contributing to SDGs:



APRIL has adopted a circular production as part of our commitment to clean manufacturing practices, minimising waste, reducing water use, and maximising resource and chemical recovery wherever feasible.

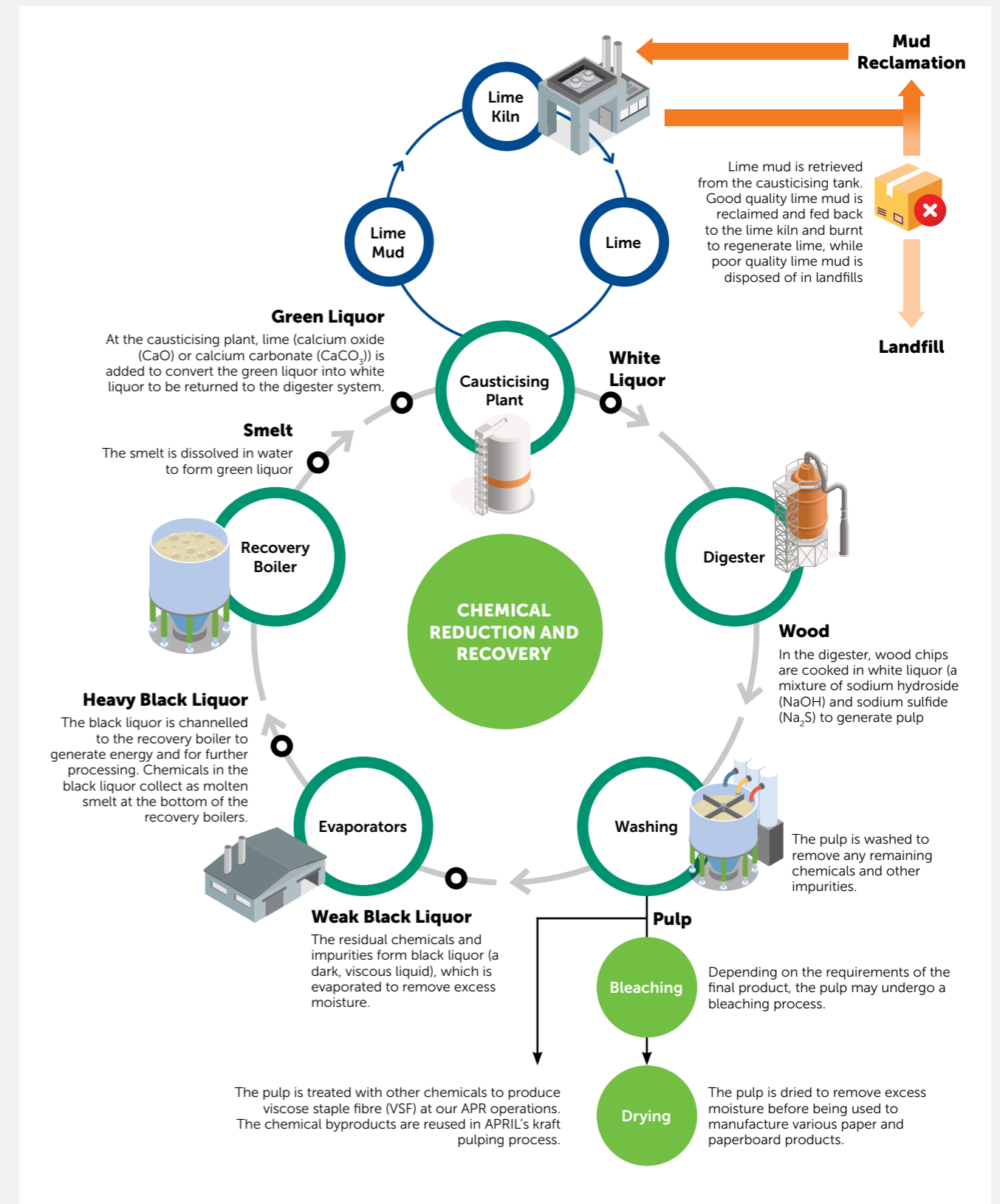
We comply with local environmental regulations and global industry standards, guidelines, and best practices for responsible manufacturing and water, chemical, and waste management, including the EU Best Available Techniques (BAT) Reference Document for Integrated Kraft Process Mills and the Confederation of European Paper Industries (CEPI) standards. We also adhere to viscose, textile, and man-made cellulosic fibre (MMCF) standards at our viscose and yarn production facilities.

Target	Performance			2023 Progress notes	Strategy to drive performance
	2021	2022	2023		
98% chemical recovery (%)	96.1	96.3	94.7	<ul style="list-style-type: none"> Reduced recovery due to the increase of lime and soda loss in the liquor cycle. Consumption of purchased soda (Na_2SO_4, NaOH) and lime (CaO, CaCO_3) increased compared to 2019 baseline. 	<ul style="list-style-type: none"> Implement chemical recovery and reduction measures
80% less solid waste to landfill (kg/T)	71	34.9	37	<ul style="list-style-type: none"> Slight increase to previous year but still on track to meet targets. Achieved 47% reduction from 2019 baseline 	<ul style="list-style-type: none"> Waste to energy optimisation Waste-to-value projects Partnerships with value-added industries
25% less water usage per product tonne (m^3/T)	28.8	28	28.7	<ul style="list-style-type: none"> Slight increase in process water consumption due to increased production. 	<ul style="list-style-type: none"> Mill-wide assessment to identify water savings and circularity opportunities Water reduction and efficiency measures
20% recycled textile used in viscose fibre (%)	N/A			<ul style="list-style-type: none"> Project is still in the trial and feasibility assessment stage. 	<ul style="list-style-type: none"> Obtained patent for textile technology Trialled a recycling demo plant with Finnish specialists

CHEMICAL REDUCTION AND RECOVERY

[GRI 3-3, 305-7]

Chemicals like lime (also known as calcium oxide, CaO), sodium hydroxide, NaOH, and sodium sulphide (Na_2S) play an essential role in our production processes, as illustrated below:



CHEMICAL REDUCTION AND RECOVERY

[GRI 3-3, 305-7]

We recognise the potential impact of chemicals on the environment and human health. We therefore employ the following responsible management and efficient use strategies to mitigate harm:

Strategies for chemical recovery and reduction

Avoiding chlorine bleaching methods

Although we do not use any elemental chlorine (Cl₂) in our bleaching processes, we are mindful of the potential negative impacts of chlorine dioxide (ClO₂). We use chlorine-free bleaching like oxygen delignification and have reduced our ClO₂ consumption intensity by 6.6%, from 13.65 kilograms per air-dried tonne (kg/ADt) in 2022 to 12.7 kg/ADt in 2023.

Reclaiming lime

Our two lime reclamation plants recover 83% of the lime from lime mud (a by-product of the pulping process during paper production, primarily composed of calcium carbonate, CaCO₃).

Our precipitated calcium carbonate plant also captures carbon dioxide (CO₂) from our lime kiln for reuse. In 2023, we captured 67,226.72 tonnes of CO₂.

Recovering soda

Our dual-purpose facility removes and recovers soda (sodium carbonate, Na₂CO₃) from brown fibre, refining it into an alternate fuel (see: Energy management (p.42)) and white liquor to cook wood chips into pulp.

We plan to install a sulphate of potash (potassium sulphate) plant in 2024 to further improve soda recovery.

Reusing sodium sulphate and hemi-caustic generated by APR

Our integrated facility allows us to reuse chemical by-products generated by APR in our production processes:

- Sodium sulphate (Na₂SO₄) for white liquor production
- Hemi-caustic (sodium hydroxide or NaOH, a less concentrated alkali compared to caustic soda) to bleach pulp bleaching.

In 2023, we reused 26,760 tonnes of sodium sulphate and 16,156.30 tonnes of hemi-caustic generated by APR.

For viscose, see [APR2030 Chemical Recovery target on APR website](#)

We aim to increase our lime and soda chemical recovery to 98% by 2030. Although our 2023 recovery rate of 94.7% was slightly lower than our 2022 rate of 96.3%, it is within the normal range of variance for chemical processes. Nevertheless, we continue to explore the feasibility of additional chemical recovery plants to further increase our chemical recovery rates.

MANAGING AIR EMISSIONS

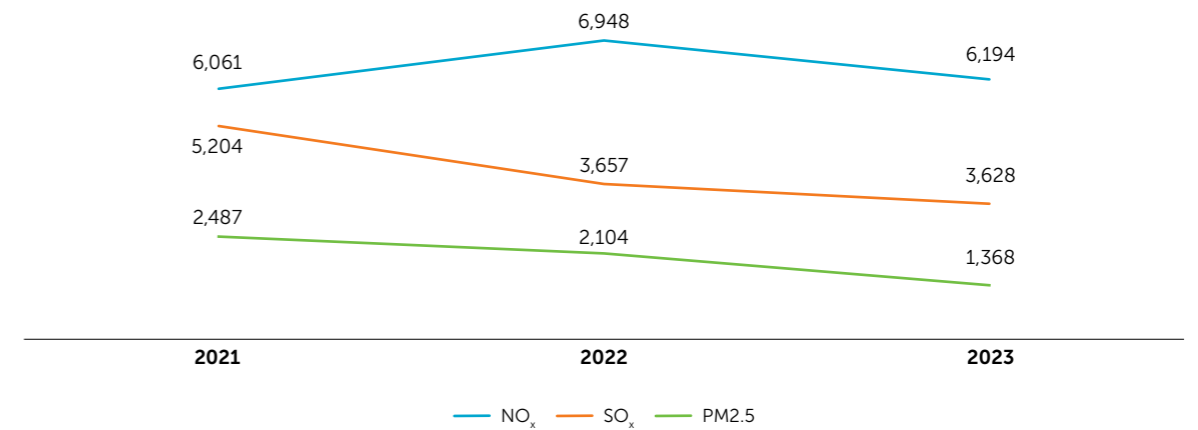
Our facilities and processes produce air emissions that include particulate matter, specifically sulphur oxide (SO_x) and nitrogen oxide (NO_x). These include power boilers, recovery boilers, lime kilns, bleaching plant, and digesters. Our mill operations department monitors, measures, and analyses our air emissions data, generating daily reports shared with national, provincial and district environmental agencies per regulatory requirements.

Our mill operations department monitors, measures, and analyses this data, which is reported internally daily and shared with provincial and district environmental

agencies every three months. Our continuous emissions monitoring system (CEMS) meets Indonesian Ministry of Environment and Forestry requirements. It transmits real-time data to the Ministry's Industry Emission Information Monitoring System (Sistem Informasi Pemantauan Emisi Industri (SISPEK)) servers.

In 2023, we upgraded one of our recovery boilers to improve efficiency, resulting in lower air emissions than the previous year. **We continue to strive to reduce Nitrogen oxide (NO_x) and Sulphur oxide (SO_x) air emissions from our mill in line with our Responsible Business Practices Key Performance Indicators (KPIs). Our air emission levels remain within regulatory limits.**

SIGNIFICANT AIR EMISSIONS 2021–2023 (t)



WASTE MANAGEMENT

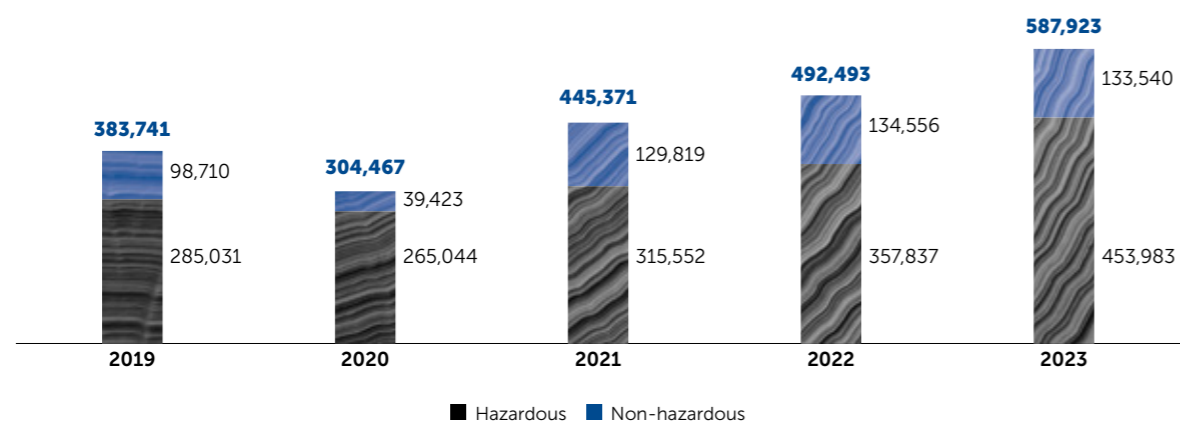
[GRI 3-3, 306-1, 306-2, 306-3, 306-4, 306-5]

We manage hazardous and non-hazardous operational waste responsibly and in line with Indonesian regulations. The hazardous waste we produce can include solid waste such as effluent sludge, dregs and grits, lime mud, and fly ash and bottom ash (FABA) from power boilers. Non-hazardous waste includes road sub-grade, general waste (including domestic waste from town sites), brown fibre, white fibre, and other solid waste in the form of viscose solids, alkali cellulose, and non-saleable tow (reject fibre).

We measure and record the amount of waste generated using weighbridges and resource planning software to align management practices with industry best practices, respect government regulations, and identify areas for improvement.

In 2023, we produced approximately 588,000 tonnes of industrial waste, 77% of which was hazardous. Due to increased production, the percentage of hazardous waste increased by 5% compared to 2022.

WASTE GENERATED BY TYPE 2019–2023 (t)

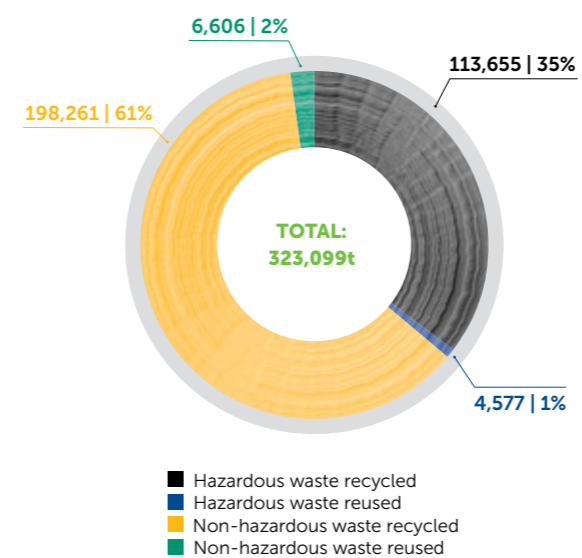


REDUCING SOLID WASTE TO LANDFILL

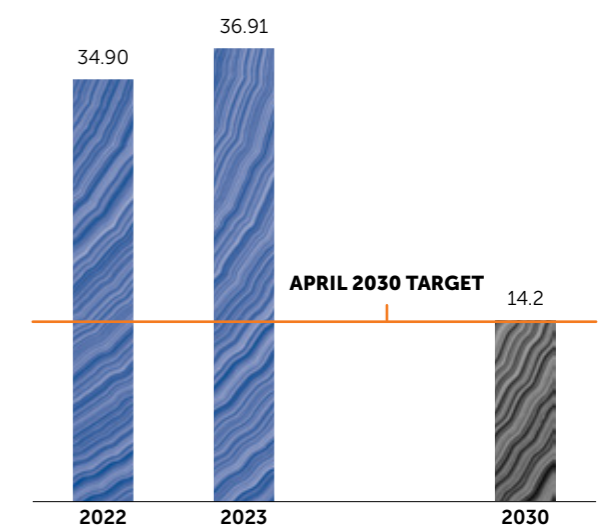
We handle and repurpose waste (where possible) in line with applicable regulations and legal guidelines. A licensed contractor manages, recycles, and disposes of general waste, none of which is directed to landfill. Our partners recycle white fibre into low-grade paper and other applications. In 2023, we recycled and reused more than 323,000 tonnes of waste, including:

- Bottom ash from our power boilers as a sub-base for roads and concrete
- Fly ash and zinc sludge mix applied in micronutrient fertiliser and piloted in our plantations
- Brown fibre from pulp production and sludge from our wastewater treatment plant as feedstock to fuel our boiler (waste-to-energy) (See: Energy management (p.42))

WASTE DIVERTED FROM DISPOSAL 2023 (t,%)



INTENSITY OF SOLID WASTE DIRECTED TO LANDFILL 2022–2023 (t)

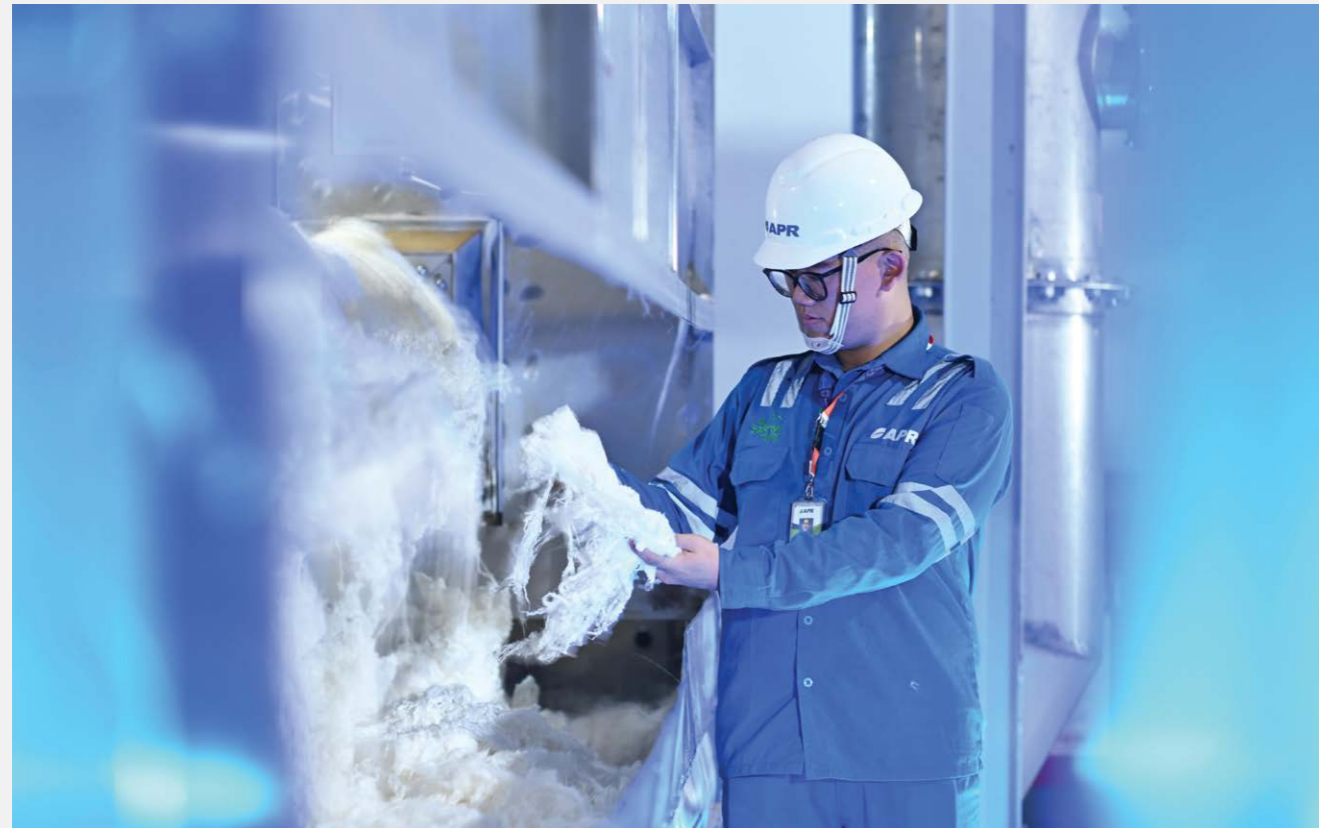


Any non-hazardous waste which is not recycled or reused is disposed in landfills at our complex, while hazardous waste is properly disposed by a licensed third party. **In 2023, we directed 36.9 kilograms of solid waste per tonne of pulp produced (kg/t) to landfill, a slight increase compared to the previous year, primarily due to more sludge generated by higher production levels and the introduction of our new fibre production line.**

APRIL recognises that we are far from meeting our target of reducing solid waste to landfill by 80% to 14.2 kg/t against our 2019 baseline. We actively explore strategies to minimise waste generation and maximise reuse to divert as much waste as possible from landfill.

WASTE MANAGEMENT

[GRI 3-3, 306-1, 306-2, 306-3, 306-4, 306-5]



USING RECYCLED PRODUCTS IN VSF PRODUCTION

Although our VSF is made with wood pulp – a natural, renewable resource – we also incorporate recycled textiles into our production processes. Between 2021 and 2022, the estimated market share of recycled man-made cellulosic fibre (MMCF) hovered at 0.5%¹³.

In 2021, APR embarked on a programme to trial textile waste as feedstock for viscose fibre manufacturing. **Our revolutionary technology, first patented in May 2023 in Singapore, has allowed us to successfully manufacture viscose fibre using a blend of 50% recycled textile (RT) pulp and regular dissolving wood pulp**¹⁴.

As of June 2024, we have built a strong feedstock database and designed a protocol for collecting and sorting textile waste. We have worked with Finnish

specialists ANDRITZ Oy to test-run a potential textile recycling demo plant that can be configured to produce 24 tonnes of 100% RT pulp or 120 tonnes of 20% RT pulp, and are exploring plans for expansion in the future.

Despite our breakthroughs in textile waste recycling, significant investments are required to establish the needed infrastructure, and consumer brands and manufacturers are slow to uptake textile waste recycling, stalling progress. We are also mindful that our new technology may adversely affect the informal secondary market for recycled textile materials, which is often the bread and butter of local communities in Indonesia. We will navigate this potential disruption with care and consideration while working towards a more sustainable and circular industry and will report on our progress as we move forward.

¹³ Textile Exchange Materials Market Report 2023
¹⁴ In April 2024, we secured a European patent and are filing patents in other countries.

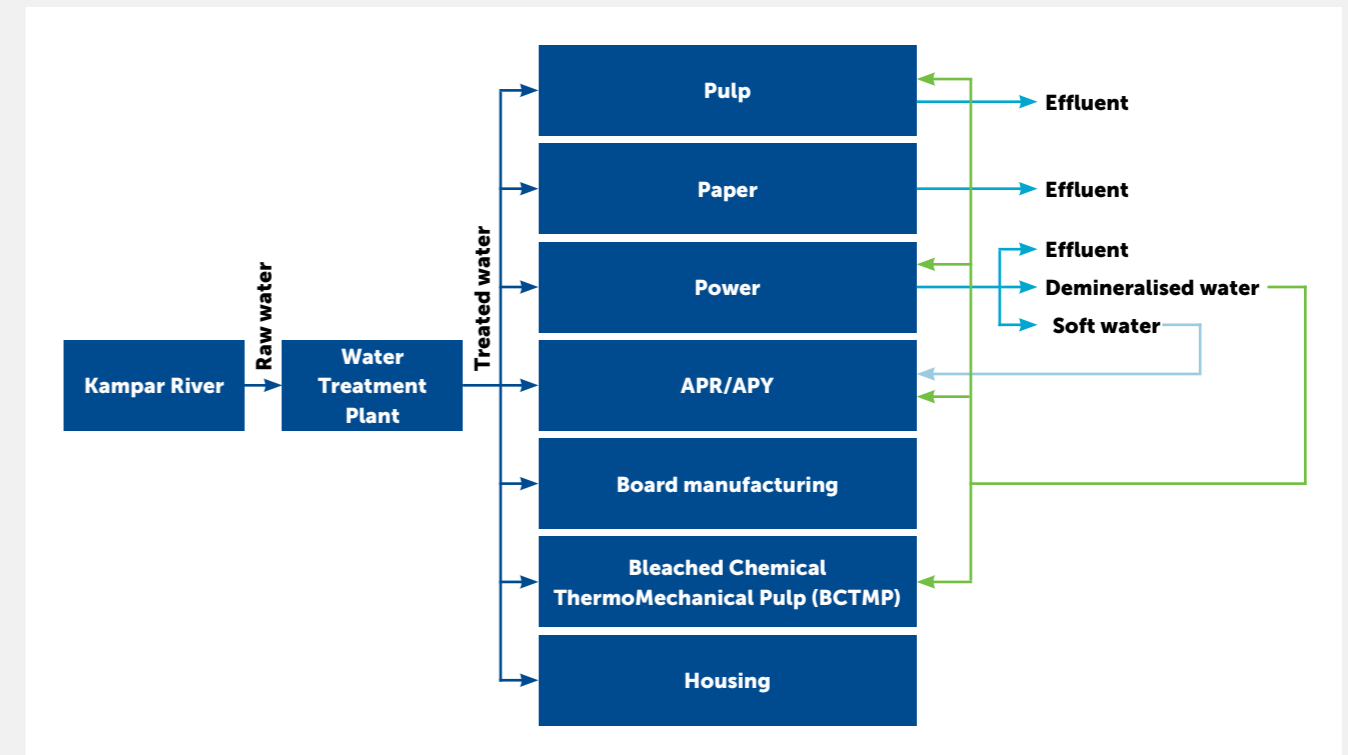
WATER AND WASTEWATER MANAGEMENT

[GRI 3-3, 303-1, 303-2, 303-3, 303-4, 303-5]

OPTIMISING WATER USE

Our plantations do not require irrigation, since natural rainfall is sufficient to support growth. However, our mill operations involve water-intensive processes and highlight the need for water stewardship.

Overview of water use



Permits from the Government of Indonesia allow us to withdraw and treat water from the nearby Kampar River. **In 2023, our overall water withdrawal increased 21% from the previous year amounting to 160,498 megalitres (ML), reflecting our expanding operations. Although water in the area is relatively abundant, we strive to reduce the amount of water we withdraw from the Kampar River, per the water usage KPI in our Responsible Business Practices.**

In addition, we seek to improve our water usage intensity through recycling, wastewater management, and by upgrading or retrofitting our equipment. We aim to reduce water use per tonne of product by 25% by 2030 compared to our 2019 baseline of 28.17 cubic metres per tonne of paper, pulp, and rayon produced (m³/t). **As of December 2023, our process water use intensity was 28.72 m³/t, or 1.95% above our baseline.**

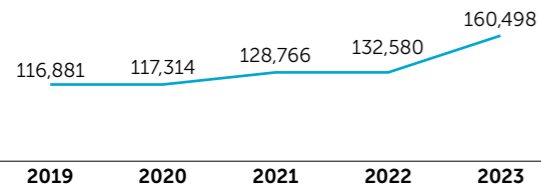
In 2023, we continue to build on water conservation and reuse efforts across our manufacturing operations to reduce water consumption intensity, including strategies to reuse and recycle water, minimise wastage and leakage, and replace equipment like pumps and valves to optimise water use.

To ensure compliance with internal and regulatory requirements, every APRIL business unit monitors and records its water withdrawal, consumption, and effluent discharge using calibrated metres at several distribution points. Our Certification and Compliance Department ensures timely reporting to the government, performs internal audits and prepares the documents needed for external audits.

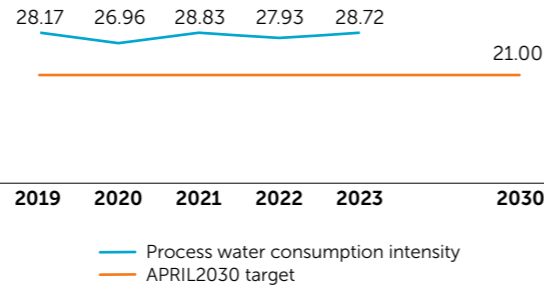
WATER AND WASTEWATER MANAGEMENT

[GRI 3-3, 303-1, 303-2, 303-3, 303-4, 303-5]

WATER WITHDRAWAL FROM KAMPAR RIVER 2019–2023 (ML)



PROCESS WATER CONSUMPTION INTENSITY 2019–2023 (m³/t)



MANAGING WASTEWATER

We treat wastewater to ensure it meets regulatory thresholds, is environmentally safe, and will not harm aquatic life before discharging it back into the Kampar River. We operate an integrated wastewater treatment plant that can treat 280,000 m³ of wastewater per day. In 2023, we installed a new effluent treatment plant with a 145,000 m³/day capacity to accommodate wastewater from our additional fibre production line.

Our mill facility technicians inspect the treatment plants daily to ensure optimal performance and efficiency. We use the government-mandated SPARING¹⁵ online waste monitoring system to deliver real-time wastewater quality data to the Ministry of Environment and Forestry. Measurements include total suspended solids (TSS), biological oxygen demand (BOD), chemical oxygen demand (COD), nitrogen, phosphorus, and adsorbable organic halides (AOX) levels. We engage an accredited third-party laboratory to assure the integrity and accuracy of our wastewater data monthly.

Table 7: Wastewater quality parameters 2022–2023

Parameter	Unit	Year	
		2022	2023
TSS	mg/L	17.79	21.38
COD	mg/L	190.70	176.58
BOD	mg/L	16.49	17.47
Nitrogen	t	22.70	24.52
Phosphorus	t	0.01	0.01
AOX	t	1.44	1.95

Note: Data on phosphorus levels are not available for 2021.

Our wastewater quality parameters respect regulatory thresholds¹⁶. **Our 2023 wastewater COD levels were nearly 44% below the regulatory limit, in line with our Responsible Business Practices KPIs.** Our goal is to achieve COD levels 75% lower than the regulatory limit.

¹⁵ SPARING stands for Sistem Pemantauan Kualitas Air Limbah secara Terus Menerus dan Dalam Jaringan. A system used to monitor, record and report the activity of measuring levels of a parameter and/or wastewater discharge automatically, continuously and in a network.

¹⁶ These thresholds are established in Article 14 of the Regulation of the Minister of Environment and Forestry Number P.93/MENLHK/ SETJEN/ KUM.1/8/2018 and P.80/MENLHK/SETJEN/KUM.1/10/2019.

