

Our Commitment to Energy Transition



For 53 Years, We Have Been Operating In Our Motherland, Indonesia

From the beginning we have used sustainable mining practices, and energy transition. The Company operates three Hydroelectric Power Plants (PLTA) with a total capacity of 365 Megawatts, which are capable of avoiding CO₂ emissions by more than 1 million tons of CO₂ eq per year compared to coal-fired plants.

During our operational activities, we pay attention to balancing the economic, social and environmental aspects. Despite it promising a profit of US\$40 million per year, we decided to cancel our coal conversion project, as it would have increased emissions by 200 thousand tons of CO₂ eq per year. Instead, we plan to build a processing plant in Bahodopi in Central Sulawesi using natural gas as an energy source. We have signed the

Bahodopi Nickel Processing Facility Project Cooperation Framework Agreement (PCFA). The plant in Bahodopi will be a nickel processing plant with the lowest carbon emissions per tonne of nickel after Sorowako, South Sulawesi.

We continue to be committed and carry out progressive reclamation of post-mining land and plant more trees to minimize the impact of mining activities and maximize the use of overburden and topsoil to support successful reclamation. A nursery facility supports this reclamation program on 2.5 ha in Sorowako. This nursery facility can produce 700,000 seedlings per year, which exceeds the company's needs, so the excess is channeled to the government and the community to support environmental conservation efforts.

Our Commitment to Village Empowerment



We Build the Self-Reliance of The Indonesian Community

Through the Community Empowerment and Development Program (PPM), by following a Self Reliance Rural Area Development (PKPM) approach, we continue to develop villages together with the surrounding communities.

The synergy and cooperation is carried out following the signing of a Memorandum of Understanding with the Ministry of Village, Development of Disadvantaged Regions and Transmigration (PDTT), as

well as other stakeholders to optimize PPM and PKPM. Implementation of the consultation is based on the procedure. There are 10 development areas in the Nuha, Towuti, Wasuponda and Malili sub-districts in East Luwu Regency, South Sulawesi. These areas are used for tourism, integrated agriculture (agropolitan), pepper plantations, and others.

Our Commitment to Gender Equality



We Respect Human Rights by Implementing A Commitment to Gender Equality

At the Annual General Meeting of Shareholders (AGMS) on April 29, 2021, the shareholders appointed Febriany Eddy as CEO and President Director of PT Vale. This confirms PT Vale's strong commitment to proportional gender diversity, by placing female employees in various positions.

Although there is only one woman at the Board of Directors level, the position of Febriany Eddy has a very strategic role. The appointment of

Febriany Eddy was not only meaningful for PT Vale, within the scope of national gender equality, but her presence at the top of PT Vale's leadership was also a monumental milestone in empowering women in the Indonesian extractive industry. Based on the 2020 National Labor Force Survey, the proportion of female workers in the extractive sector was only 8.14%. Therefore, we will continue to provide equal opportunities for female workers in PT Vale.

Sustainability Performance Highlights

Economic Management Aspect

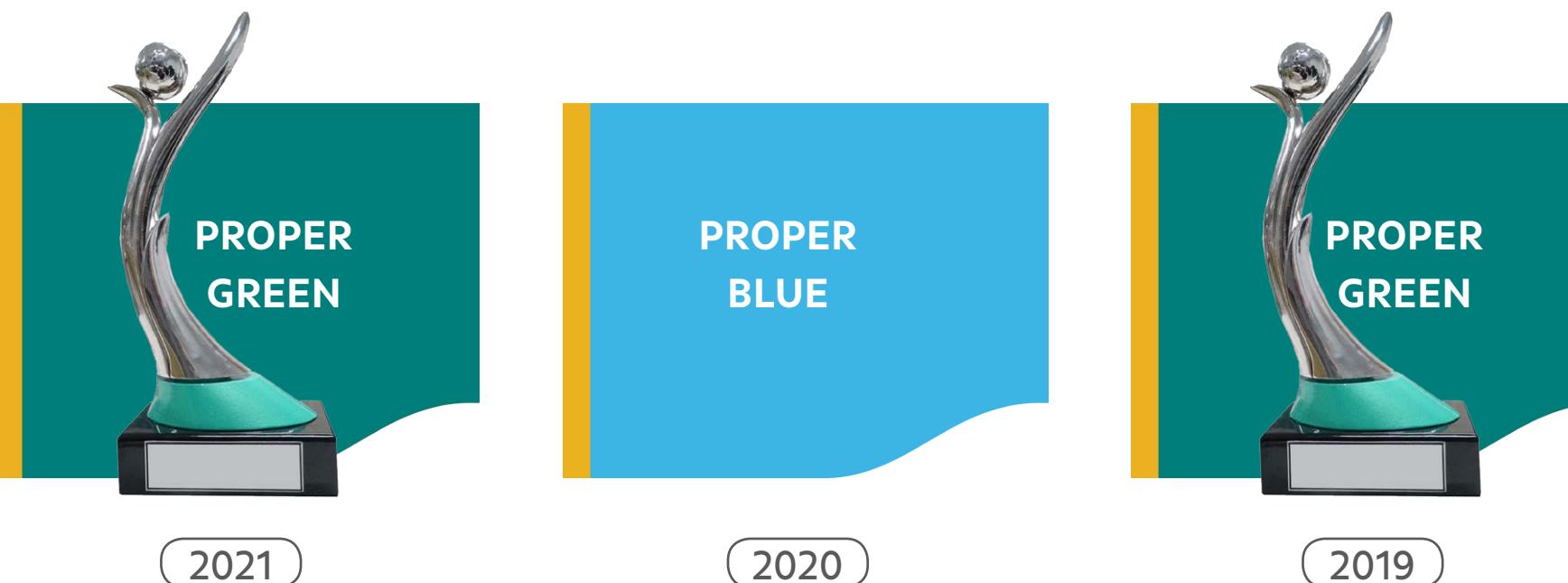
[POJK51-2.a.1][POJK51-2.a.2][POJK51-2.a.3][POJK51-2.a.5] [EM-MM-000.A]

Description	Unit	2021	2020	2019
Production Performance				
Nickel in Matte Production	Ton	65,388	72,237	71,025
Proven Ore Reserves	Million Tons	65.7	61.9	66.2
Probable Ore Reserves	(DKP)	46.9	42.1	41.4
Economic Performance				
Revenue		953,174	764,744	782,012
Total Economic Value Distribution	Thousand USD	872,091	760,475*	815,864
Total Economic Value Retained		83,797	8,741*	(29,093)
Net Profit		165.78	82.82	57.40
Involvement of Local Suppliers				
Number of Local Suppliers	Unit	295	295	295

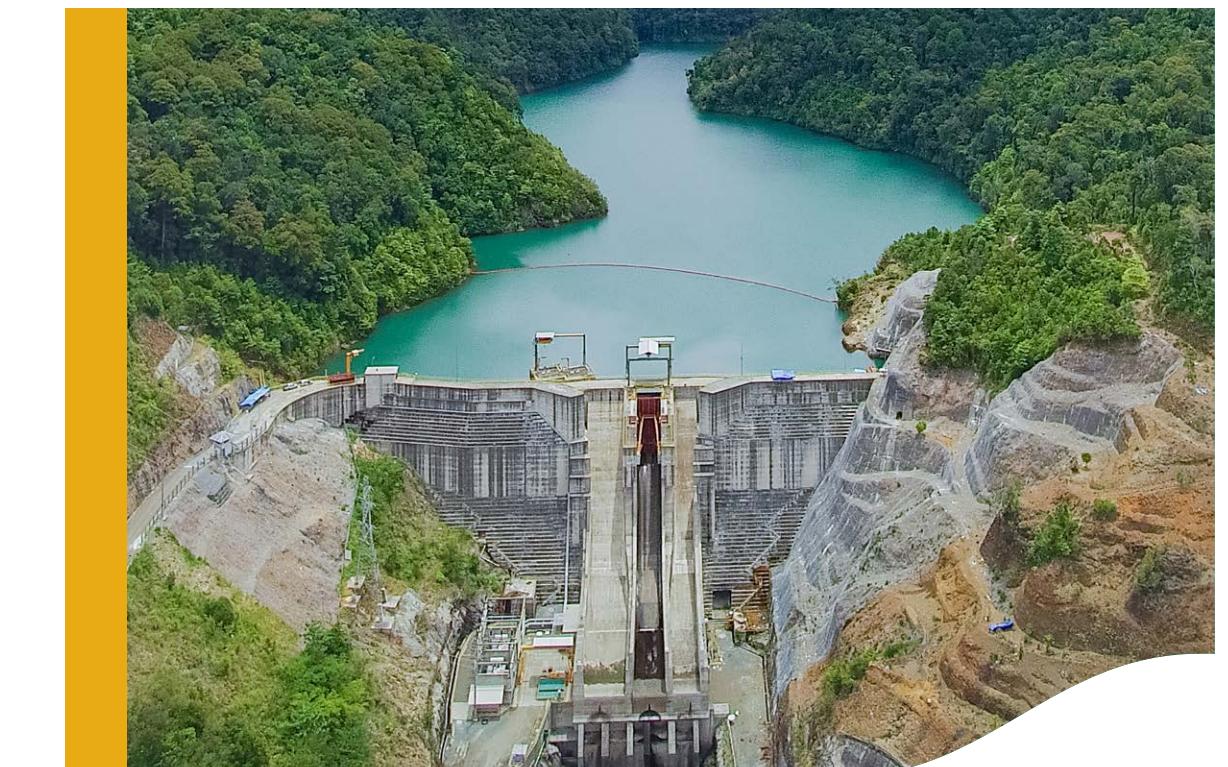
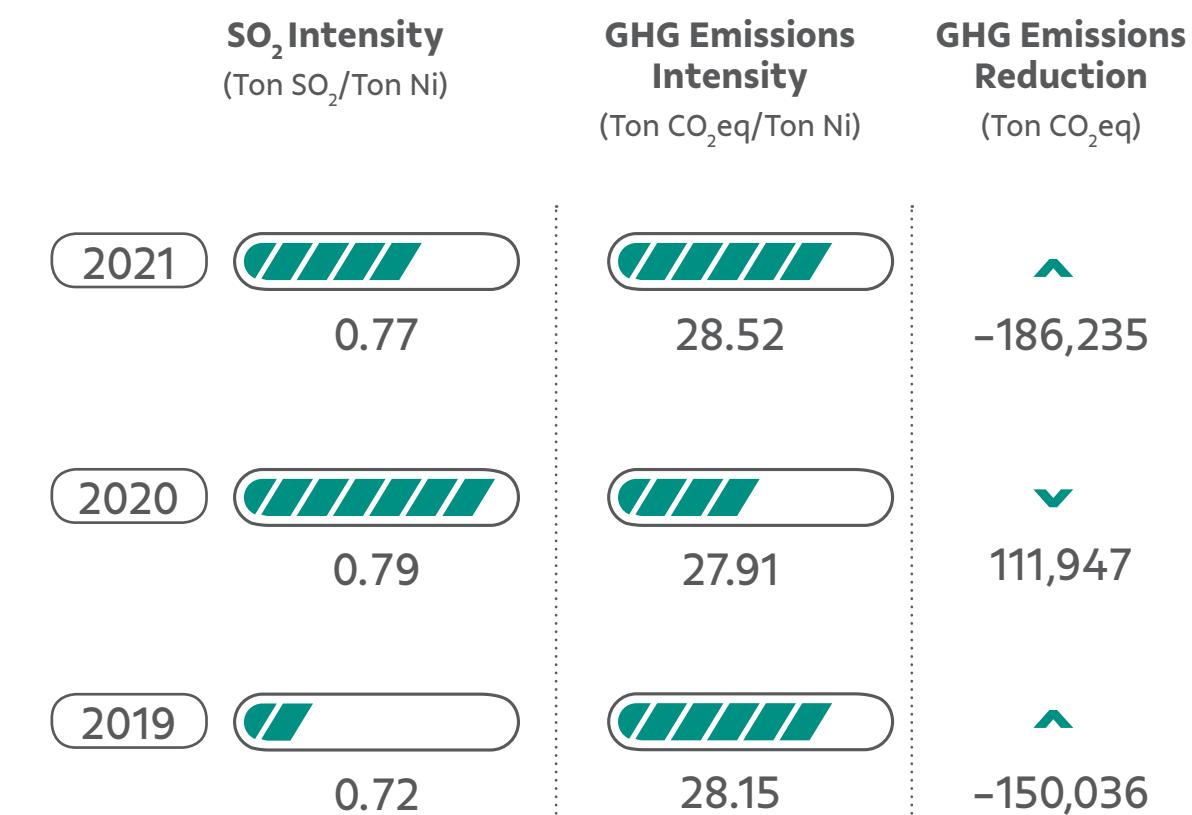
Note : *Restatement of the 2020 Sustainability Report [2-4]

Environmental Management Aspect

[POJK51-2.b.1][POJK51-2.b.2][POJK51-2.b.3][POJK51-2.b.4]



Emission Control Performance



Energy Used Performance

Description	Unit	2021	2020*	2019*
Energy Usage	GigaJoule	28,268,297	30,628,679	30,336,764
Energy Intensity	GigaJoule/Ton Ni	432.31	424.00	427.13
HSFO Usage Intensity	Barrel/Ton Ni	19.74	18.14	20.04
Coal Usage Intensity	Ton/Ton Ni	5.73	5.90	5.23
HSD Usage Intensity	Liter/Ton Ni	1,094.92	1,068.36	1,224.40
Gasoline Usage Intensity	Liter/Ton Ni	1.63	3.50	5.38
Power (PLTA – Hydroelectric Power Plant) Usage Intensity	MWh/Ton Ni	34.94	33.22	33.19

Information :

*Restatement of the 2020 Sustainability Report based on the results of data verification. [2-4]

Waste Management Performance

Description	Unit	2021	2020	2019
Non-Industrial Domestic Waste Generated	Ton	1,001	1,278	1,810
Non-Industrial Domestic Waste Segregated for Recycling	%	10.17	7.03	6.73
Industrial Non-Hazardous Waste	Ton	8,721	7,454	12,222

Land and Biodiversity Management Performance

Description	Unit	2021	2020	2019
Rehabilitated Land Area	Ha	283.74	176.24	81.09
Accumulated Area of Rehabilitated and Reclaimed Land	Ha	3,249.11	3,012.44	4,249.45
Total Trees Planted	Trees/Ha	219,595	104,333	79,372
Local Tree Type	Trees	10,761	31,837	24,251
Endemic Tree Type	Trees	22,206	11,140	10,761

Renewable Energy Used

Description	Unit	2021	2020	2019
Hydroelectric Power Plants	Unit	7	7	7
	MW	365	365	365

Sustainability Performance Highlights

Social Management Aspect

[POJK51-2.c]

Health Promotion Activities in 2021

Program Name	Total Participants		
	PT Vale	Contractors	Total
Delivering health education: Drug Prevention, Dangers of Smoking	17,286	0	17,286
Occupational Awareness of HIV/AIDS	11,524	0	11,524
Healthy Life Education Program Podcast: Chronic diseases	25,929	0	25,929
Ergonomics Education	11,524	0	11,524
Delivering Education : Confirmation of COVID-19	43,215	0	43,215
Nasopharyngeal Swab Training for health workers	23,048	26	23,074
Health Share: How to make masks protect you more	14,405	0	14,405
World TB Day, March 24, 2021	14,405	0	14,405
Health Share: Beware of Dengue Fever	20,167	0	20,167
Health Day Campaign " No Health No Life " Healthy mind, Healthy Body, Productive people!	1,500	887	2,387

Total Employees and Training

Description	Unit	2021	2020	2019
Total Employees	People	2,966	3,006	3,044
Total Training	Hours	121,781	104,842	125,070
Training Hours per Employee	Hours/Person	41	35	42

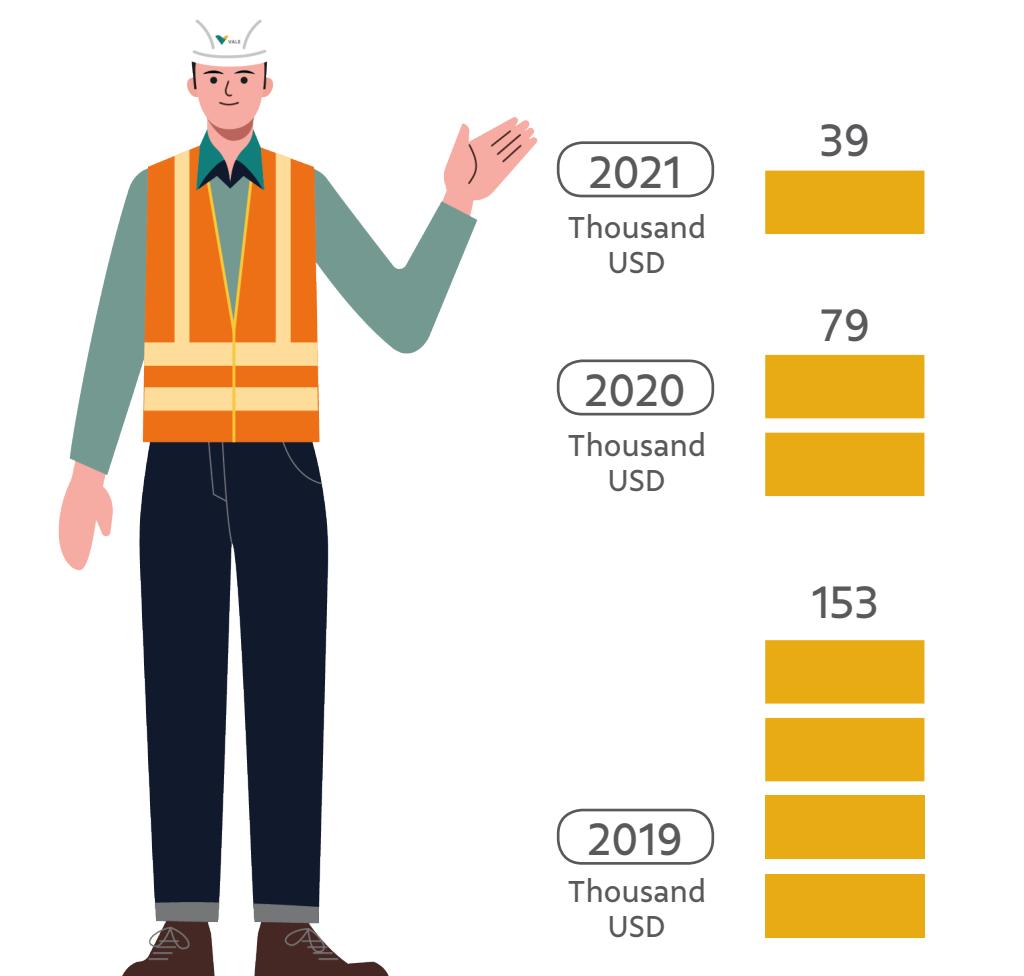
Occupational Health, Safety, and Environment

Description	Unit	2021	2020	2019
Employee OHS Training	Hours	64	48	16
Recordable Injury Frequency Rate	%	0.70	0.51	0.53
Safe Working	Hours	5,006,592	9,571,366	4,881,030
Lost Work Days	Days	170	38	88
Environment Training	Hours	136	120	80

Integrated Community Empowerment and Development Program

Description	Unit	2021	2020	2019
Number of Programs/Activities	Unit	54	28	47
Total Funds	Million USD	2.6	4.1	3.4
Estimated Number of Beneficiaries	Villages	38	38	38
	Individuals	43,205	21,000	38,000

Donations and Additional Assistance



Governance Aspect

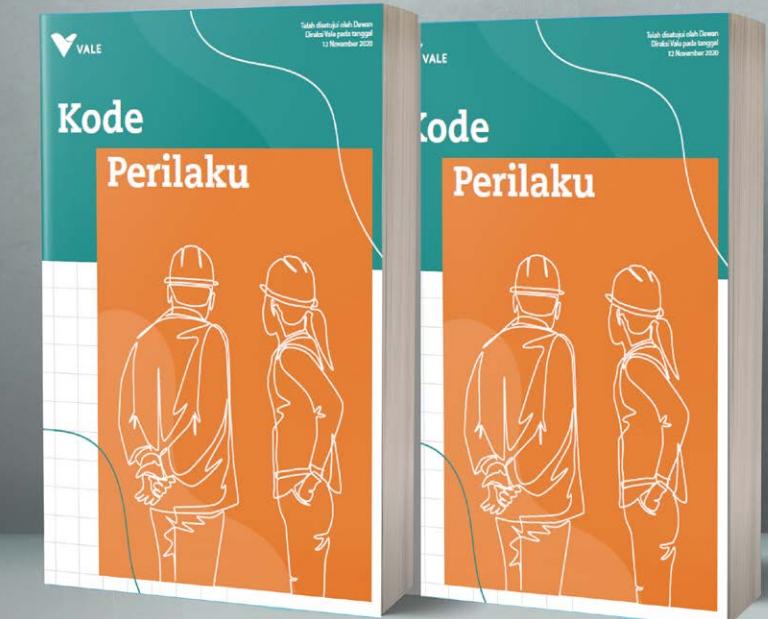
[POJK51-5]

Violation Reporting Handled Through Vale Whistleblower Channel (VWC)

Description	Unit	2021	2020	2019
Number of Allegations Received		33	74	24
Percentage of Valid Allegations		85	99	92

On March 10, 2021, PT Vale launched an update to its Code of Conduct.

The document contains the Company's ethical principles, based on our Values and Purpose. This book guides everyone working on behalf of PT Vale on how to act with integrity, resolve dilemmas, and always make the best ethical and responsible decisions.



Employees

[POJK51-3.c.2]

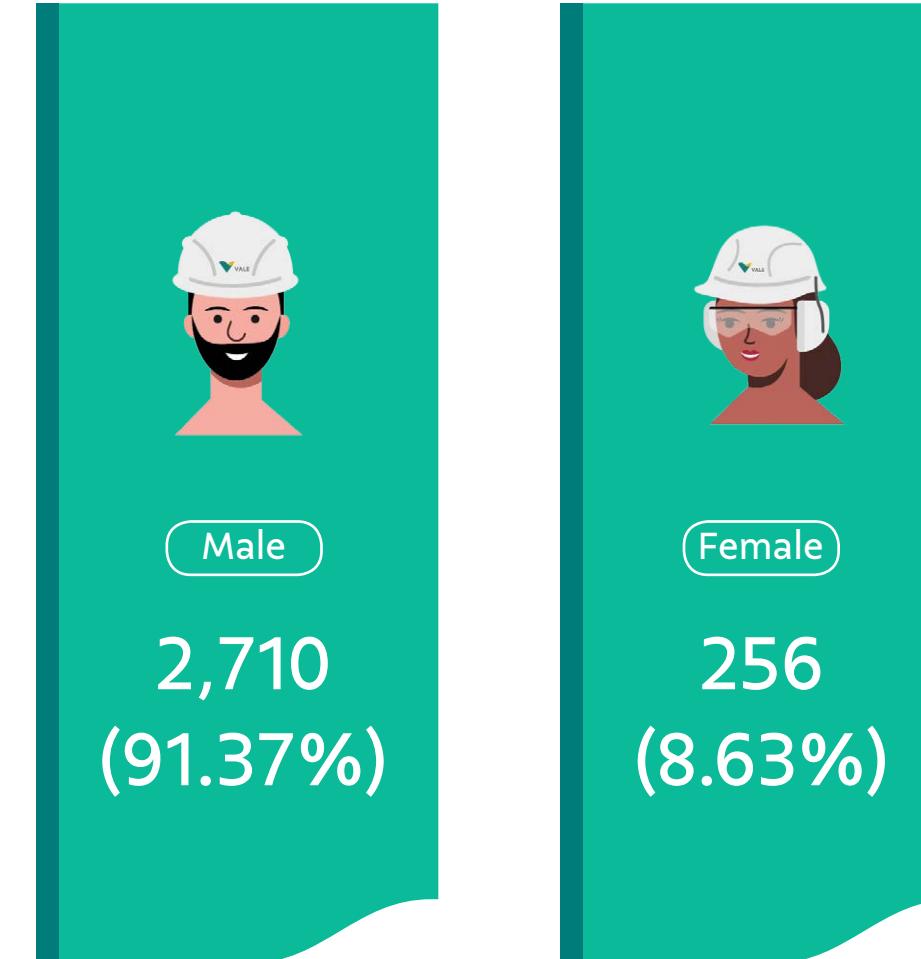
Throughout 2021, we did not lay off any employees (PHK) even though the challenges and business conditions were very dynamic during the COVID-19 pandemic. On the other hand, PT Vale recruited 89 new employees. All of them work in Indonesia, with placements in South Sulawesi, Central Sulawesi, Southeast Sulawesi, and outside Sulawesi. In line with our management policy, the Company does not employ part-time employees.

[2-7][2-7a][2-7b][2-7d][2-7e]

The total number of employees of PT Vale until 2021 is 2,966 and most of the employees are local residents who come from the East Luwu Regency, mainly from 4 empowerment areas. The number reached 2,570 people or 86.6% of the total workforce of PT Vale. A total of 388 employees or 51.8% of the senior staff is held by local workers.

[202-2] [EM-MM-210b.1]

[EM-MM-000.B]



Number of Employees in 2021 Based on Gender



Number of Employees in 2021 Based on Employment Status and Gender

Employment Status	Male		Female		Total	
	Total	%	Total	%	Total	%
Permanent Employees	2,682	90.4	253	8.5	2,935	98.7
Contract Employees	28	0.9	3	0.1	31	1.0
Total	2,710	91.4	256	8.6	2,966	100

Number of Employees in 2020 Based on Employment Status and Gender

Employment Status	Male		Female		Total	
	Total	%	Total	%	Total	%
Permanent Employees	2,727	90.7	252	8.4	2,979	99.1
Contract Employees	22	0.7	5	0.2	27	0.9
Total	2,749	91.4	257	8.6	3,006	100

Number of Employees in 2019 Based on Employment Status and Gender

Employment Status	Male		Female		Total	
	Total	%	Total	%	Total	%
Permanent Employees	2,780	91.3	243	8	3,023	99.3
Contract Employees	18	0.6	3	0.1	21	0.7
Total	2,798	91.9	246	8.1	3,044	100

Number of Employees in 2021 by Gender and Placement Area [2-7a]

Placement	Male		Female		Total	
	Total	%	Total	%	Total	%
Jakarta	41	1.4	21	0.7	62	2.1
Makassar	3	0.1	2	0.1	5	0.2
Sorowako	2,666	89.9	233	7.9	2,899	97.8
Total	2,710	91.4	256	8.6	2,966	100

Number of Employees in 2020 by Gender and Placement Area [2-7a]

Placement	Male		Female		Total	
	Total	%	Total	%	Total	%
Jakarta	44	1.5	21	0.7	65	2.2
Makassar	4	0.1	2	0.1	6	0.2
Sorowako	2,701	89.9	234	7.8	2,935	97.7
Total	2,749	91.5	257	8.5	3,006	100

Number of Employees in 2019 by Gender and Placement Area [2-7a]

Placement	Male		Female		Total	
	Total	%	Total	%	Total	%
Jakarta	35	1.1	16	0.5	51	1.6
Makassar	3	0.1	2	0.1	5	0.2
Sorowako	2,760	90.7	228	7.5	2,988	98.2
Total	2,798	91.9	246	8.1	3,044	100

Number of Permanent Employees in 2021 by Gender and Placement Area [2-7a]

Placement	2021			2020			2019		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Jakarta	34	21	55	35	19	54	30	16	46
Makassar	2	2	4	3	2	5	3	2	5
Sorowako	2,666	230	2,876	2,689	231	2,920	2,747	225	2,972
Total	2,710	253	2,935	2,727	252	2,979	2,780	243	3,023

Number of Contract Employees in 2021 by Gender and Placement Area [2-7b]

Placement	2021			2020			2019		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Jakarta	7	0	7	9	2	11	5	0	5
Makassar	1	0	1	1	0	1	0	0	0
Sorowako	20	3	23	12	3	15	13	3	16
Total	28	3	31	22	5	27	18	3	0

Number of Employees Based on Age Group

Age Group	2021		2020		2019	
	Male	Female	Male	Female	Male	Female
>50	484	15	433	14	395	13
31-50	2,137	213	222	224	2,300	219
<30	89	28	94	19	103	14
Total	2,710	256	2,749	257	2,798	246
	2,966		3,006		3,044	

Number of Employees Based on Education Level

Education	2021		2020		2019	
	Male	Female	Male	Female	Male	Female
Doctorate	1	0	1	0	7	0
Master's degree	45	13	48	13	42	10
Bachelor's degree	607	136	577	121	559	110
Diploma	287	59	295	72	297	73
High School	1,740	48	1,795	51	1,856	53
Junior High School/Equivalent	25	0	25	0	28	0
Elementary School	0	0	1	0	1	0
Expatriates	5	0	7	0	8	0
Total	2,710	256	2,749	257	2,798	246
	2,966		3,006		3,044	

Number of Employees Based on Position and Gender

Position	2021		2020		2019	
	Male	Female	Male	Female	Male	Female
Management	4	1	6	1	5	1
Senior General Management	16	1	13	0	10	0
General Management	74	9	71	7	57	6
Senior Staff	343	45	321	42	267	32
Staff	678	117	606	101	596	92
Non-Staff	1,595	83	1,732	106	1,863	115
Total	2,710	256	2,749	257	2,798	246
	2,966		3,006		3,044	

Data source: Master list of employee data and based on individuals recorded as of December 31, 2021. [2-7c]



Other Workers who are not PT Vale employees

In our locations there are other workers who are not employees of PT Vale. They include contractors/vendors/supplier workers, who work based on agreed contracts. However, this report does not include the number of other employees who are not PT Vale employees, given the dynamic movement among them. [2-8][2-8a][2-8c]

Organizational Scale [2-6] [POJK513.c][POJK513.c.1]

Education	Unit	2021	2020	2019
Total Employees	People	2,966	3,006	3,044
Total Operating Areas	Area	1	1	1
Revenues		953.17	764.74	782.01
Total Capitalization				
• Total Liabilities	Million US\$	318.37	292.92	281.00
• Total Equity		2,154.46	2,020.39	1,941.69
Total Assets		2,472.83	2,317.31	2,222.69
Total Net Profit		165.78	82.82	57.40
Nickel in Matte Product Sales	Ton	66,615	72,846	72,044
Proven Ore Reserves		65.7	61.9	66.2
Probable Ore Reserves	Million Tons (DKP)	46.9	42.1	41.1

External Initiatives, Certification, and Association Membership

[2-28] [POJK513.e]



Indonesia Business Council for Sustainable Development



Indonesia Business Coalition for Women Empowerment



Women in Mining and Energy

Name of Certification	Validity	Issuing Agency
ISO 14001-2015 Environmental Management System Number of Certificate: ID004085	October 2021 to October 2024	Bureau Veritas
ISO 17025 General Requirements for Competency Laboratories Testing and Calibration	October 1, 2018 to September 30, 2022	National Accreditation Committee

Note :

Details regarding the specific scope of certification can be found on the PT Vale website.
<http://www.vale.com/indonesia/EN/sustainability/our-approach-in-indonesia/Pages/policies.aspx>

Association Membership [POJK513.e]

Association	Role	Scope
Indonesia Business Council on Sustainable Development (IBCSD)	Febriany Eddy as Vice Chairman	International
Nickel Institute	Member	
International Commission on Large Dams (ICOLD)		
The Employers' Association of Indonesia (APINDO)	Extraordinary Member	
Indonesian Mining Association (IMA)		
Stock Issuer Association		
Indonesia Corporate Secretary Association (ICSA)		National
Indonesia Business Coalition for Women Empowerment (IBCWE)	Member	
Indonesian Public Companies Association		
Forum Komunikasi Pengelolaan Lingkungan Pertambangan Indonesia (FKPLPI)		

External Awards and Appreciation

Green PROPER from the Ministry of Environment and Forestry (MoEF).

Gold Award at the 2021 Asia Sustainability Reporting Rating (ASRRAT), from the National Center for Sustainability Reporting (NCSR).

Bronze Award (Bronze) in the Asia Sustainability Reporting Awards (ASRA) category for the Best Sustainability Report in Asia (Digital).

Bronze (Bronze) at the Global Corporate Sustainability Awards (GCSA) 2021, from the Taiwan Institute for Sustainable Energy (TAISE), in the Sustainability Reports category.

Indonesia SDGs Award (ISDA) 2021

Aditama award from the Ministry of Energy and Mineral Resources



About Sustainability Report



Basis and Reference for Issuing Sustainability Reports

1. **2007 Law No. 40 concerning Limited Liability Companies, which requires the Company to submit a report on their Social and Environmental Responsibility (SER) implementation in the Annual Report.**
2. **OJK Regulation (POJK) No.51/POJK.03/2017 concerning the Implementation of Sustainable Finance in Financial Services Institutions, Issuers, and Public Companies**

The disclosure of information in the OJK Regulation has been adjusted to the Company's business in the mineral mining sector. This report does not disclose material information pertaining to customer satisfaction surveys, use of environmentally friendly materials, environmentally friendly products and matters related to the implementation of Sustainable Finance, including problems faced, financing targets, and product development responsibilities. In addition, there were no spills as a result of the Company's operations.



3. **Global Reporting Initiative (GRI) 2021 standards, with conformity: 'reference to the GRI Standards'.**
4. **Sustainability Reporting Guidelines & Mining and Metals Sector Supplement (MMSS) GRI-4.**
5. **Sustainability Accounting Standards Board (SASB) Metals and Mining 2021.**
6. **Task Force on Climate-related Financial Disclosure (TCFD).**

Stakeholder Engagement
The Company has identified internal and external stakeholders.



Accuracy

The report has gone through a verification process to ensure the information accuracy.

Balance

The report is submitted in a balanced manner and includes the positive and negative impacts of the Company's activities, and their management.

Clarity

The report is presented clearly in Indonesian and English, so that stakeholders can better understand it.

Comparability

The report is presented for different periods to show the impact of the Company's activities and their management in each period,

Materiality

Material topics are determined through surveys, involving internal and external stakeholders.

Completeness

The Company discloses information according to the criteria/standards referred to.

The entire process of collecting, recording, compiling, and analyzing information is carried out correctly, so that when necessary testing and verification can be carried out.

Sustainability Context

Disclosure of impact management information is delivered in the context of environmental, social or governance (ESG) sustainability.

Punctuality

The Company sets a timeline for preparing reports, so that the decision-making process can be carried out quickly and accurately.

Verified

The entire process of collecting, recording, compiling, and analyzing information is carried out correctly, so that when necessary testing and verification can be carried out.

Entity, Period, and Frequency of Reporting

Information in the Company's Financial Statements is submitted in a consolidated basis. The sustainability performance information in this Report is only from PT Vale, as the Company does not have any subsidiaries. [2-2a][2-2b][2-2c]

The reporting period for sustainability performance and Financial Statements is January 1, 2021 – December 31, 2021. The Company publishes a report once a year, and the previous 2020 Sustainability Report was published on March 31st 2021. [2-3a][2-3b][2-3c]

Response to Previous Year's Report Feedback

We would like to thank you for the input on the 2020 Sustainability Report received from stakeholders, especially from investors. They asked various questions about PT Vale's initiatives in managing the environment, especially in supporting the reduction of greenhouse gas (GHG) emissions. In response to the questions, in this report PT Vale provides information on environmental initiatives, beyond compliance with environmental regulations, as well as commitments to upholding human rights.

The responses to the verification process (assurance) in the 2020 report is also one of our concerns, especially in completing the quantitative data and supporting documentary evidence, and the mapping of material topics we have carried out with internal and external parties participation. We present the results of material topics mapping and significant issues in this report along with all the processes we developed as part of our improvement strategy.

Contact Person [2-3d]

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Restatement and External Assurances

Some information has been restated from previous reports and we have noted such in our report. The Board of Directors as the responsible governance body has approved all information disclosures. The reporting scope covers the operational areas in Sorowako, Bahodopi, Pomalaa, the Representative Office in Makassar, and the Head Office in Jakarta. The consolidated financial statements are submitted in the annual report and have been audited by a public accounting firm. [2-4] [2-14]

This sustainability report has been through an assurance process by an independent external party based on the approval of the Board of Directors, namely SR Asia, Indonesia representative who has a US AA1000 license. The assurance process was carried out between 9 to 11 March 2022. [2-5a][2-5b][2-5c] [POJK51-7]

Stakeholder Engagement [2-29]

Internal Stakeholders, Approach, and Discussion Topics

Stakeholders	Identification Basis	Discussion Topics	Approach And Response	Approach Frequency	
Internal Stakeholders					
<ul style="list-style-type: none"> Employees Company Leaders Contractors 	Communication policy and social management system.	<ul style="list-style-type: none"> COVID-19 pandemic. Economic Performance. Occupational Health and Safety Environmental management Strengthening the capacity of local suppliers and implementing the domestic component level (TKDN). 	<ul style="list-style-type: none"> Implementation of health protocols Competitive production costs. Increased production and sales of nickel in matte. Implementation of the Promote National Interest (PNI) and Local Business Initiative (LBI) programs. Application of Safe Work Permit, Mining Safety Management System (SMKP), and Contractor Safety Management System (CSMS). Implementation of Environmental Management System and PROPER. 	<ul style="list-style-type: none"> Health protocols implemented during the COVID-19 pandemic. Preparation of the Company Work Plan and Budget (RKAP), and outreach, carried out as needed. Regular evaluation and performance reporting Occupational health and safety evaluations are carried out throughout the year. Contractor performance evaluation carried out periodically, as needed. Regular Environmental management performance reporting. 	
External Stakeholders					
<ul style="list-style-type: none"> Community Formal Leader Informal Leader 	Communication Policy and Social Management System	<ul style="list-style-type: none"> Recruitment of local workers. Community empowerment (local communities) 	<ul style="list-style-type: none"> Recruitment process by the company, as well as through contractors. Meetings through the Inter-Village Cooperation Agency (BKAD) forum to discuss, compile and evaluate Community Empowerment and Development Program (PPM) programs. 	<ul style="list-style-type: none"> Recruitment of employees is carried out as needed. BKAD forums are held at the beginning of the year, mid-year and the end of the year, and can be at any time as needed. During the reporting period, there were four meetings with the BKAD forum. 	
<ul style="list-style-type: none"> Government and Private Companies Local Government Central Government TNI/Polri 	<ul style="list-style-type: none"> Investors Customer Suppliers and Partners Public Sector 	Communication Policy and Social Management Systemvw	<ul style="list-style-type: none"> Divestment of the Company's shares. Contribution to the state and regions. Safeguarding assets. Environmental management and governance. Company performance. 	<ul style="list-style-type: none"> Completed divestment of 20% of the Company's shares to the Government of Indonesia through PT Indonesia Aluminum (Persero) or MIND ID. Payment of taxes and non-tax state revenue (PNBP). Coordination and joint patrols. Implementation of an Environmental Management System and compliance with regulations. Periodic reporting of the Company's performance. 	<ul style="list-style-type: none"> Payment of taxes and PNBP at the time set by the Government. Total taxes and PNBP paid in 2021 reached US\$142,966 thousand. Coordination and joint patrols are carried out periodically as needed. Environmental management reports submitted periodically. Production and sales performance reporting carried out periodically. Annual GMS once a year and Extraordinary GMS as needed. The 2021 Annual GMS was held on April 29, 2021 and the 2021 Extraordinary GMS on August 31, 2021.
<ul style="list-style-type: none"> Observers Media Academicians NGOs Other Entities 	Communication Policy and Social Management System	<ul style="list-style-type: none"> Openness and easy access to information. Consultation, research and cooperation. 	<ul style="list-style-type: none"> Publication and delivery of public information through press conferences, news releases, and public exposés. Meetings and discussions related to the implementation of social and environmental responsibility (SER). Collaboration on research and activities in the context of SER. 	<ul style="list-style-type: none"> Publication and delivery of public information carried out as needed. Meetings and discussions are held according to the needs of the Company. Collaboration with universities, NGOs, and other entities. 	
<ul style="list-style-type: none"> Local Communities 	Communication Policy and Social Management System	Respect and fulfillment of customary rights and local wisdom.	Building dialogue and communication with local communities, through various official meetings and forums held by the central and local governments.	Implemented as needed and continuously.	

Specific Approach to Stakeholders: Collective Labor Agreement

Our employees are strategic stakeholders that directly affect the Company's sustainability. We do not employ child employees or forced labor. During 2021 there were no discriminatory practices against employees. In 2021 there were no discriminatory practices against employees. All (100%) employees are protected by a collective labor agreement (PKB) by Law No. 13 of 2003 concerning Manpower and Law no. 11 of 2020 concerning Job Creation. The foreign employees (foreigners) regulations are not covered by the PKB but by the senior management book. In addition, we also evaluate the assessment of suppliers/contractors, including those related to compliance with the Manpower Act and respect for human rights. During the reporting period, PT Vale has a freedom of association policy set out in the Policy Regular Review.

[2-30a][2-30b] [406-1] [408-1] [409-1]
[POJK51-6.c.2.a] [EM-MM-310.a.1]

Material Topics

The process for determining material topics for internal stakeholders is different this year than in previous years. This year, the material topics were determined using various methods that involved internal and external stakeholders.

Internal stakeholders:

1. Management – from FGD
2. Employees – from employee survey

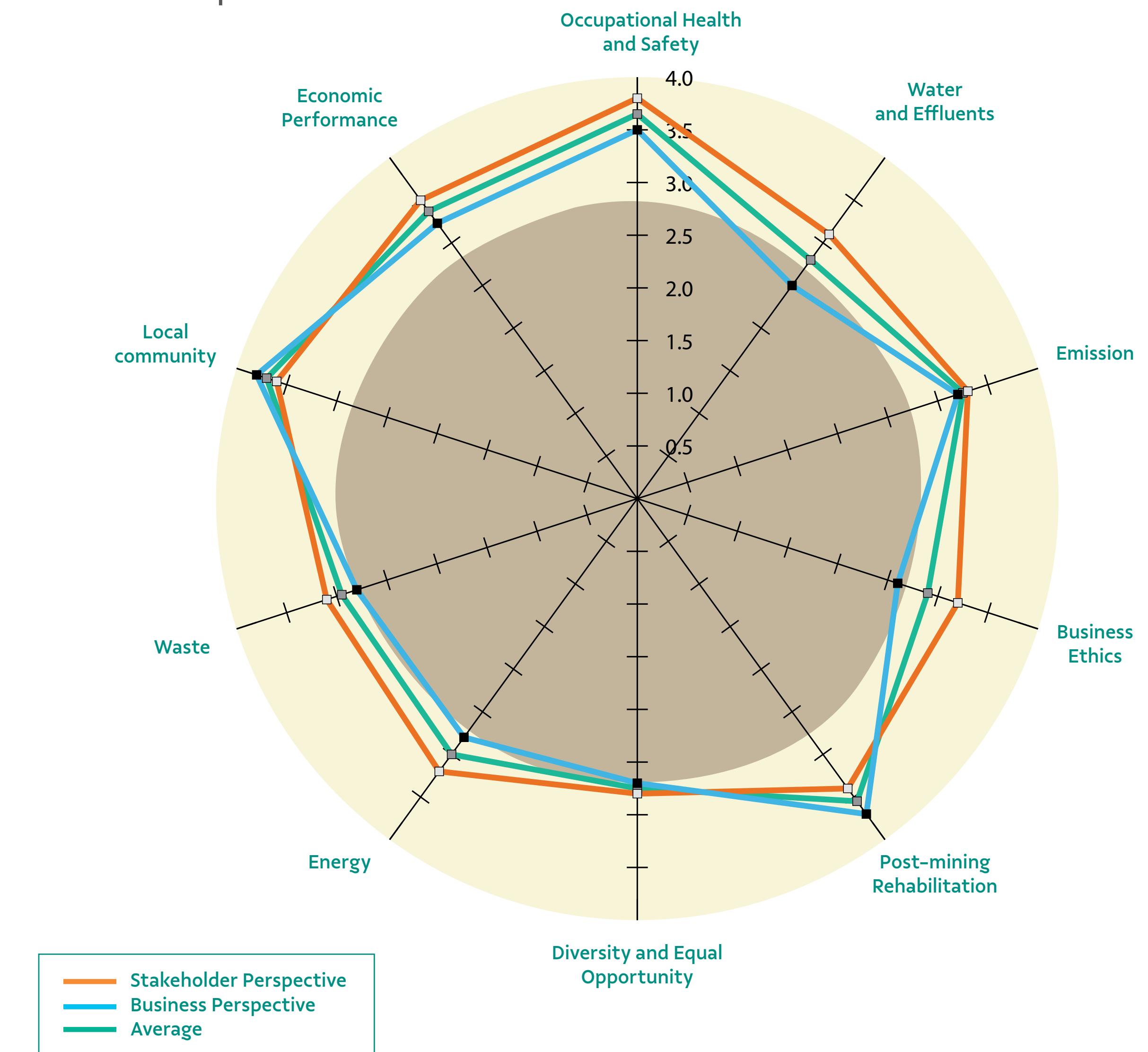
External stakeholders:

1. Public – from public survey
2. Media – from Sprinklr Media Monitoring tools
3. Local stakeholders – from sample survey.

This approach is also used in discussions facilitated by independent parties, acting as a team of experts. The discussion discussed the actual and potential impacts, both positive and negative, from the Company's activities, together with an analysis of their effect. [3-1a]
[3-1b] [POJK51-5.d.1] [POJK51-5.d.2]

The discussions resulted in ten material topics based on sustainability and aligned with efforts to achieve the Sustainable Development Goals (SDGs). There is an additional material topic 'Equality and Diversity' in the 2021 report. This is in line with the Company's commitment to promote equality and diversity, without discrimination, whilst acknowledging existing historical and cultural obligations. [3-2a][3-2b]

Material Topics Matrix



Material Topics and Impact Boundaries [3-2a] [3-1] [3-2] [3-3]

Material Topic	Key Topic	Impact		Importance of Material Topic
Occupational Health and Safety	Implementation of management policies and achievement of OHS performance	Head Office	Operating Areas: Sorowako Bahodopi Pomalaa	The characteristics of the operations carried out by PT Vale have a high risk to the health and safety of employees, thus it is important to inform OHS management so that stakeholders are aware of PT Vale's commitment to providing a healthy and safe workplace, and according to the value: 'Life matters most'.
Post-Mining Rehabilitation	Environmental recovery and climate change prevention		Operating Areas: Sorowako	The mining process has the potential to change the landscape so that the former mining activity area needs to be managed and utilized to function according to its designation. PT Vale has a policy and carries out rehabilitation of former mining areas.
Emissions	Measurement and reduction of greenhouse gas (GHG) emissions and conventional emissions	Head Office	Operating Areas: Sorowako Bahodopi Pomalaa	Reduce absolute GHG by 33% by 2030 and conventional emissions.
Energy	Energy efficiency and development of new and renewable energy (EBT)	Head office	Sorowako Bahodopi Pomalaa	Energy is needed for the Company's operational activities and efficiency efforts, as well as the use of New and Renewable Energy (EBT) to reduce climate change.
Local Communities	Management of negative impacts and enhancement of positive impacts on local communities.		Operating Areas: Sorowako	The local communities are a strategic stakeholder that develops with the Company and PT Vale's efforts to improve their welfare are very important.
Economic Performance	Direct economic value generated and distributed to stakeholders.	Head office	Operating Areas: Sorowako Bahodopi Pomalaa	Economic performance is the basis for all the Company's operational activities and risks that can affect economic performance are very important to be managed.
Diversity and Equality	Training, competency improvement, and career development for employees and opportunities for society	Head office	Operating Areas: Sorowako Bahodopi Pomalaa	Vale's aspiration is to become an authentically inclusive company, namely by accommodating and respecting the diversity of employees so that they can fully contribute to achieve maximum potential, without discrimination, and achieve a positive work experience.
Waste	Landfill load reduction	Head office	Operating Areas: Sorowako Bahodopi Pomalaa	PT Vale's efforts to recycle, reuse, and reduce (3R) waste properly, through stakeholder engagement.
Business Ethics	Anti-corruption training, e-procurement, Corporate Integrity pact	Head office	Operating Areas: Sorowako Bahodopi Pomalaa	PT Vale's commitment to support an anti-corruption culture, by conducting various trainings and outreach, implementing e-procurement and inclusion of no bribery and corruption in every employee that is renewed annually.
Water and Effluents	Reducing the intensity of water usage	Head office	Sorowako Bahodopi Pomalaa	<ul style="list-style-type: none"> Vale's commitment to process liquid waste to meet quality standards, according to the Minister of Environment Regulation No. 9 of 2006 concerning Wastewater Quality Standards for Nickel Ore Mining Business and/or Activities, as well as maintaining the clarity of lake water in the operating area. PTVI targets to reduce the intensity of new water use from natural sources by 10% by 2030 based on 2018 as the year of baseline.

High Priority
Medium priority

Sustainability Policy and Strategy

We carry out strategic priorities as a form of our commitment to maintaining sustainability in every activity we undertake. Our Sustainability Strategy develop to 2025. More detail about our sustainability strategy can refers to <http://www.vale.com/indonesia/EN/sustainability/our-approach-in-indonesia/Pages/policies.aspx>. [POJK51-1]



PT Vale is part of Vale Global to strive to achieve 33% absolute reduction of GHG emissions and support the achievement of the 2030 Agenda and Net Zero Emissions by 2050.

From the main sustainability strategy priorities until 2025, PT Vale has established sustainability strategies for 2022, as we did in 2021. These strategies focus on our commitments to reduce climate change; energy and water efficiency; conserving forests; and increasing social contribution; as a transitional step to Net Zero Emission mining.

Main Sustainability Strategic Priorities

Net Zero Emission

- Implement the Green PROPER environmental compliance agenda, compliance audit, emission targets, and monitoring system.
- Develop a roadmap and implementation toward net zero emission in stages (33% reduction of GHG emissions by 2030 from 2017 baseline).
- Finalize the social agenda: relocation of Dongi and land encroachment.

High Performance Culture

- Complete succession planning.
- Implement IMPACT & role-modeling training.
- Implement the Supervisor Training Program.
- Carry out Superior Employee Training (PKU).
- Prepare for diversity and inclusion.
- Implement programs to overcome performance problems.
- Improve the quality of VPS implementation.

Environmental protection & management

- Reclaim 70% of post-mining land progressively by 2025.
- Carry out rehabilitation outside the contract area of work.
- Implementing biodiversity conservation programs.
- Implement waste reduction and utilization.
- Implement water efficiency and reduce pollution load.
- Implement an environmental management system consistently.

Obsessed with Risk and Safety Zero N1 and N2

- Complete the follow-up HIRA and implement critical controls.
- Reproduce N3 & Hi-Po non-energy release reports.
- Promote the Golden Rules, INS003, and RAC/MHS.
- Set up Integrated Operations Control (COI).
- Complete the Health program and facilities repair.
- Implementing the Leadership in the Field (LIF) program.

90KT Sorowako 70KT Bahodopi 40KT Pomalaa

- Improve ore quality by reducing dilution and moisture content.
- Reduce operating variability - kiln standby and stability of the power supply.
- Complete the Continuous Improvement (CI) process plant and mass-balance synchronization program.
- Implement a de-bottlenecking program.
- Mineral conservation by utilizing low-grade ore (limonite).

Asset Integrity and Maintenance Adherence

- Implement Zero-Based Maintenance.
- Complete the Asset Integrity program from the 2012 assessment.
- Implement immersion to improve supply chain & maintenance synergy.



We are building strong relationships with our stakeholders, investing in reducing any negative impact from our activities, working with high ethical standards, promoting transparent management, and actively contributing to environmental and biodiversity conservation, and sustainable development. [2-24]

Sustainability Strategy

Support sustainable development in the region and enhance Vale's reputation with the community

Principle Guide

- Induction of a low carbon chain
- Shared value generation
- Territorial development
- Trust and credibility
 - » Transparency and listening
 - » Response Agility
 - » Participatory process
 - » Embody different view
 - » Find converging paths
- Clear and measurable KPIs

Vale 2030 Commitments

Climate Change

Reduce greenhouse gas emissions aligned with the Paris Agreement and be Net Zero Emission by 2050

Energy

Increased clean energy

Water

Reduce new water collection by 10%

Note : PT Vale has implemented a climate scenario.



Forests

Recover and protect of degraded land beyond our boundaries

Socioeconomic Contribution

Health care, education and income generation

ESG Gaps

Eliminate main ESG gaps in relation to best practices

Vale Global's Sustainability Strategies and Commitments

[POJK51-1]

1 We have instigated a sustainability strategy to improve the quality of life and change the future. Together.

2 For us, the future is the process of constantly evolving, creating and reinventing.

3 We need to have a greater responsibility towards all those involved in our operations, to society, and to the earth. We are required to perfect ways to improve the quality of life.

4 For this future, PT Vale welcomes ideas by listening and working together, and by creating an unbroken cycle that brings prosperity to everyone.

5 We want PT Vale's future resources to be used to create value for everyone.



Pillar Goals



Serving society, giving back to all

Serving the communities by contributing to all. From the beginning, PT Vale has served the communities. Turning natural resources into self-sufficient areas, contributing to the development of the country. Currently PT Vale serves the communities by providing what they need and want, including mining materials and other resources to improve their quality of life. While preserving the Earth. Creating prosperity for all.



Doing it together

Doing together means listening but our listening will only be valuable if it is comprehensive. Everyone must listen: society, governments, customers, and especially the people who make PT Vale, everywhere PT Vale is. After all, we are the communities. Communities are PT Vale.

Doing together means creating a collective capacity to think, design and realize possible futures for everyone. For mining. For the planet. Creating spaces dialogues that evolve the industry as a whole.

Doing together means acting with responsibility, transparency and consistency. Walking the Talk.



Using Vale's mobility to do something extraordinary.

All mining companies are required to preserve nature, protect the community, and those involved in the company's operations.



Transforming the future by taking care of the present.

We are generating development for communities, well-being for society and permanent environmental preservation mechanisms. Leaving the world a better place than when Vale arrived. Putting the benefits intrinsic to mining at the service of society as a whole.

But also: using the knowledge and technical, human, financial and catalytic capacity that PT Vale has developed over the years to rebuild a virtuous cycle of prosperity that points to an inclusive and comprehensive future, in which everyone benefits and PT Vale's horizons expand to meet the needs of a world in constant transformation.

Recognizing the role of natural resources, but also humanity's infinite vocation to create and evolve.

Focus for the Future



Safety

This is one of the key aspects to increase and regain public trust. Ensuring safety of life and operations is Vale's priority.



VPS

A strong management model is essential to increase the level of operational excellence. Having standards is our way of becoming a unified Vale wherever we operate, as well as contributing to building a more reliable Company.



People

Our Company is built by human hands – they are the key elements to achieving the future we want.



Innovations

Investing in innovation, leaving the comfort zone, is the main factor that makes our Company more competitive and profitable.



Sustainability

Contributing to improving environmental conditions, focusing on three dimensions: environmental, social, and governance. This is our new mindset: investing with purpose.

Support for SDGs and Sustainable Mine Management

Through membership and sustainability initiatives: PT Vale, through the Indonesia Business Council for Sustainable Development (IBCSD), has drafted business documents in support of achieving the SDGs. We focus on eight goals.

 Sustainable and Environmentally Friendly Agriculture	Target	Create an integrated farming system that promotes Good Agricultural Practices through maintaining ecological order and avoiding the use of pesticides or chemical fertilizers that risk damaging soil structure, its fertility and also the survival in the food chain.
	Strategy	Form an Integrated Agricultural Area in Towuti District
 Tackling Coronavirus	Target	Minimize the impact of COVID-19 at the regional level.
	Strategy	Strictly implement health protocols and provide assistance to both employees and the public to reduce the spread of COVID-19.
 The Company signs the Diversity and Inclusion Charter	Target	<ul style="list-style-type: none"> Increase in the number of female employees to 8.9% by the end of 2021. Establishing a recruitment strategy that includes an objective to increase the number of female employees and employees with disabilities by reviewing which jobs can be completed.
	Strategy	<ul style="list-style-type: none"> Expanding job opportunities for female employees and employees with disabilities. Provide training related to diversity and inclusion to all employees.
 Renewable Energy for Our Operations	Target	Achieve 100% clean energy production targets to sustain self-generated energy by 2030.
	Strategy	Clean energy optimization, power stabilization, waste heat and solar panel utilization, also fuel shift.
 The trainings carried out by third parties are Gender Bias Training, Unconscious Bias Training, and How To Build A Culture of Respect in Vale Indonesia Training	Target	Raising awareness about gender diversity and inclusiveness to 230 leaders (supervisor lever up)
	Strategy	Provide information on the implementation of the H-2 week training via email and provide a questionnaire regarding training responses.

 Emergency Response Team for Disaster Areas	Target	Become part of efforts to accelerate the recovery of affected areas
	Strategy	Provide aid to disaster-affected areas
 Towards Low Carbon	Target	2050 Net Zero Emission
	Strategy	Reduce greenhouse gas emission levels by 33% by 2030 by optimizing energy usage along the supply chain; shifting lower carbon fuels, electrification of mining heavy equipment and its supports; move from fossil fuels to renewable energy sources; achieve 100% clean energy production target to sustain self-generated energy by 2030; and continue to rehabilitate post-mining areas and carry out beyond boundary reforestation.
 Building Good Corporate Governance	Target	Promote continuous improvement in ethical awareness
	Strategy	<ul style="list-style-type: none"> Conduct anti-corruption and ethics & conduct socialization and training. Develop a road map to better governance based on International standards.
 Tackling Coronavirus	Target	Minimize the impact of COVID-19 at the regional level
	Strategy	Strictly implement health protocols, provide assistance to both employees and the public, and work closely with stakeholders to reduce the spread of COVID-19.



PT Vale's support in achieving SDGs:

<https://www.ibcsd.or.id/uploads/private-sector-contribution-to-achieve-sdgs-in-indonesia/>



Environment

Environmental Sustainability Management Performance

PT Vale is committed to continuing to protect the environment through PTVI's Environment Health Safety and Sustainability (EHSS) Policy document, which discusses the Company's compliance with the environment that has been approved by the CEO and COO, as well as a specific PROPER Policy in every environmental aspect, such as energy efficiency, emission reduction, waste management, water efficiency and reducing the burden of pollution and conserving biodiversity. PT Vale has taken corrective action to encourage continuous improvement, such as environmental monitoring activities, reporting, evaluation, implementation of environmental management systems, environmental audits, monitoring of compliance with laws and regulations, and reclamation of post-mining land for environmental management. These activities are the responsibility of the Environment and Permit Management Department. Their results are reported regularly to the Ministry of Environment and Forestry. South Sulawesi Provincial Environmental Management Office, East Luwu Regency Environmental Service, and other relevant agencies.

The implementation of environmental management is carried out by all departments that generate impacts. Evaluation of environmental management performance is carried out every month, attended by Senior Management and the Board of Directors.

During its 53 years of operations in Indonesia, PT Vale has been committed to implementing sustainable mining practices. We realize this commitment by supporting external initiatives through the Sustainable Mining Management Principles based on the International Council of Mining and Metals (ICMM) Framework. In 2021, we instigated five environmental commitments to support the achievement of net zero carbon emissions. [2-25]

The Company is committed to and continues to strive to comply with all applicable environmental regulations, including by using an application, namely the Regulation

Compliance System (RCS), and referring to Global standards related to regulation compliance which allows the company to access and identify its compliance at any time with the obligations of the applicable regulations. In addition, the Company cooperates with Bureau Veritas as an external auditor to evaluate PT Vale's environmental performance.

Furthermore, PT Vale will continue to make regular efforts to report on performance and environmental issues regularly since the start of operations through Environmental Management Plan and Environmental Monitoring Plan (RKL-RPL) reports, SIMPEL-KLHK (KLHK Electronic Reporting Information System) reports, and reclamation reports according to the timeframe set out in the regulations (monthly). Quarterly, semester and yearly). To ensure that environmental management and monitoring are carried out properly, a monthly performance evaluation is carried out by the Environment Committee, whose members consist of Senior Managers and Directors. And monthly departmental environment performance reports that have been reported to PT Vale management regularly once a month.

The company strives to create environmental awareness for all employees such as conducting housekeeping competitions, clean Friday programs, webinars, conducting waste management campaigns, General Induction Program (GIP) training for new employee and visitors, and commemorating World Environment Day commemorations. In addition, the Company also provides several trainings on environmental awareness according to the results of training need analysis (TNA) from all functions and employee levels. In addition, to ensure the competence of environmental management resources, the Company provides training for employee certification according to the stipulated requirements "training schedule and certificate and absenteeism".

Sustainable Mine Management Principles based on the International Council of Mining and Metals (ICMM) Framework

Apply ethical business practices and sound systems of corporate governance and transparency to support sustainable development.

Integrate sustainable development in corporate strategy and decision-making processes.

Respect human rights and the interests, cultures, customs and values of employees and communities affected by our activities.

Implement effective risk-management strategies and systems based on sound science and taking into account stakeholder risk perceptions.

Pursue continual improvement in health and safety performance with the ultimate goal of zero harm.

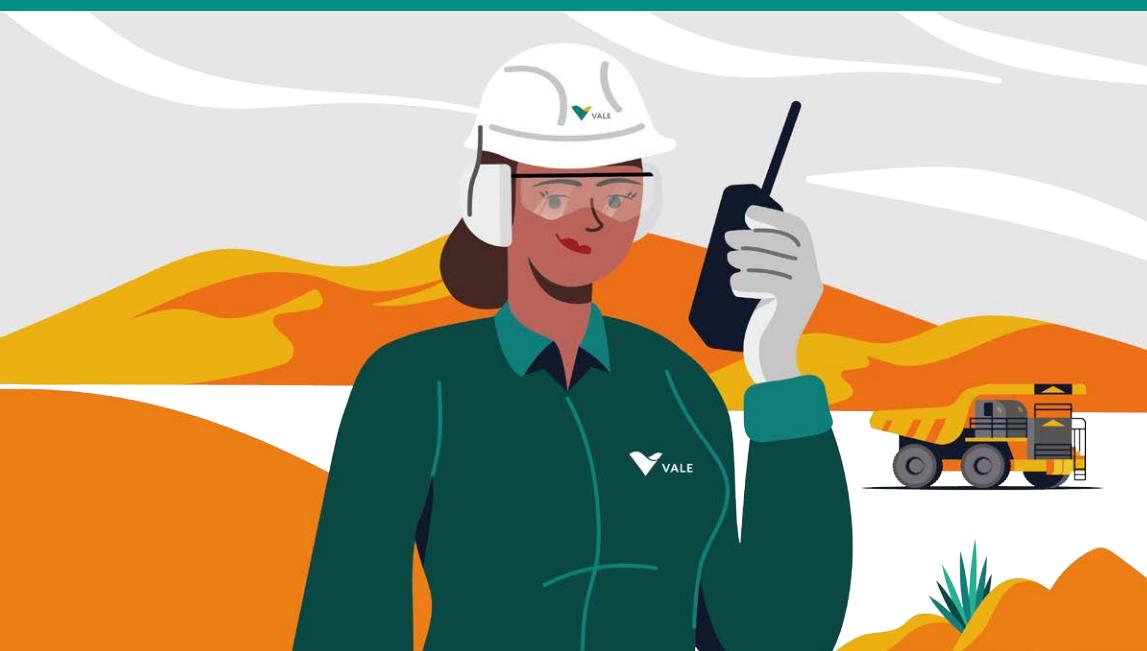
Pursue continual improvement in environmental performance issues, such as water stewardship, energy use and climate change.

Contribute to the conservation of biodiversity and integrated approaches to land-use planning.

Facilitate and support the knowledge base and systems for responsible design, use, re-use, recycling and disposal of products containing metals and minerals.

Pursue continual improvement in social performance and contribute to the social, economic and institutional development of host countries and communities.

Proactively engage key stakeholders in sustainable development challenges and opportunities in an open and transparent manner. Effectively report and independently verify progress and performance.



Five Environmental Commitments in 2021

Low carbon agenda

Reducing landfill load

Reducing the intensity of water usage

Cross-border forestation

Biodiversity Conservation

Towards Net Zero Carbon Emissions

Management of Material Topics

Mining activities can have an unavoidable negative impact on the environment. However, we continue to strive to manage these impacts so the environmental pollution does not occur. Environmental management is confirmed to reduce by various policies, targets, and initiatives. To ensure their implementation, the Environment and Permit Management (EPM) department conducts monitoring, reporting and auditing, and the results are submitted to the relevant institutions to ensure environmental compliance. Our environmental performance is shown below. [\[EM-MM-160a.1\]](#)

PT Vale's Contribution to the Planet



PT Vale continues to strive for 33% scope 1 and 2 greenhouse gas emissions by 2030 by implementing various programs, including:

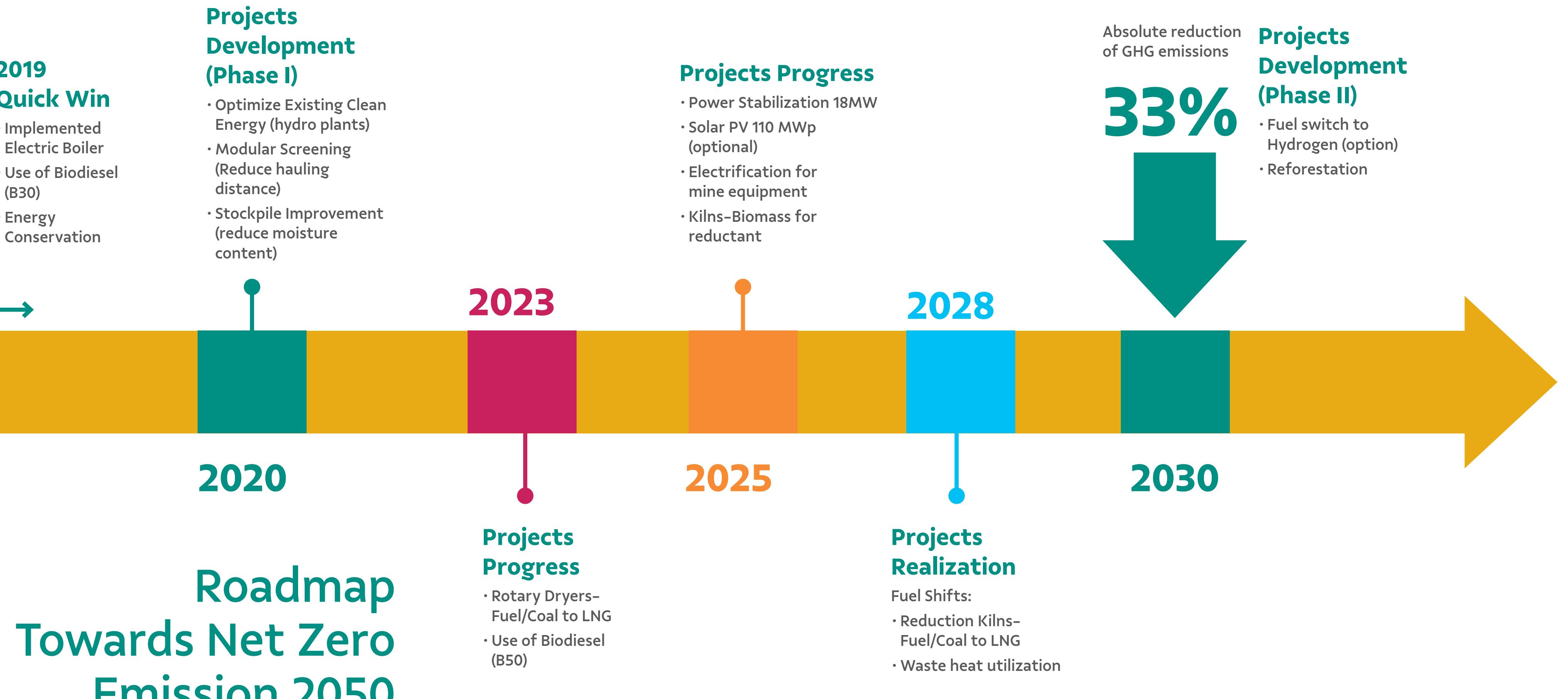
- Substitution of coal as a reductant with biomass
- Substitution of fuel oil and coal with LNG
- Electrification of heavy equipment, logistics transportation equipment, buses, and light vehicles
- Electrification of fuel boiler stage-2

PT Vale was one of the participants at the 26th Conference of Parties (COP) in Glasgow, Scotland, which was attended by 197 countries. Our presence at COP 26 shows our primary commitment to addressing climate change, and was also an opportunity to share information about PT Vale's initiatives to reducing and neutralizing GHG emissions.

During the forum, Febrinay Eddy as CEO of PT Vale, shared the initiatives, experiences, and achievements in the transition to environmentally friendly energy process by emphasizing sustainability as a core governance in the mining industry. PT Vale's energy transition efforts include operating three hydroelectric power plants that reduce GHG emissions by more than 1 million tons CO₂eq per year, and the cancellation of a coal conversion project to reduce potential additional carbon emissions of 200,000 tons CO₂eq per year. We are also committed to the rehabilitation and conservation of biodiversity on post-mining land. [\[3-3a\]\[3-3b\]](#)
[\[3-3c\]\[3-3d\]\[3-3e\]\[3-3f\]](#)

PT Vale's climate change risk management focuses on sustainability and we refer to the Task Force on Climate-Related Financial Disclosure (TCFD) guidelines. We have set short term targets for energy efficiency solutions and for maximizing renewable energy usage; while the medium-term target for 2030 is a 33% reduction in absolute scope 1 and scope 2 emissions. The long-term target is to achieve net zero emissions by 2050. [\[EM-MM-110a.2\]](#) [\[TCFD Strategy.a\]](#)

We believe that in the future, the energy transition will be one of the keys to ensuring the success of controlling climate change, and preventing a 2oC temperature increase according to the Paris Agreement. Along with this, nickel, which is a product of PT Vale, will become an important commodity in the energy transition to build the required renewable infrastructure, and support transporting electrification via electric vehicles (EV). The increasing demand for nickel will affect the Company's positive financial performance in the next few years. [\[TCFD Strategy.b\]](#) [\[TCFD Strategy.c\]](#)



Note : Energy conversion to LNG will contribute to around 28% of emission reduction.

GHG Emission Calculations [POJK51-6.e.4.a]

The calculations include GHG scope 1 emissions in the production and usage of fuel oil (BBM), and scope 2 in electricity usage. The GHG emissions results are expressed as total emissions, in units of tons of CO₂ equivalent (CO₂eq), including the conversion of non-CO₂ GHG emissions (CH₄, N₂O, dan HFC). The calculations use the energy consumption balance method for fossil fuels and gases that cause the greenhouse effect using a 2017 baseline, and the Global Warming Potential/GWP=1 index. There are no calculations for biogenic CO₂ emissions. All GHG emission calculations are for operations in Sorowako, South Sulawesi. The calculation of GHG emissions uses the Intergovernmental Panel on Climate Change (PCC) guidelines with the Global Warming Potential (GWP) index, which refers to the fifth report assessment in 2014 (AR-5). [305-1a, 305-2a][305-1b][305-2c][305-2b][305-1c][305-1d][305-2d][305-1e, 305-2e][305-1f, 305-2f][305-1g, 305-2g]

During the reporting period PT Vale did not calculate scope 3 emissions. PT Vale is gradually trying to reduce GHG emissions in its supply chain activities by encouraging suppliers and customers to share its commitment to reduce carbon emissions in all activities carried out. [305-3]

Total GHG Emissions Based on 2017 Baseline

[305-1a][305-2a][305-1d][305-2d]

(Ton CO₂eq)

2021	1,864,871
2020	2,015,952*
2019	1,999,236*

Information:

*Restatement of the 2020 Sustainability Report based on the results of data verification. [2-4]

GHG Emissions Intensity [POJK51-6.e.4.a]

GHG Emissions Intensity only calculates carbon equivalent emissions (CO₂eq), including CH₄, N₂O, and HFC, based on the total GHG scope 1 and scope 2 emission calculation. The results are expressed in tons of CO₂eq /ton Ni, using the calculation of Intergovernmental Panel on Climate Change (IPCC) method. [305-4b][305-4c][305-4d]

The GHG emission intensity in 2021 was 28.6 tons CO₂eq/ton Ni, an increase of 2% from 27.91 tons CO₂eq/ton Ni in 2020. This was due to a decrease in the total nickel in matte production and the consumption of lower nickel content ore when compared to 2020. [305-4a]

GHG Emissions Intensity Value [305-4a][POJK51-6.e.4.a]

Description	Unit	2021	2020	2019
Total GHG Emissions	Ton CO ₂ eq	1,864,871	2,015,952*	1,999,236*
Total Nickel Production	Ton	65,388	72,237	71,025
GHG Emissions Intensity	Ton CO ₂ eq/Ton Ni	28.52	27.91*	28.15*

Information :

*Restatement of the 2020 Sustainability Report based on the results of data verification. [2-4]

GHG Emissions Reduction [POJK51-6.e.4.b]

The GHG emissions reduction came from the hydroelectric power operations, which reduced additional carbon scope 1 emissions by 1,118,231 tons of CO₂eq per year, for diesel power plants (PLTD) using fuel (BBM); and by 2,292,375 tons of CO₂eq per year, for steam power plants (PLTU) using coal. Overall in 2021, we succeeded in reducing GHG emissions by 147,705 tons CO₂eq, or by 7% of GHG emissions in 2020 by, or up to 7.7% of the 2017 GHG emission baseline of 155,948 tons CO₂eq. [305-5a] [305-5b] [305-5c] [305-5e]

GHG Emission Calculation and Reduction Results Based on 2017 Baseline [305-4a][POJK51-6.e.4.a]

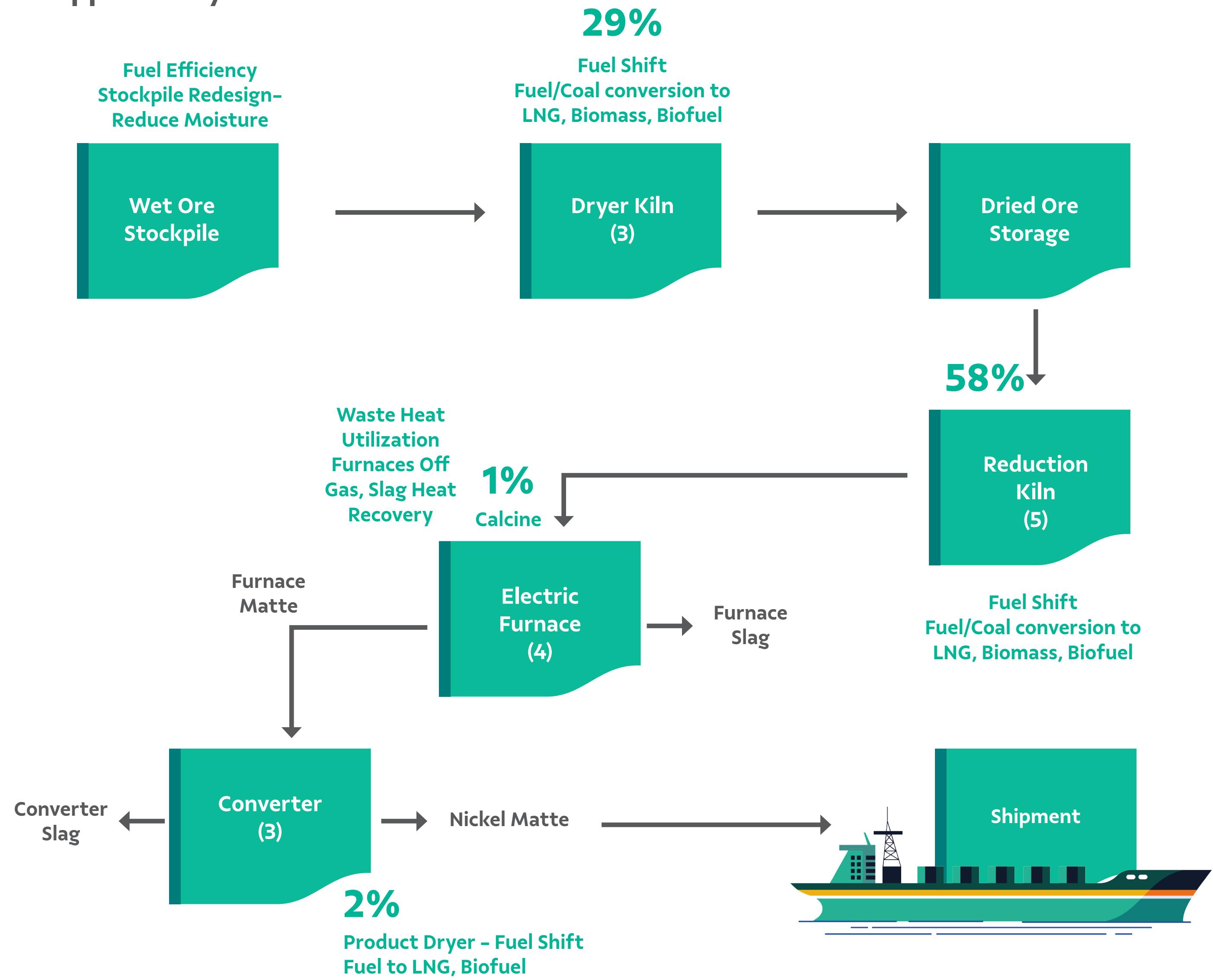
Description	Unit	2021	2020*	2019*	2018*	2017*
Total GHG Emissions	Ton CO ₂ eq	1,864,871	2,015,952	1,999,236	2,195,383	2,013,950
GHG Emissions Reduction	Ton CO ₂ eq	-186,235	111,947	-150,036	181,433	N/A
	%	-7%	1%	-9%	9%	N/A

Information :

*Restatement of the 2020 Sustainability Report based on the results of data verification. [2-4]

We continue to seek opportunities to reduce GHG emissions in the production processes, to reduce GHG emissions of 1,800 kilotons CO₂eq, or 90% of total GHG emissions. Other opportunities exist in the mining areas for a GHG emission reduction of 200 kilotons CO₂eq.

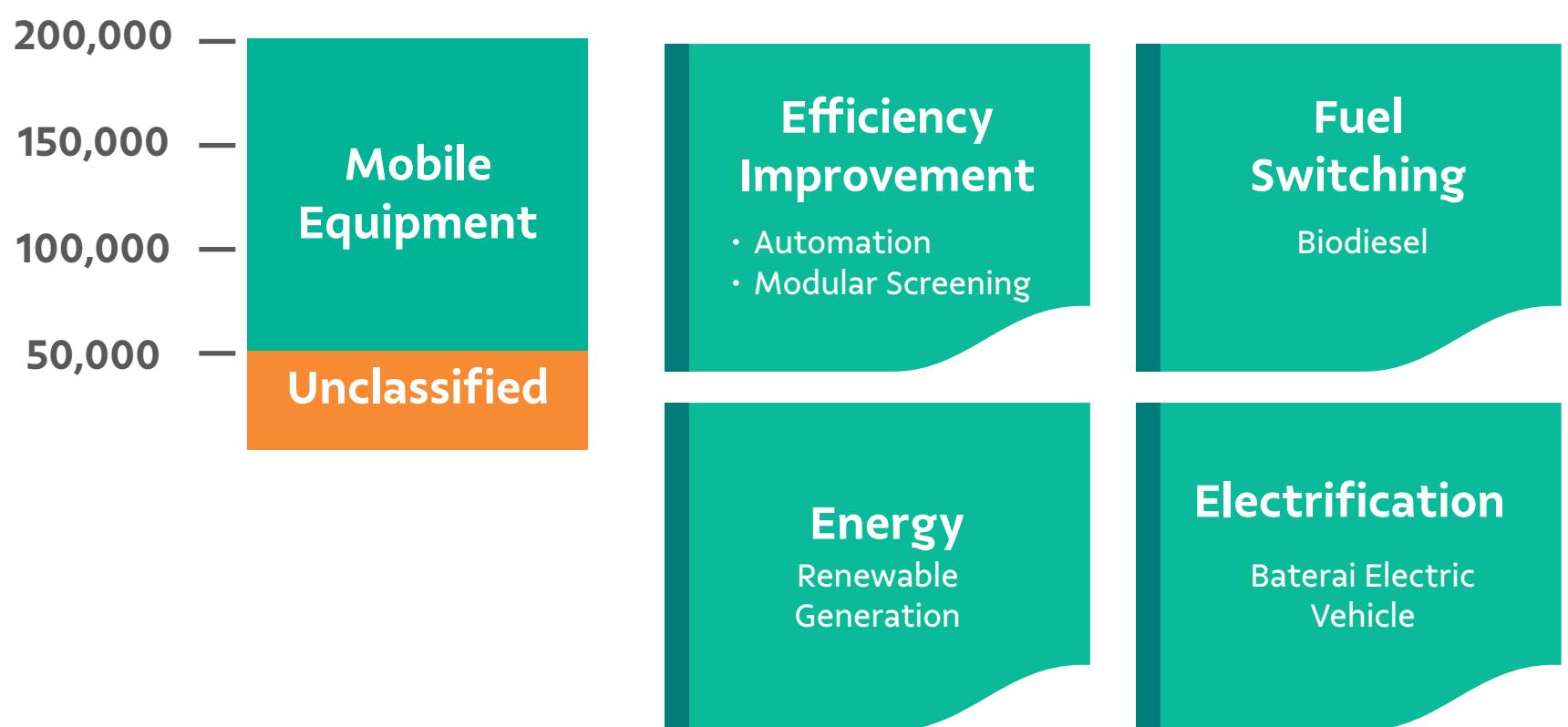
Opportunity in Process Plant Areas



Opportunity in Mining Areas

200 kt CO₂e

(10% of Total GHG Emission)



Emissions Containing Ozone Depleting Substances (ODS)

PT Vale no longer uses HCF-22 (CHF₂Cl) freon by replacing it with R32 freon, a non-ozone depleting substance, as it has an Ozone Depletion Potential (ODP) value of 0, and a Global Warming Potential (GWP) value of 675. All R32 freon is purchased from suppliers, and we have not calculated the volume of freon R32 used, so this report does not include an explanation on the methodology or calculation results. [305-6a][305-6b][305-6c][305-6d]



SO₂ and Particulate Emissions Control

[POJK51-6.e.4.a] [EM-MM-120a.1]

SO₂ emissions result from the use of sulfur to sulfidation in the nickel ore processing that uses High Sulfur Fuel Oil (HSFO) and coal. We continue to work to ensure the SO₂ emissions meets the Government's quality standards, based on 2014 Minister of the Environment Regulation No. 4 concerning Fixed Emissions Quality Standards for Mining Business and/or Activities.

PT Vale periodically monitors and calculates the amount of SO₂ emissions intensity. The calculation uses the mass balance method by determining the intensity of emissions by comparing the weight of SO₂ emitted with the weight of the product produced. The calculation of SO₂ emissions is expressed in units of Ton SO₂/Ton Ni. The results of the calculation of SO₂ emission levels always meet the quality standard threshold of 0.80 Ton SO₂/Ton Ni. However, PT Vale is committed to reducing SO₂ emissions by continuing to conduct studies involving experts from academia and practitioners. Studies to reduce SO₂ emissions are focused on increasing the efficiency of sulfur fixation in the sulfidation process in a reducing furnace, including process control and sulfur injection methods. The trend of decreasing nickel content from mining is one of the challenges to reducing the intensity of SO₂ emissions.

During 2021, PT Vale instigated SO₂ emission controls, including stabilizing the process in the reduction kilns that affects the liquid sulfur usage; converting of the use of Marine Fuel Oil (MFO) to lower sulfur coal in drying kilns and reduction kilns no. 2 and 3; and converting conventional diesel to B20 diesel with a lower sulfur content in biodiesel than conventional diesel. [POJK51-6.e.4.b]

Other Emissions Measurement and Calculation Results in 2021 [305-7a]

Description	Unit	2021	2020	2019
Total Nickel Production**	Ton	65,388	72,237	71,025
Total SO ₂ Emissions	Ton	50,666	57,320	51,435
Emission Intensity	Ton SO ₂ / Ton Ni	0.77	0.79	0.72
Quality standards	Ton SO ₂ / Ton Ni	0.80	0.80*	0.80*

Note:

* Quality Standards became effective as of October 2019

** Total production of tons of nickel consists of nickel alone without a mixture of cobalt and sulfur.

In addition to measuring emissions from factory operations, PT Vale also measures particulates in ambient air, namely particulate meters (PM) 10 and PM 2.5.

Particulate Intensity measurements are carried out according to USEPA Method 5, and are expressed in Tons of Particulates/Tons of Ni. Particulate emissions are derived from the results of periodic measurements of the dryer kiln, reduction kiln, electric furnace and product dryer chimneys. The particulate quality standard value is 0.80 Ton Particulate/Ton Ni, and the particulate concentrate measurement result during 2021 was 0.020 Ton Particulate/Ton Ni, meeting the quality standard.

[305-7a][305-7b][305-7c]

Particulate Intensity Measurement Results [305-7a]

Description	Unit	2021	2020	2019
Total Nickel Production	Ton	65,388	72,237	71,025
Total Particulate Emissions	Ton	1,613	1,531	877
Particulate Intensity	Ton Partikulat / TonNi	0.020	0.021	0.010
Quality Standards	Ton Particulate	0.80	0.80*	0.80*

Note:

*Quality Standards have been effective since October 2019

Energy Management and Low Carbon Economy Support

Management of Material Topics

In 2021 we will replace the transformer at the Larona LGS#1 hydroelectric power plant to save more energy which is the responsibility of the Department of Energy and Logistics and the authorities. We also manage energy use optimally and efficiently Energy Efficiency Policy 2021 of PT Vale by involving stakeholder's interests, including employees, contractors, and partner companies. Detail about Energy Efficiency Policy of PT Vale can refes to <http://www.vale.com/indonesia/EN/sustainability/our-approach-in-indonesia/Pages/policies.aspx> [3-3a][3-3b][3-3c][3-3d][3-3e][3-3f][POJK51-6.d.3]

About Vale Power Shift (VPS) [POJK51-6.d.3]

To support the transition to a future low-carbon economy, PT Vale follows the Vale Global internal program: Vale Power Shift (VPS). This program aims to improve PT Vale's energy matrix by focusing on the use of renewable energy and alternative fuels, as well as efficiencies by using new technologies. Initiatives related to VPS are expected to contribute around 5% of the planned reduction by 2030. The Debottlenecking project was implemented in 2021 and is targeted for completion in 2024.

In 2021, PT Vale together with two partner companies, Taiyuan Iron & Steel (Group) Co., Ltd (TISCO) and Shandong Xinhai Technology Co., Ltd (Xinhai), signed the Bahodopi Nickel Processing Facility Project Cooperation Framework Agreement (PCFA). This cooperation includes the construction of a nickel processing facility in the Xinhai Industrial Park, Morowali, Central Sulawesi. Through this collaboration, eight ferronickel processing lines using Rotary

Kiln Electric Furnace (RKEF) technology will be built with an estimated production of 73,000 metric tons of nickel/year, together with supporting facilities. All parties agreed that the processing facilities' electricity needs would be sourced from the Gas Power Plant (PLTG) further supporting the commitment to reduce carbon emissions.

Energy Usage and Efficiency

Energy usage calculations include the volume of energy sources used within the company for heavy equipment operations in nickel ore mining operations and nickel in matte production processes. We have not calculated the energy consumption outside the Company. The energy sources come from hydroelectric power supply, which includes renewable energy, as well as thermal power generation and fossil fuels, which are non-renewable energy. None of the hydroelectric power plant electricity is sold to other parties. The energy usage calculation uses the sum method for the volume of energy sources used, which is converted into Gigajoules (GJ) using the International Energy Agency (IEA) conversion. [302-1a][302-1b][302-1e][302-1f][302-1g][302-2][POJK51-6.d.3.a]

Total energy usage in 2021 was 28,268,297 GJ, down 10% from 30,628,679 GJ in 2020. The largest energy source is from coal usage of 9,340,201 GJ, a decrease of 22% from 11,371,381 GJ in 2020. PT Vale also used 28,268,297 GJ of renewable energy sourced from hydroelectric power or 32.2% and the remaining 67.8 came from non-renewable energy. [302-1a][302-1b][302-1e] [EM-MM-130a.1]

Energy Usage Volumes within the Organization (GJ)

[302-1a][302-1b][302-1e][302-1f][302-1g] [EM-MM-130a.1] [POJK51-6.d.3.a] [POJK51-6.e.1] [EM-MM-130a.1]

Energy Sources	Allotment	2021	2020*	2019*
Non-renewable Energy				
Coal	Drying Kilns	4,537,779	5,226,048	4,063,960
	Reduction Kilns – Reductant	3,002,054	3,767,909	4,123,086
	Reduction Kilns – Combustion	1,800,368	2,377,425	1,564,938
	Total Firing Kilns	9,340,201	11,371,381	9,751,983
High Speed Diesel HSD	Thermal Generators	23,182	7,692	431,213
	Steam boilers	14,268	44,124	88,312
	PP Dryer Furnace & others	332,241	396,459	357,689
	Reduction Kilns	34,943	32,524	43,909
	Refining – Nickel 78%	39,450	43,590	40,888
	Heavy vehicles	1,676,109	1,820,530	1,697,596
	Light vehicles, trucks and others	171,030	202,544	205,131
	Total	2,291,223	2,547,463	2,864,736
High Sulfur Fuel Oil (HSFO)	Steam boilers	22,984	502	96,243
	Drying Kilns	640,555	593,445	1,037,620
	Reduction Kilns	7,424,388	7,226,966	7,773,829
	Total	8,087,927	7,820,913	8,907,692
Gasoline**	Light Vehicles	3,616	8,593	12,986
Renewable energy				
Hydroelectric Power Plant	Processing Plant	8,223,746	8,639,474	8,485,193
Total	All Usage	28,268,297	30,628,679	30,336,764

Note:

* There was a change in the submission of data for 2020 and 2019 with the previous year's report due to a change in the calculation methods [2-4]

** Excludes consumption data in Jakarta and Makassar

Energy Intensity

Energy intensity is calculated as the total electricity and fuel energy required to produce one tonne of nickel in matte. The calculation does not include energy usage outside the Company. The Energy Intensity in 2021 was 432.31 GJ/Ton Ni, higher than 424.00 GJ/Ton Ni in 2020. [\[302-3a\]](#)[\[302-3b\]](#)[\[302-3c\]](#)[\[302-3d\]](#) [\[POJK51-6.d.3.a\]](#)

Energy Intensity Measurement Results [\[302-3a\]](#)[\[POJK52-6.d.3.a\]](#)

Description	Unit	2021	2020*	2019*
Total Energy Used	GJ	28,268,297	30,628,679	30,336,764
Total Nickel Production	Ton	65,388	72,237	71,025
Energy Intensity	GJ/Ton	432.31	424.00	427.13

Note: *Restatement of the 2020 Sustainability Report due to differences in calculation methods [\[2-4\]](#)



Energy Usage Reduction

Total energy costs in 2021 accounted about US\$639,352 million of nickel in matte production costs, an increase from 31.6% in 2020. This increase was due to increased fuel and coal prices, of 12% for HSFO, 13% for HSD, and 29% for coal, respectively.

By comparing the volume of energy sources used, during 2021, we can reduce fuel consumption. The volume of MFO usage in 2021 will reach 205 million liters, down 1.5% from 2020 of 208 million liters; while the use of HSD in 2021 will get 69 million liters, or down 10% from 2020 of 77 million liters. Coal consumption in 2021 also decreased by 12% to 374,937 tons, from the previous 426,450 tons, in line with the increase in nickel in matte production and offset the decrease in fuel consumption. [\[302-4a\]](#)[\[302-4b\]](#)[\[302-4c\]](#)[\[302-4d\]](#)

We continue to encourage energy efficiency through several efforts, including biofuel (BBN) biodiesel which is more environmentally friendly because it contains 30% Fatty Acid Methyl Ester (FAME). Biodiesel is used for operational vehicles. The volume of biodiesel use in 2021 reaching 69.48 million liters, or 25% of the total fuel consumption, and will decrease by 77.17 million liters in 2020. [\[POJK51-6.d.3.b\]](#)

Fuel Usage Volume (Million Liters)

Year	Fuel			Biofuel	Percentage
	HSFO	HSD	Total		
2021	205.26	69.48	274.74	20.84	30%
2020	208.32	77.17	285.49	23.15	8.1%
2019	226.33	86.96	313.29	17.39	5.55%

This report has not calculated the energy demand reduction/efficiency from products/services sold during 2021, as the delivery of nickel in matte to customers uses vessels provided by customers, so the energy calculation is based on the fuel usage volume conversion. In the future, PT Vale will consider requesting this calculation be a joint effort to improve energy efficiencies. [\[302-5a\]](#)[\[302-5b\]](#)[\[302-5c\]](#)

Support for energy optimization involved replacing the transformer at PLTA Larona LGS #1, as the old transformer had been used since the Larona hydroelectric power plant was first inaugurated in 1978. The replacement transformer will increase the reliability of the electricity supply needed to support PT Vale's nickel processing. The new transformer has a power of 100 MVA, an increase from the previous transformer (78 MVA). This power increase was carried out to adjust to the previously increased generating capacity, as well as to provide an adequate loading factor for the new transformer.

Contribution to the Development of New and Renewable Energy (NRE)

PT Vale also supports the transition to the use of EBT. The development of NRE for nickel products will support the transition to a low-carbon economy through the production of electric car batteries in the future. PT Vale is focused on realizing strategic plans for the next five years, including preparing a smelter plant or nickel processing in Bahodopi, Central Sulawesi, and in Pomalaa, Southeast Sulawesi. These factories will produce Mix Hydroxide Precipitate (MHP) and Mix Sulphide Precipitate (MSP) as raw materials for battery components in electric vehicles. [\[POJK51-6.d.3.b\]](#)

Post Mining Rehabilitation

Management of Material Topics

Any negative impact from the mining processes is managed through the post-mining plans. We are trying to rehabilitate post-mining and cross-border land in other areas, especially on critical land. PT Vale continues to carry out post-mining rehabilitation and has planted more trees from its 2.5 ha nursery in Sorowako, which has a capacity of producing 700,000 seedlings per year.

Reclamation activities are monitored using a reporting mechanism to the authorities, and when reclaimed land is handed back to the Government, and are evaluated for achievement of the Department of Environment and Permit Management (EPM) key performance indicators (KPI), as the party in charge of the activity. Post-mining rehabilitation land in 2021 reached 283.74 ha, 1.3% more than planned, resulting in a cumulative total of 3,249.11 ha. Apart from our employees, the reclamation activities also involves other stakeholders, including the central government's Ministry of Energy and Mineral Resources (ESDM) and Ministry of Environment and Forestry (LHK), and the local governments, communities and non-governmental organizations (NGOs). [\[3-3a\]](#)[\[3-3b\]](#)[\[3-3c\]](#)[\[3-3d\]](#)

PT Vale already has a mine closure plan document that was prepared in 2009 and approved in 2015. Regularly this document will be updated every 5 years by PT Vale.

Reforestation Beyond Boundary

Post-mining land reclamation helps to improve land ecosystems, conservation and protection of protected and endemic flora and fauna species, and is a form of legal compliance. We are committed to limiting the open land areas for mining operations, and implementing biodiversity management in the mining operation areas in accordance with Approval Letter No.188.4/66/II/BAPEDALDA. We also carry out land rehabilitation and transboundary reforestation activities outside the mining operation areas, especially in critical land and watersheds (DAS). In addition, there are no mine sites where acid drainage in PT Vale. [\[POJK51-6.e.1\]](#)[\[POJK51-6.e.3.b\]](#)[\[EM-MM-160a.2\]](#)

By 2025, PT Vale's targets are restoring 15,000 hectares of land to become forest through its post-mining rehabilitation activities and the rehabilitation of critical land and watersheds. By the end of 2021 the accumulated land area rehabilitated was 3,249 Ha, which included 283.73 Ha of land rehabilitated during 2021 is. For the remainder, we are targeting more than 10,000 Ha of land for reclamation and rehabilitation by 2024. In addition, PT Vale has also provided a budget of US\$6,765,826 in 2021 and US\$7,453,502 in 2022 for post-mining rehabilitation.

Implementation of Post-Mining Rehabilitation Activities

PT Vale's mining operation areas are based on Contracts of Work with the Government of Indonesia, as amended in 2014. 41,822.95 ha or 59% of the total Sorowako operation area of 70,894 ha is adjacent to a protected forest. PT Vale has obtained a Borrow-to-Use Forest Area Permit (IPPKH) from the KLHK in accordance with SK No. 645/MenLHK/SetJen/PLA.0/12/2018. [\[304-1a\]](#)[\[POJK51-6.e.3.a\]](#)[\[EM-MM-210a.1\]](#)[\[EM-MM-160a.3\]](#)

PT Vale has also obtained an IPPKH for operations and production activities in Bahodopi Block I in Morowali Regency, Central Sulawesi, covering an area of 2,143.14 hectares based on the Minister of Environment and Forestry Decree No. SK.341/Menlhk/Setjen/PLA.0/5/2019. The Company obtained a 2nd IPPKH extension for exploration activities in Bahodopi covering an area of 12,820.60 Ha, based on the Minister of Environment and Forestry Decree No. SK.522/ Menlhk/Setjen/ PLA.0/11/2018. For the Pomalaa Block, Kolaka Regency, Southeast Sulawesi, PT Vale obtained an IPPKH for exploration activities covering an area of 12,563.10 hectares based on the Head of the Investment Coordinating Board Decree No. 6/1/IPPKH/PMA/2018. [\[304-1a\]](#)[\[POJK51-6.e.3.a\]](#)

We carry out open-pit mining activities, including land clearing and stripping soil surface, excavating soil materials and materials mines, also transporting soil materials and mining materials. These activities impact changes in the natural hue, thus affecting the ecosystem

and the biodiversity therein. We manage impact by identifying species affected, followed by the transfer of the affected species to other locations, including post-mining rehabilitation areas. We also carry out post-mining rehabilitation to restore the carrying capacity of the ecosystem in the former area mining operations. [\[304-2a\]](#)[\[POJK51-6.e.2\]](#)

To minimize the ecosystem and biodiversity impact, we have also instigated a policy to limit the area of land opened annually for mining activities, in line with the reclamation guarantee for the period 2021–2022 as approved by the Ministry of Energy and Mineral Resources, and for 2021 the area of open land will be limited to a maximum of 2,183.72 hectares. The land area cleared for mining operations during the reporting period was 261.09 hectares, bringing the total area of land cleared for mining operations to 5,303 hectares. Furthermore, there is no proved and probable reserves in or near areas of conflict. [\[304-2b\]](#)[\[EM-MM-210a.1\]](#)

The reclaimed mining area in 2021 was 283.74 hectares, or 1.3% of the target of 280.12 hectares. Cumulatively, the post-mining reclamation area up to December 31, 2021 was 3,249 hectares. The total remaining area of open land for mining activities in 2021 was 2,054 hectares, meeting the set limit. Also by the end of the reporting period all the rehabilitated land had been returned to its original state. All post-mining reclamation land is in Sorowako. [\[304-3a\]](#)[\[MM1\]](#)

Area of Disturbed and Rehabilitated Land (Ha) [304-3]

Description	Total Area of Unrehabilitated Disturbed Land at the Beginning of Year	Total Area of Disturbed in Current Year	Total Area of Rehabilitated Land in Current Year	Total Area of Unrehabilitated Disturbed Land at End of Year
	1	2	3	1+2-3
2021	2,076.74	261.09	283.74	2,054.10
2020	1,971.22	281.44	176.24	2,076.42
2019	1,807.8	286.56	81.09	2,013.27

The post-mining rehabilitation involves community, NGO, Government, and third parties also pays attention to the 2009 Law No. 4 concerning Mineral and Coal Mining. To realize our commitment to land rehabilitation and reclamation we provide financial resources, included in the environmental cost component in the Company's Financial Statements. According to regulations, the Company has mine closure plans (RPT) in all (100%) mining operational areas in the Sorowako area, including a guarantee for mine closure. By 2021, PT Vale's environmental management costs had amounted to US\$21,349,994. [304-3b][MM10] [POJK51-6.d.1]

Locally trained communities are involved in the planting and maintenance activities. The Ministry of Energy and Mineral Resources regularly conducts monitoring and evaluation of the reclamation, to ensure it meets the planting criteria and can be handed over to the Government through the Ministry of Environment and Forestry. The success criteria include standards for land use, revegetation, and final settlement, based on to Attachment IV of the Minister of Energy and Mineral Resources No. 7 of 2014 concerning the Reclamation and Post-Mining in Mineral and Coal Mining Business Activities. [304-3b][304-3d]

**90 Ha
Rehabilitated Critical Land and Watersheds (DAS)**

In 2021 we handed over 90 Ha of rehabilitated critical land and watersheds (DAS) to the Ministry of Environment and Forestry to fulfill our obligations as an IPPKH holder. The land handed over was in a protected forest area in Kawata Village and Ledu-Ledu Village, Wasuponda Sub-district, East Luwu Regency.



Biodiversity Conservation

PT Vale is committed to completing its biodiversity management plan, covering the entire mining operation areas in the Sorowako Block. By the end of the reporting period, the management has been implemented 100%. In 2021, PT Vale continued the study of protected species started in 2020 with Hasanuddin University. The results show that several species of fauna and flora are protected or threatened with extinction, and need to be conserved to maintain their sustainability. The list of protected species based on the IUCN red list can be seen in Appendix 3. [304-4a][MM2][POJK51-6.e.3.b]



**1,000
Tembeuwa
seedlings
in muara
tapolemo, on
the shores of
Lake Matano,
East Luwu
Regency**

PT Vale together with the Government and the communities planted 1,000 tembeuwa seedlings in Muara Tapolemo, on the shores of Lake Matano, East Luwu Regency, to rehabilitate and maintain the lake ecosystem, especially on the shoreline. Tembeuwa (*Kjellbergiodendron celebicum*) is a type of vegetation often found on the shores of Lake Matano, and is endemic to Sulawesi. Previously, 1,200 tembeuwa seedlings from PT Vale's nursery facilities had been planted in Soluro, on the west shore of Lake Matano. Tembeuwa has a similar function to mangrove and can withstand abrasion, ensuring the lake water quality is maintained. Post-planting, activities will include monitoring and evaluations over the next two years.

Sustainable Environment Inspiration

The solid waste generated from nickel in matte production processes include nickel slag and overburden material. During the reporting period, the Government issued Government Regulation (PP) No.22/2021 concerning the Environmental Protection and Management, which classifies nickel slag as non hazardous waste. We use nickel slag as a mining road pavement material. Overburden management is used as a backfill material and when compacted with soil reduces the risk of erosion. [306-1][306-2]

Reducing Landfill Load

Overburden material and topsoil are the solid waste generated from nickel ore mining operations, and are used as stockpile material in post-mining operations, for land and post-mining rehabilitation. Other non hazardous waste solid waste produced includes domestic waste and metal scrap. [POJK51-6.e.5.b]

In line with our environmental priority for 2021, namely reducing the landfill burden, several efforts were undertaken to optimize the waste generated from domestic activities and production processes. These efforts followed the reduce, reuse, recycle, and recover or 4R concept. By doing so, the volume of domestic waste generated and disposed of at storage locations has been significantly reduced. Other non-hazardous waste solid waste generated includes domestic waste and metal scrap. Third parties carry out the management of these two waste materials.

[POJK51-6.e.5.b] [POJK51-6.e.5.b]

Types and Volume of Non-Hazardous Solid Waste from Mining Activities [POJK51-6.e.5.a] [EM-MM-150a.6]

Type of Waste	Unit	Volume Generated		
		2021	2020	2019
Topsoil	WMT	1,447,074	898,824	413,559
Overburden		36,438,882	40,730,655	42,968,601

Generation of Non-Hazardous Waste from Supporting Activities [POJK51-6.e.5.a]

Type of Waste	Unit	Volume Generated		
		2021	2020	2019
Non-Industrial Domestic Waste Generated	Ton	1,001	1,278	1,810
Non-Industrial Domestic Waste Segregated	%	10.17	7.03	6.73
Industrial Domestic Waste Generated	Ton	3,492	2,839	2,237
Metal Scrap Generated	Ton	5,229	4,615	9,985

Another waste material containing non hazardous waste is nickel slag, which is generated from the nickel in matte production process. In 2021, a Government Regulation No. 22 concerning Environmental Protection and Management was released that stated that nickel slag waste is classified as non hazardous waste. Nickel slag is used as construction material for mining roads and special mining roads, based on the Ministry of Environment and Forestry Permit No. SK 121/Menlhk/Setjen/PLB.3/2/2018 concerning hazardous waste utilization. The total volume of

nickel slag generated in 2021 was 4,156,994 tons, of which 97%, or 4,012,656 tons was reused. Other hazardous waste solid wastes are managed and processed based on their respective characteristics, and are used for internal purposes or handed over to licensed third parties. PT Vale has no non-mineral waste and tailings produced. Also, no hazardous waste is shipped internationally. During 2021 there were no waste material spills that harmed the environment.

[MM3][POJK51-6.e.5.a][POJK51-6.e.5.b][POJK51-6.e.5.c] [306-3][306-4][POJK51-6.e.5.a][POJK51-6.e.5.b] [EM-MM-150a.9][EM-MM-150a.10] [EM-MM-150a.4][EM-MM-150a.5][EM-MM-540a.1][EM-MM-540a.2][EM-MM-540a.3]

Types and Volume of Listed Non-Hazardous Waste from PT Vale Activities [EM-MM-150a.7] [EM-MM-150a.8]

Type of Waste	Unit	Volume Generated		
		2021	2020	2019
Furnace Slag		3,739,088	3,928,494	4,112,126
Converter Slag	Ton	417,906	394,431	515,701
Total		4,156,994	4,322,925	4,627,827

Hazardous Waste from Processing/Supporting Activities and Management Methods

Type of Waste	Management Method	Amount Processed (Tons)		
		2021	2020*	2019*
Used Lubricants and Grease	Fuel additive for nickel ore processing in the dryers and kilns	1,087.90	1,138.80	1,775.90
Furnace Slag	Mining operations support	441.7	676.2	320.9
Filters, Cloth, and Contaminated Materials		17.5	15.2	39.5
Expired Chemical Reagents		63.1	78.2	53.8
Used Batteries	Sent to third parties	44.5	40.2	2.2
Paints and Chemicals		3.5	3.2	0.9
Asbestos		5.0	3.5	2.4
Medical Waste	Burnt in incinerators and ash sent to third parties	5.0	3.5	2.4

Note: *Restatement of the 2020 Sustainability Report [2-4]

Waste Management and Treatment Activities
[306-4][306-5][POJK51-6.e.5.b]



Reducing Water Usage Intensity

Our biggest use of water is in our hydropower operations. The water source comes from the Larona River, supplied from Lake Matano, Mahalona, and Towuti. The three lakes are also water sources for local residents, both to meet their domestic needs, as well as the livelihood of fishermen and farmers, as well as transportation. PT Vale manages hydroelectric power operations and uses water properly and carefully so as not to interfere with the interests of the local community. [\[303-1\] \[EM-MM-210b.1\]](#)

We manage our hydroelectric power operations and use water carefully so as not to interfere with the interests of the local communities. Efforts continue to be made with other stakeholders to clean up the lakes with 27 tons of garbage being cleared from Lake Matano. This was carried out in collaboration with the Environmental Service of East Luwu Regency, as well as the Center for Ecoregional Development of South Sulawesi and Maluku. We also carefully regulate the volume of water and the flow of water used to ensure that Lake Matano, Mahalona and Towuti water levels are maintained, as the three lakes have been designated as Nature Tourism Park Conservation Areas based on the Minister of Agriculture Decree No. 274/Kpts/Um/4/1979 dated April 24, 1979. [\[303-2\]](#)

We look to optimize the water used for every ton of nickel in matte production, in accordance with Company Policy about Water Efficiency and Reduction of Wastewater Pollution Load. Detail about this policy can refers to <http://www.vale.com/indonesia/EN/sustainability/our-approach-in-indonesia/Pages/policies.aspx>. During 2021 the efforts undertaken included:

- Reducing and controlling leaks in the water supply pipelines in the operational areas
- Controlling and reducing overflow in the Matte ponds
- Increasing employee awareness of water consumption savings and daily reporting of water consumption through daily FMDS meetings, and making water usage intensity a KPI

PT Vale takes water from the lake and sends it to the reservoir. However, we do not calculate the amount of water taken directly from the lake and the lake did experience water stress throughout 2021. PT Vale calculated that the total water usage in 2021 was 8,681,643 m³, a decrease of 928,769 m³ or 9.7% from 9,611,107 m³ in 2020. The Water Consumption Intensity value in 2021 decreased to 130.98 m³ per ton Ni, compared to 131.20 m³ per ton Ni in 2020. Routine water consumption intensity is reported by PT Vale through the RKL-RPL report, and to the public via website <http://www.vale.com/indonesia/EN/sustainability/our-approach-in-indonesia/Pages/reports.aspx>.

[\[303-5\] \[EM-MM-140a.1\]](#)

Hazardous Waste from Processing/Supporting Activities and Management Methods

Description	Unit	Amount Processed		
		2021	2020	2019
Nickel in Matte Production Volume	Ton	65,388	72,237	71,025
Water Usage Volume	m ³	8,681,643	9,611,107	10,016,498
Water Usage Intensity	m ³ /Ton Ni	130.98	131.20	141.03

We also ensure that the quality of treated wastewater flowing into the tributaries leading to Lake Matano has met the quality standards set by the Government. The Company regularly analyzes the processed effluent using heavy metal content parameters. Periodically, the Company analyzes the processed effluent with parameters of heavy metal content. The analysis was carried out by an accredited independent laboratory, using the SNI 6989.59:2008 Water and Wastewater method

and the American Public Health Association (APHA) standard method. The goal is to ensure that the processed effluents meet the quality standards in accordance with the 2006 Minister of the Environment Regulation No. 9 concerning Wastewater Quality Standards for Nickel Ore Mining Business and/or Activities. The inspection results in 2020 showed that the quality of the processed effluent has met the quality standards. [\[303-4\] \[POJK51-6.e.3.a\] \[EM-MM-140a.2\]](#)

2021 Effluent Quality Measurement Results

Measurement Location	Volume Processed (m ³)	Parameters, Quality Standards, and Measurement Results				
		TSS	Cr Total	Cr6+	Fe	Ni
East Petea	9,401,210	<200 ppm	0,5 ppm	0,1 ppm	5 ppm	0,5 ppm
West Petea	57,721,801	11.30	0.06	0.008	0.04	0.006
Far East Petea	26,917,733	10.21	0.06	0.01	0.02	0.01
Lorraine	1,542,917	9.60	0.07	0.007	0.02	0.006
Kathryn	2,022,798	2.36	0.02	0.005	0.05	0.01
Lamoare Creek A	3,511,793	1.70	0.005	0.002	0.01	0.009
Lamangka 1	4,827,693	5.09	0.07	0.007	0.009	0.01
Lamangka 2	17,079,896	3.007	0.04	0.01	0.01	0.01
Lamangka 3	8,509,942	4.84	0.07	0.01	0.01	0.02
Petea Washing Pad	41,832	9.94	0.15	0.005	0.01	0.01

During the reporting period we did not receive any complaints regarding alleged pollution of Lake Matano, Mahalona or Towuti. We have also never received sanctions related to alleged violations in environmental management.

However, we understand there has been some dissatisfaction expressed by several parties, and continue to continue dialogue to find the best solution, and are committed to implementing sustainable practices. [\[POJK51-6.e.6\]](#)

Social



Social Sustainability Management Performance

Employees and the community are part of the PT Vale family. Together we build and live side by side to grow, empower, and maintain health, safety, and environmental sustainability.

Security, Safety, and Health in the Workplace

Management of Material Topics

PT Vale's mining activities are strictly managed by following the Mineral and Coal Mining Safety System (SMKP Minerba). Our commitment is to have zero fatal work accidents and minimize occupational diseases (PAK). Compliance with OHS is the responsibility of the Chief Mine Technical (KTT) and is evaluated by the Board of Directors through a key performance indicators (KPI) achievement assessment that is reported to the authorities. During 2021 there were zero fatal work accidents and 5,006,592 safe working hours. OHS management involves management and employees working with the OHS Central Committee, the Ministry of Energy and Mineral Resources, Manpower, and other stakeholders. [\[3-3a\]](#)[\[3-3b\]](#)[\[3-3c\]](#)[\[3-3d\]](#)[\[3-3e\]](#)[\[3-3f\]](#)

OHS covers all processes of mining operations and production activities, in compliance with regulations including Ministerial Regulations of Minister Energy and Mineral Resources Number 26/2018 about Implementation of the Good Mining Practices and Supervision the Mineral of Coal Mining. Minerba SMKP aims to ensure the safety and health of all (100%) employees and contractors/supplier workers

without any exception. [\[POJK51-6.c.2.c\]](#)

[\[403-1a\]](#)[\[403-1b\]](#)[\[403-8a\]](#)

In 2020, PT Vale launched the a Safe Work Permit (SWP) as a standard to be globally applied in all Vale units. SWPs are work permits that must be obtained for project and maintenance activities before carrying out the work. The purpose of an SWP is to ensure that all risks have been identified, and that safety controls are in place and comply with the New Golden Rules Number 9 (Risk Analysis). [\[403-1\]](#)[\[403-8\]](#)

PT Vale applies the New Golden Rules to improve the protection of all employees and contractors/suppliers from injury and fatalities. The New Golden Rules contain 10 priorities that must be followed by employees and contractors/suppliers. More information about New Golden Rules can refers to Intranet of PT Vale. [\[403-1\]](#)[\[403-8\]](#)



Key Hazard Identification and Employee Engagement

The implementation of OHS involves the participation of employees and contractors/suppliers workers. It begins with the identification of the main hazards and is managed with systems/equipment inherent in operational activities, and includes all employees and contractors/suppliers workers. These activities are carried out through the Contractor Safety Management System (CSMS), General Induction Program (GIP), Site Specific Induction Program (SSIP), Risk Assessment (RA), Job Safety Analysis (JSA), Safety Talks, Critical Activity Requirements (CAR), Safe Work Permit (SWP), and field observations in the form of audits/inspections.

[\[403-2a\]](#)[\[403-4a\]](#)

PT Vale has adopted a mechanism where all employees can report any conditions that endanger safety and health at work. Reports are submitted to leader and via the web-based software and smartphone application IRIS, and depending on the priority of employee safety, we will remove employees from dangerous situations, and follow up on every report submitted by employees, including conducting investigations in the event of a work accident.

During 2021, our employee safety and security improvements and development activities included:

[\[403-2b\]](#)[\[403-2c\]](#)[\[403-2d\]](#)

- Monthly mandatory contractor forums attended by PJO from all PT. Vale Indonesia, Tbk partner companies
- Annual internal SMKP audits for IUP companies within PT. Vale Indonesia, Tbk
- SWP and JSA requests before carrying out work
- Monitoring and follow up on any golden rules violations (Smoking and phone detection)

The focus of OHS in 2021 was in the handling of the COVID-19 pandemic and preventing occupational diseases (PAK). PT Vale organized vaccinations for its employees and contractors/supplier worker, with 97% receiving vaccination-1, and 96% receiving vaccination-2. This was in compliance with the 2021 Republic of Indonesia Minister of Health Regulation No. 10 concerning Vaccinations for Combating the COVID-19 Pandemic, which regulated the gotong royong cooperation vaccine program (VGR), and independent vaccines carried out by private companies for their Beside that, PT Vale implement 3T [Testing, Treatment, and Tracing] +Vaccinations. We have hospitals and isolation facilities for COVID-19 to all employees and contractors.

[\[403-3a\]](#)[\[403-2b\]](#)[\[403-2c\]](#)[\[403-2d\]](#)

One of the OHS activities involving employees and contractors/suppliers workers concerned the Prevention Week 2021 on October 6–10 2021, with the theme: "Safety is also about communication. Identify, talk openly about and report risks". The aim was to reflect and learn together to



realize the vision of zero fatality. The activity involved the Vale SA CEO and the PT Vale CEO.

[\[403-4a\]](#)[\[403-9d\]](#)

Our OHS Central Committee is responsible for OHS through the OHS Central Committee meeting mechanism, where employee representatives can discuss any OHS matters. Management representatives forward the meeting results to the Company for follow-up. During 2021 the OHS Central Committee held 12 monthly meetings.

[\[403-4b\]](#)

We also ensure contractors implement

the Contractor Safety Management System (CSMS), and reward those contractors that manage OHS properly Contractor Awards. In 2021, awards were given to one national company, PT. Leighton Contractors Indonesia and 2 local companies, PT Welani Jaya and PT Sinar Sentosa Utama.

In 2021 the Company organized and included employees and contractor workers in OHS training. There were 64 OHS training sessions attended by 37,248 participants. Some of the OHS training involves certification to improve employees' competencies:

- First Operational Supervisor (POP)
- Middle Operations Supervisor (POM)
- Principal Operations Supervisor (POU)

Employee Health

Employee health is one of the essential factors in supporting the Company's operational activities. Therefore by applicable government regulations, PT Vale provides normal working hours of 8 hours per day. PT Vale also covers its employees through the Social Security Administering Body (BPJS) health social security program whereby employees can access health facilities at referral hospitals. [403-6a]

Annual medical check-ups (MCU) are mandatory for all employees, and the Company facilitates this by collaborating with hospitals. During the reporting period, employees, 2,475 PTVI employees, 9,453 contractor employees, and 224 YPS-ATS employees undergo the MCU process.

We also organize non-PAK health promotion activities for employees and contractor/supplier workers, including the prevention of HIV/AIDS, and the COVID-19 pandemic, for which we received Gold predicate Awards from the Ministry of Manpower for the HIV/AIDS Prevention and Control Program (P2 HIV/AIDS), and the COVID-19 Response (P2 COVID-19). [403-6b]

OHS Management of High Risk Operations [403-7a][403-9c]

Working at Heights

- Implemented CAR/MHS 01 standard
- Conducted training and audits on the dangers of working at heights

Light Motor Vehicles

- Implemented CAR/MHS 02 standard
- Conducted training and audits on the dangers of operating mobile equipment

Mobile Equipment Operation

- Implemented CAR/MHS 03 standard
- Conducted training and audits on the dangers of operating heavy equipment

Lockout, Tagout and Zero Energy

- Implemented CAR/MHS 04 standard
- Conducted isolation work training
- Conducted audits related to Isolation hazards

Lifting of Loads

- Implemented CAR/MHS 05 standard
- Conducted training for hiring jobs
- Conducted audits related to lifting job hazards

Confined Spaces

- Implemented CAR/MHS 06 standard
- Organized explosives certification
- Conducted audits related to blasting work

Working Near Dangerous Gases

- Conducted industrial hygiene risk assessment
- Conducted direct and online monitoring
- Prepared safe working procedures
- Used appropriate PPE

Working in Noisy Areas

- Conducted industrial hygiene risk assessment
- Monitoring

Working in Heat Exposure Areas

- Conducted industrial hygiene risk assessment
- Monitoring



On March 16, 2021 PT Vale introduced 26 new employee buses. Each bus is equipped with a number of driving safety features such as anti-lock braking systems (ABS), seat belt sensors, CCTV, speed limiters, fire sensor & suppression systems, and driver fatigue detection. In addition, to anticipate the spread of COVID-19, the number of bus passengers was limited to only half the bus capacity while still adhering to health protocols.

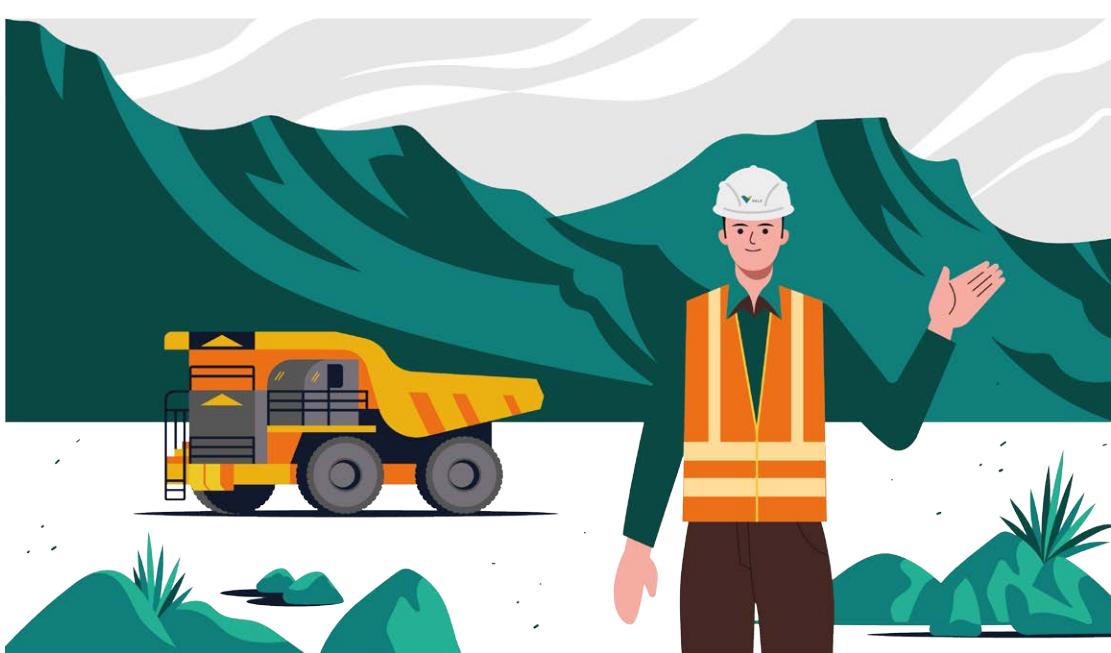
Work Safety Performance

Every year PT Vale conducts an OHS compliance audit that refers to the Minerba SMKP and IMS—Environment Health and Safety Management System. Minerba SMKP audit in 2021 was performed internally by PTVI's registered SMKP certified auditor. The audit results show a compliance level of 75.18%.

[\[403-8b\]](#)[\[403-8c\]](#)

Overall, OHS management improved in 2021 with no fatal work accidents (deaths). Meanwhile, in 2021, the average rate of accidents resulting in injury was 0.20%, while for near-miss incidents, there were 77 incidents consisting of 70 PT Vale and 7 contractors/suppliers. The OHS Severity Rate and Frequency Rate performance calculation is calculated per 1,000,000 working hours. The calculation does not include exceptions, and only includes PT Vale employees and contractors. [\[403-9a\]](#)

[\[403-9b\]](#)[\[403-9e\]](#)[\[403-9f\]](#)[\[EM-MM-320a.1\]](#)



OHS Performance Statistics [\[403-9a\]](#)

Description	2021			2020			2019		
	Sorowako	Bahodopi	Pomalaa	Sorowako	Bahodopi	Pomalaa	Sorowako	Bahodopi	Pomalaa
Number of fatalities	0	0	0	0	0	0	0	0	0
Lost time injuries	4	0	0	3	0	0	0	0	0
First aid injuries	15	0	0	24	0	0	28	0	0
Near miss unsafe action, unsafe condition	77	0	0	86	0	0	44	0	0
Days lost due to accident (Severity Rate/SR)	0.20	0	0	0.19	0	0	0.25	0	0
Total accident rate (Frequency Rate/FR)	0.70	0	0	0.51	0	0	0.53	0	0



5 Million Working Hours Without LTI

In 2021 the Exploration Unit of the IGP Department recorded an achievement of 5 million hours without a lost-time injury. This achievement is an outstanding work safety achievement. The last LTI incident in the PT Vale Exploration area was in 2013 in the drilling area, and several high-risk accidents (HiPo) followed.

Rate and Total Occupational Accidents in 2021 [403-9]

Workplace Accident Rate	Area and Rate					
	Sorowako		Bahodopi		Pomalaa	
	Total	Rate	Total	Rate	Total	Rate
Medical Aid	10	0.50	0	0	0	0
Lost Time Injury & Disabling Injury	4	0.20	0	0	0	0
Fatality	0	0	0	0	0	0
Total	14	0.70	0	0	0	0

Rate and Total Occupational Accidents in 2020 [403-9]

Workplace Accident Rate	Area and Rate					
	Sorowako		Bahodopi		Pomalaa	
	Total	Rate	Total	Rate	Total	Rate
Medical Aid	5	0.32	0	0	0	0
Lost Time Injury & Disabling Injury	3	0.19	0	0	0	0
Fatality	0	0	0	0	0	0
Total	8	0.51	0	0	0	0

Rate and Total Occupational Accidents in 2019 [403-9]

Workplace Accident Rate	Area and Rate					
	Sorowako		Bahodopi		Pomalaa	
	Total	Rate	Total	Rate	Total	Rate
Medical Aid	6	0.29	0	0	0	0
Lost Time Injury & Disabling Injury	4	0.25	0	0	0	0
Fatality	0	0	0	0	0	0
Total	10	0.53	0	0	0	0

Types of High Risk OHS Work [403-10]

Type of Work	Mitigation	Threats to Employees
Working at heights	Implement MHS 01 standards Conduct training and audit on working at heights	Death/ Serious injury
Blasting	Implemented CAR/MHS 04 standard Certify blasting operators Perform audit on blasting jobs	Death/ Serious injury
Working Near Dangerous Gases	Conduct industrial hygiene risk assessment Conduct direct and online monitoring Prepare safe working procedures Use appropriate PPE	Hazardous gas poisoning
Working in Noisy Areas	Conduct industrial hygiene risk assessment Implement noise reduction program and monitoring.	Loss of hearing sensitivity
Working in Heat Exposure Areas	Conduct industrial hygiene risk assessment	Heat stress
Type of work identified from Project Job Demand Analysis:	<ul style="list-style-type: none"> · Performing Engineering Control on mine equipment classified with a potential high risk of ergonomic hazards · Working with mine equipment · Material Handling Manual. · Performing Administrative Control by developing awareness for mine operators who work with equipment with a potential high risk of ergonomic hazards · Administrative control for all types of work with manual material handling 	Musculoskeletal disorder (Low Back Pain, Hernia Nukleus Pulpulus, etc)

Occupational Health Performance

In 2021 there were no reports of fatal PAK concerning employees or contractors/suppliers workers. They all undergo regular medical examinations and the dominant PAK reported was for muscle and spinal tissue disorders in heavy vehicle operators. To prevent any dominant PAK, the Company continues to conduct occupational health campaigns. [403-10a][403-10b][403-10c][403-9d]

- Performing Engineering Control on mining equipment with a potentially high risk of ergonomic hazards
- Carrying out Administrative Control by raising awareness for mining operators who work with equipment that has a potentially high risk of ergonomic hazards
- Administrative control for all types of manual material handling work

Dam Safety and Security Management

Another important aspect that concerns us is the safety and security of the dams, and in 2021 PT Vale continued to improve their safety and security as follows:

- Operation of the Utilities Central Control Room (UCCR) located in the Utilities Office can operate the hydroelectric power plant and thermal plant remotely. The UCCR facility equipment is also capable of monitoring, providing information and analyzing the condition of dams, canals, geotechnical aspects, environmental aspects, and mobilizing the logistics units.
- The Capital & Project Management Department continued the Shotcrete Project, especially for the hydro utilization area around the dam and logistics roads. This project involves the reinforcement of inclined planes to prevent landslides by laying foundations and spraying concentrate on the plane. The project is in accordance with the Indonesian Dam Safety Commission recommendations, and is used as part of the extension of PT Vale's power plant operating license and certificate. The staged project has entered Phase 2 covering the areas of Karelbe, Balambano, Tawaki, and logistics roads. Phase 2 completion is expected in 2023.



Diversity and Equal Opportunities

Building a Transparent and Respectful Work Environment

Diversity is fundamental for PT Vale as it builds a transparent and respectful work environment. All Management of PT Vale commit to support diversity and we value all our employees and provide equal career opportunities (for the staff level as well as the management level), by respecting diversity, and ignoring all discriminatory practices, including gender,

race, religion, background, or people with disabilities.

[\[POJK51-6.c.2.a\] \[405-1a\]](#)

PT Vale is committed to gradually increasing the number of female employees. By 2022, the target number of female workers will be 10.6% 2022. In the reporting period, the realization of the number of female employees is 256 people, or 8.6%.

The Company is open to

disabled workers who have competencies and abilities in the available positions. In the 2021 reporting year, the number of disabled workers is three people or 0.1%. [\[405-1b\]](#)

Most of our employees are local residents, namely residents of Sorowako and other areas in East Luwu Regency. By the end of 2021, there were 2,570 local employees, or 86.6% of PT Vale's total employees and 51.8% as senior staff. Apart from PT Vale employees, there are other contractors/suppliers workers with the majority being local residents. The composition of local partners is in line with our policy to encourage contractors/suppliers to employ local residents. [\[405-1b\]](#)



Number of Employees Based on Position and Gender [405-1a]

Position	Gender		Age Group		
	Male	Female	<30	31-50	>50
Management	20	2	0	18	4
Senior General Management	74	9	1	65	17
Senior Staff	343	45	18	294	76
Staff	678	117	63	589	143
Non-Staf	1,595	83	64	1,355	259
Total	2,710	256	146	2,321	499
				2,966	2,966

Number and Percentage of PT Vale Employees By Gender, Persons with Disabilities and Local Workers [405-1b]

Form of Diversity	2021		2020		2019		
	Total	%	Total	%	Total	%	
Gender	Male	2,710	91.4	2,749	91.5	2,798	91.9
	Female	256	8.6	257	8.5	246	8.1
	Total	2,966	100	3,006	100	3,044	100
Employees with Disabilities	3	0.1	4	0.1	5	0.2	
Local Employees	2,570	86.6	2,616	87	2,670	87.7	

Increase in the Number of Female Employees and Employees with Disabilities

Description	2021	2020	2019	Δ%	
	1	2	3	1:2	1:2
Female Employees	256	257	246	(0.4)	4.5
Employees with Disabilities	3	4	5	(25.0)	(20.0)

Number of Female Employees by Management Position

Position	2021	2020	2019	Δ%	
	1	2	3	1:2	1:2
Directors	1	1	1	0.0	0.0
Senior Managers	1	0	0	-	-
Middle Managers	9	7	6	28.6	16.7
Supervisors	45	12	11	275.0	9.1
Specialists	117	51	37	129.4	37.8
Technicians	83	186	191	(55.4)	(2.6)
Total	256	257	246	(0.4)	4.5

Support for Gender Equality and Diversity

PT Vale values diversity and inclusion.

We have a Diversity and Inclusion Charter containing the 5 Company commitments.

- To create an environment that respects everyone's uniqueness, where everyone has an equal opportunity to develop their potential.
- To build a safe and healthy environment where people are free to express their ideas, express their views, and be themselves.
- To implement a transparent, fair, and bias-free process in recruiting, evaluating, and creating a diverse work environment.
- To have Zero tolerance for any kind of harassment, discrimination or prejudice.
- To have open dialogue and to raise awareness of diversity.

For employees with disabilities, the Company targeted an increase of up to 500%, and during 2021 there were 3 employees with disabilities.

Currently, there are several workers' unions within PT Vale, and through representatives, the employees and management drew up and agreed on the 19th Collective Labor Agreement 2021 – 2023.

PT Vale has an open employee recruitment process, providing equal opportunities to all regardless of gender, ethnicity, religion, class, political affiliation, school/education or other matters that may give rise to allegations of discrimination. During 2021 we did not receive any complaints regarding allegations of discrimination in the recruitment process.

We have an on the job training mechanism, as a work guidance program for employees on new assignments in operational units. Work guidance is given by employees who previously worked in the operational units in question.

PT Vale continues to promote awareness among employees concerning gender diversity and inclusiveness. We organized three programs in 2021 for 230 supervisory level leaders for:

- Gender Biased Training;
- Unconscious Bias Training; and
- How To Build A Culture of Respect in Vale Indonesia Training

PT Vale already has a policy about human rights contained in the Code of Conduct (CoC) and refers to the UN Human Rights Guiding Principles on Business and Human Rights. Every year all employees of PT Vale attended the human rights policy training.


February Eddy

"Early in my career at Vale, I felt that to be successful in a male-dominated industry and Company, I had to act, think and speak 'like a man'. Now, if I look back many of my perceptions were actually wrong. We impose unnecessary boundaries on ourselves. The higher our position in the organization, the greater the responsibility to encourage others to succeed. As a leader, I recognize the influence I have on the organization. So many people rely on us to make a difference and create a more inclusive and more balanced environment. Diversity, equality and inclusivity are no longer a choice, but a necessity."

Ratio of Employment Benefits for Male and Female Employees

PT Vale pays employee benefits (remuneration) without discriminating between males and females, with a ratio of 1:1. The total remuneration for employees working at the same position level may be different, due to factors such as length of service, provision of benefits and incentives, including placement in certain locations and special jobs. Several allowances/incentives are provided to employees, namely Religious Allowance, Child Education Allowance, BPJS, Residence, and Maternity Leave. [\[405-2a\]](#)

The Company's employee remuneration has been adjusted to the minimum wage regulations. In general, the lowest remuneration for PT Vale employees in 2021 is still 114% higher than the minimum wage provisions in force in East Luwu Regency. Employees are also assigned based on their needs and competencies so they can develop, both in terms of career, abilities, and character.

[\[POJK51-6.c.2.b\]](#) [\[405-2b\]](#)

Other Information Disclosure

Employee Training

During 2021 we held employee competency development training activities, with a total of 121,781 training hours. Thus, the average training hours per employee in the reporting period was 41 hours per person. [\[POJK51-6.c.2.d\]](#)

Equal Service to Customers

PT Vale's production in the form of nickel in matte with 80% sold to Vale Canada Limited (VCL), and 20% to Sumitomo Metal Mining Co.Ltd (SMM), with sales based on agreements. We provide equal service to both buyers, in accordance with the contract agreements, including determining the selling price by referring to the London Metal Exchange. [\[POJK51-6.c.1\]](#)



Empowered and Prosperous Communities

[POJK51-6.c.3.c]

Management of Material Topics

PT Vale has provided benefits to the local communities. During the reporting period we continued the Community Empowerment and Development Program (PPM) in accordance with PT Vale's 2018-2030 PPM Master Plan, as a form of corporate social responsibility (CSR) and allocated US\$29,241,288.

The PPM is monitored and under the responsibility of the Social Development Program-External Relations Department and involves the active participation of the communities and other stakeholders, including the Government. In addition, the External Relations Department has a particular strategy (Standard Operating Procedure) with the community. Evaluation of the PPM is carried out through a direct monitoring mechanism of beneficiaries, periodic reporting to stakeholders, as well as Community Satisfaction Index (IKM) surveys. [3-3a]

[3-3b][3-3c][3-3d][3-3e][3-3f]

Social Impact Assessment

[POJK51-6.c.3.a]

Our social impact assessment involves stakeholders in all operation areas. We monitor and report the environmental impact management to the authorities through the Environmental Monitoring Plan (RPL), Environmental Management Plan (RKL), and Environmental Management Performance Summary Document (DRKPL) for PROPER assessment. The social impact assessment results show the community needs, maps vulnerable stakeholder groups, collaboration opportunities with local governments, and the complaint channels. [413-1ai][413-1aii][413-1aiii] [EM-MM-210b.2]

We manage the social impact through the PPM and Self Reliance Rural Area Development (PKPM) programs. Other social investments involve strategic partnerships and contributions that are adjusted based on the stakeholder mapping, as well as the East Luwu Regency Government development plan. Stakeholder mapping covers the Sorowako, Bahodopi, and Pomalaa areas. [413-1aiv][413-1av]

Negative Impact Management in 2021

[413-1] [413-2ai] [413-2aii]

Number of Villages Affected	Percentage of Villages in Operational Areas	Type of Impact	Impact Management and Type of Social Investment
Sorowako Block			
<ul style="list-style-type: none"> Nuha sub-district consists of 5 Villages/wards Wasuponda sub-district consists of 6 Villages/wards Towuti sub-district consists of 18 Villages/wards Malili sub-district consists of 9 Villages/wards 	100% <small>Note: 5 villages in Malili sub-district are not included in the Ring 1 area</small>	<ul style="list-style-type: none"> An increase in Lake Towuti water level and an increase in the river water level in Malili District Mining activities in the Pinang Hill area (CoW area resulted in a number of farmers not continuing their activities) 	<ul style="list-style-type: none"> Community Development and Empowerment for Self Reliance Rural Area Development (PKPM), Strategic Partnerships, Strategic Contributions Periodic monitoring of water levels used for power generation Assessment and compensation
Pomalaa Block			
<ul style="list-style-type: none"> Pomalaa sub-district consists of 12 Villages/wards Baula sub-district consists of 10 Villages/wards 	100%	Operational vehicle activities resulting in dusty roads	<ul style="list-style-type: none"> Providing the infrastructure to support community development and empowerment (PPM) programs Carrying out repairs and arrangement of access roads
Bahodopi Block			
<ul style="list-style-type: none"> East Bungku sub-district consists of 10 Villages/wards Bahodopi sub-district consists of 7 Villages/wards 	100%	There has been no impact from mining activities, as the mining permit is still being processed	<ul style="list-style-type: none"> Providing the infrastructure to support community development and empowerment (PPM) programs Strengthening Community and Stakeholder Capacity through Strategic Partnership Programs and Strategic Contributions

Management of Social Impact on Vulnerable Groups [413-1avi]

One of our priorities for managing social impacts is our understanding that local community groups belong to vulnerable groups. During 2021 we continued our existing agreements with local communities, in accordance with PPM program directives and policies. Our cooperation continued through the Sustainable Environmental Friendly Healthy Agriculture and Fisheries Development Program (P3SRLB Program) in the form of infrastructure development and support for the P3SRLB infrastructure. P3SRLB activities carried out during 2021 included:

- Constructing a Meeting Hall in Tabarano
- Cultivating Organic Vegetable in Dongi
- Creating Organic Vegetable Demonstration plots for the Padoe Group
- Creating Organic Rice & Vegetables Demonstration plots for the Karunsie Group
- Optimizing the Compost House for the Taipa Group

Note:
Some work is still in progress and will be resumed in 2022.

Infrastructure Development and P3SRLB Program – Dongi Resettlement, Wasuponda

As a form of the Company's concern for the local communities in the residential areas of Dongi in Wasuponda, PT Vale also carried out its infrastructure development and the P3SRLB Program throughout 2021. For infrastructure development, PT Vale renovated residents' houses, constructed drainage and repaired roads. For the socio-economic sector, the Company provided assistance and technical capacity development for P3SRLB cultivation for groups in the Dongi area.

PT Vale understands the approaches taken with local community groups have not always satisfied everyone, but there have been no land disputes with the Company. Therefore, we will continue to improve our coordination and synergy with the East Luwu Regency Government through their input, direction, and guidance, and shared expectations to increase work and business opportunities for local communities.

Building Synergy with the Government

The community empowerment program is the responsibility of the Social Development Program Function at the External Relations Department. For PPM, we continue to build communication and synergy with the Government and other stakeholders.

PT Vale with the Ministry of Village, Development of Disadvantaged Regions, and Transmigration (PDTT), and the South Sulawesi Provincial Government and East Luwu Regency Government signed a Memorandum of Understanding (MoU) and Collective Labor Agreement (CLA), covering the PPM program and the Self Reliance Rural Area Development Program (PKPM). This signing was

carried out to synergize the programs and activities for realizing the welfare of the community in the PT Vale empowerment area. The scope of cooperation covers PPM and PKPM, fostering and strengthening the government institutional capacity at the village and sub-district level, fostering and strengthening the Inter-Village Cooperation Agency (BAKD) capacity, and fostering and strengthening the capacity of village-owned enterprises (BUM-Des) and / or joint village-owned enterprises (BUM-Desma).

The PPM-PKPM scope includes efforts to develop rural areas through spatial planning. The impact of this approach has led to a growth of service centers, and the development of villages in 10 development areas based on superior potential. The development

areas are located in the Nuha, Towuti, Wasuponda, and Malili Districts. Development has been carried out to create tourism areas, integrated agriculture (Agropolitan), pepper plantations, and commodity processing trading and industry areas. Other areas will include animal husbandry and support, agro-tourism, livestock and non-timber forest product processing, coastal and marine product processing industries (minapolitan), urban areas and services, and support for agriculture and animal husbandry.

Building Rural Areas Together

During the reporting period, the Company continued the 2018–2022 RI-PPM in four sub-districts in East Luwu Regency, namely Nuha, Malili, Wasuponda, and Towuti sub-districts. The support from PT Vale in 2021 included program financing in the Sorowako Block amounting to US\$2,798,091. The program expenditure included:

- Education – US\$57,123
- Healthcare – US\$836,604
- Real Income Level – US\$690,304
- Economic Independence – US\$530,387
- Socio-Cultural – US\$135,457
- Social Environment (Community Participation) – US\$76,939
- Community Community Institutions – US\$471,278

We launched the Micro, Small, Medium Business Product Shopping Movement known as "SME Breakthrough" in collaboration with PT Vale's assisted MSMEs in East Luwu who actively participate in mentoring programs. To date, there are 87 MSMEs in the Nuha, Towuti, Wasuponda and Malili sub-districts following PT Vale guidance and assistance.

PT Vale with the East Luwu Regency Government inaugurated Towuti Pujasera ("Petahineando"). The inauguration of Towuti Pujasera in PKPM Region 4 is oriented towards trade and processed industrial activities. The 26 Pujasera kiosks were constructed from containers at a cost of Rp2.2 billion using PKPM funds for the 2018–2019 period. Pujasera Towuti is projected to become the epicenter of creativity and education for the Towuti community, under the name Towuti Community Center (TCC).

Infrastructure Development to Support PPM

The PPM program also includes support for the development of supporting infrastructure for the PPM program. In 2021, the PPM supporting infrastructure costs in the Sorowako Block covering the Nuha, Wasuponda, Towuti, and Malili sub-districts was US\$1,569,563, or 32% of the total cost of US\$4,892,895.

The supporting infrastructure included:

- Developing the infrastructure to support social and economic activities for people living in Dongi Village, Ledu-Ledu Village, Wasuponda sub-districts.
- Providing electricity and lighting facilities and infrastructure for public facilities for the Nuha sub-



districts area community, and pumps to supply water to the Towuti District area for use in communities in 8 villages in Asuli, Wawondula, Langkea Raya, Baruga, Lioka, Matompi, Timampu, and Pekaloa.

- Providing and improving public facilities such as futsal sports facilities in Balantang Village, a Multipurpose Building (GSS), repairs to floodgates for irrigating rice fields in Laskap Village, and other public facilities.
- In 2021, PT Vale also carried out repairs to the clean water pipe network, and managed the distribution of clean water and provided water tank services in 8 villages in the Towuti sub-district.
- Renovating and passing over ownership of Puskesmas buildings in Bahomatefe Village, Bungku Timur sub-districts through the signing of a Regional Grant Agreement (NPHD) with the Morowali Regency Government.

The PPM program costs in the Pomalaa, Bahodopi, and Suasa-sua Blocks in 2021 were still focused on completing the 2020 program. The total costs reached AS\$525,241 with some programs continuing into 2022.

Other Social Activities

During 2021 PT Vale organized concern activities and provided social assistance for the surrounding communities and elsewhere in Indonesia:

- We dispatched an Emergency Response Group (ERG) to the eruption disaster area near Mount Semeru, East Java. The ERG team consisted of 14 people, including rescue crews, doctors, paramedics, and security personnel to assist in the search and rescue (SAR) operations. We also opened a refugee post in Candipuro sub-district, Lumajang Regency, East Java, in collaboration with the National Search and Rescue Agency (Basarnas), the National Police, and a joint team under the coordination of the Ministry of Energy and Mineral Resources (ESDM).
- PT Vale also sent an ERG to distribute aid to earthquake victims in Mamuju and Majene, West Sulawesi. Previously, during the emergency response phase, we sent an ERG team to assist in the search and evacuation of victims under the coordination of the ESDM Ministry's Disaster Preparedness Team.



Complaint Handling and Management Approach

[103-2][413-1][MM7] [POJK51-6.c.3.b]

PT Vale provides access to the public to submit and report complaints. All reported complaints are followed up by the External Relations Department with the related functions using various approaches. There were several complaints/grievances from the public, including those delivered directly during the monthly coordination meetings with the sub-districts on 2021. PT Vale have a SDI System as application for handling every complains that still prepared on 2021.

All work activities that will carried out by the Company always involves community in the early stages of implementation so that during 2021 PT Vale will not ever had a job postponed for other non-technical reasons. Therefore it can be said that PT Vale carries out all activities operate responsibly and



take into account the social aspects.

[EM-MM-210b.2]

All complaints or reports are followed up by the External Relations Department using various approaches and involve the related functions. During 2021, several complaints from the communities were submitted directly during the monthly coordination meetings with the sub-districts. Most of the community complaints related to the level of welfare, and we provided the maximum

possible response to find the best solution. Throughout 2021, 202 allegation and complaints were received in the Company's Sorowako, Pomalaa and Bahodopi Blocks operational areas with 36 proven complaints in 5 categories covering the social programs, work opportunities, clean water supply, compensation payments and plantation activities in the contract work areas. Examples of the resolved complaints with follow-up included:

There was no illegal mining or smallholder mining activities around PT Vale's operational areas throughout 2021, and no strikes occurred for more than one week. In addition, there are no dispute cases concerning the use of customary land rights of local communities and indigenous people. We also did not relocate any communities during the reporting period due to our mining activities. In accordance with Government regulations, two of PT Vale's three blocks already have Post Mining Plans. In addition, one of the three blocks that is in PT Vale's operating area contains local communities who are indigenous people who are recognized and recorded in the agreement. [MM4][MM5][MM6][MM8][MM9] [EM-MM-210a.2]

[EM-MM-210b.2] [EM-MM-310a.2]

Community Complaints/Grievances in 2021 and Follow-ups		
Type of Complaint/Grievance	Location	Follow-up
Alleged sulfur spill contamination on Mori Island	Maili District	PT Vale engaged an independent and accredited third party to follow up on the allegation. PT Vale with the community, related PT Vale contractors, and Baltangan Village officials carried out a clean up of sulfur on Mori Island.
PPM program capacity management	East Luwu	An evaluation of the PPM program management was carried out at the district level PPM coordination team, followed up by training and capacity strengthening.
Community demands on behalf of indigenous people to receive a special portion of the PPM program	Sorowako	Mediation and education carried out regarding the PPM program scheme and their involvement at the program implementation stage

Non-Company Land Use

Non-Company land use has become a chronic problem in the contract work areas, and in 2021 PT Vale conducted a socio-economic survey and census of land users. The results of the study—in the form of land data and social, economic, and cultural data; and geo-socio-spatial mapping—will be used to mitigate and create problem-solving that not only looks at the root causes of the non-company land use issue, but also ensures that the action plans carried out take into account the interests of all parties.



Governance

Governance Sustainability

Governance Sustainability Management Performance

Good governance implementation forms the basis for all of PT Vale's operational and community activities to create more valuable sustainability, and increase the trust of all stakeholders.



PT Vale requires the Board of Commissioners, Board of Directors, Company officials, employees and related parties act responsibly, honestly, confidently, respectfully and loyally; and comply with applicable legal obligations. This commitment's success is reflected in the absence of fines or other legal sanctions during the reporting period, both from authorized institutions in managing the extractive industry, as well as from other regulators. [2-27]

Governance Structure and Remuneration Policy [POJK51-5.a]

Based on the 2007 Law No. 40 concerning Limited Liability Companies, PT Vale's governance structure consists of the General Meeting of Shareholders (GMS) as the highest governance body, the Board of Directors for the management of the Company, and the Board of Commissioners as the supervisor. The nomination and appointment of the Board of Directors and Board of Commissioners is under the authority of

the Shareholders, and is ratified in the GMS. Complete information disclosure regarding the GMS, the Board of Directors, the Board of Commissioners, the Committees under the Board of Commissioners and functions under the Board of Directors, and the nomination and selection process for members of the Board of Directors and Board of Commissioners, can be found in the PT Vale Indonesia Tbk 2021 Annual Report. [2-9][2-10]

We ensure that there is no relationship between members of the Board of Directors with the Board of Commissioners, as well as internally between their respective Boards, which may cause a conflict of interest. There are no Shareholders with direct or indirect relationships with the Company's suppliers or supply chain. During the reporting period there were no indications of a conflict of interest in any decisions made by PT Vale. [2-15]

The Board of Commissioners and Board of Directors remuneration is determined through the GMS. The GMS delegated authority to the Board of Commissioners to determine the amount and remuneration for the Board of Directors, after taking into account the recommendations of the Company's Governance, Nomination and Remuneration Committee. The shareholders are the only stakeholders involved in the process of determining the remuneration for the Board of Commissioners and the Board of Directors. Disclosure of information on the Board of Directors and the Board of Commissioners remuneration ratio can be found in the PT Vale Indonesia Tbk 2021 Annual Report. [2-19][2-20][2-21]

Delegation of Authority

As of the end of the reporting period, PT Vale has not directly appointed a member of the Board of Directors responsible for sustainability performance. Responsibility and decision making for sustainability management is still the collective responsibility of the entire Board of Directors under the coordination of the President Director as the Chief Executive Officer (CEO), and the supervision of the Board of Commissioners. The Board of Directors' sustainable governance includes the economic, environmental, and social aspects. Each member of the Board of Directors can delegate their sustainable governance responsibilities to Company officials reporting to them, based on the area of duty under their responsibility. [2-11][2-12]

Sustainable governance including environmental, social and governance (ESG) management, and the Board of Directors consults with stakeholders using several approach methods. Direct consultation is carried out by members of the Board of Directors, while indirect consultation is carried out by delegating authority to appointed Company officials according to the topics requiring consultation. In fulfilling their social and environmental responsibility (SER), the Board of Directors delegates its authority to the External Relations Department for consultation and communication with stakeholders. [2-13]

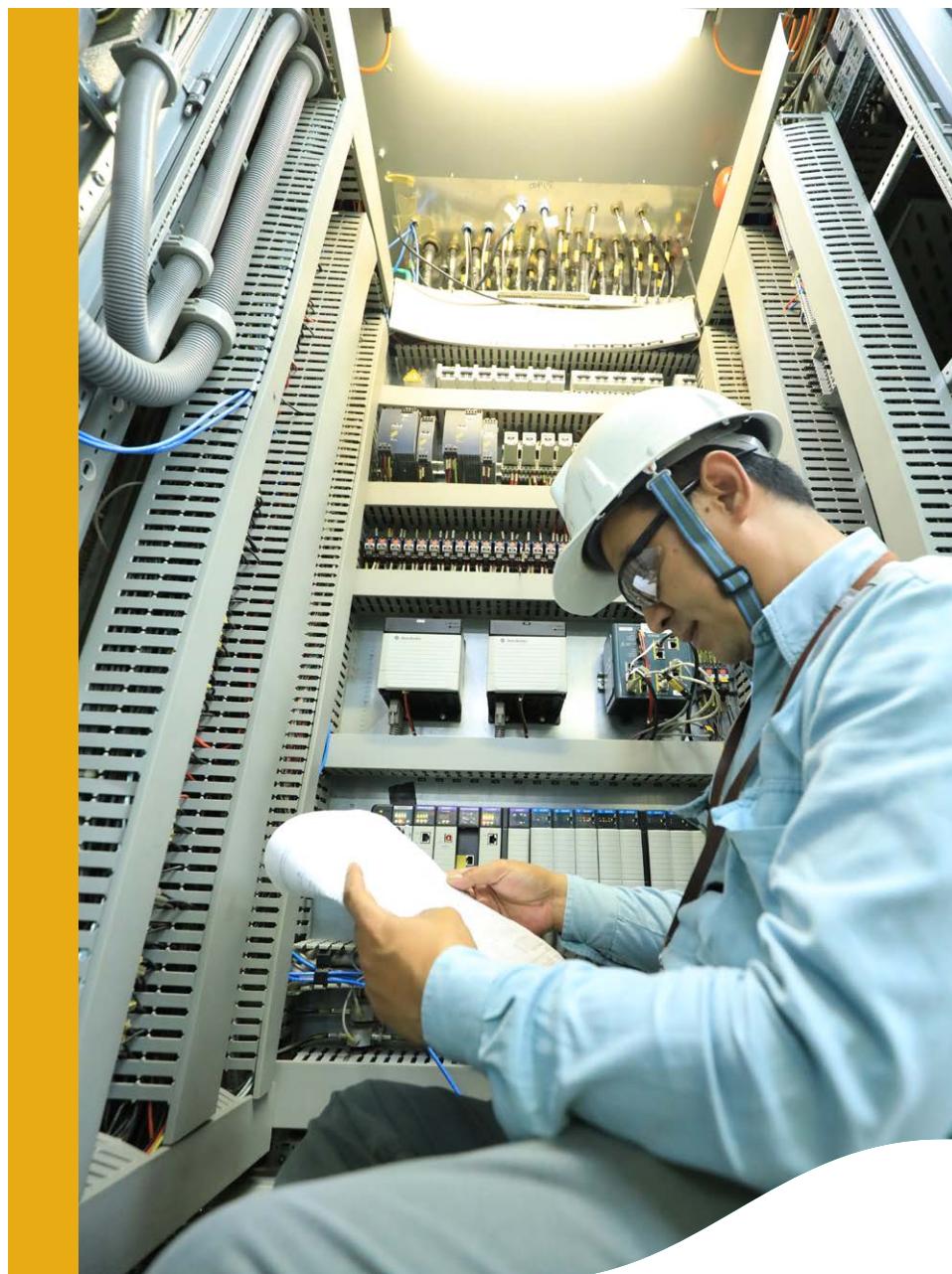
Delegation of Consultation and communication with stakeholders			
Board of Directors	External Relations Department	Strategic Permit and Formalities Division	S T A K E H O L D E R S
		➤ Strategic Permit and Formalities Division	Carrying out the functions of development, policy analysis, social program development strategy, planning and measuring internal performance, as well as encouraging the completion of the licensing processes, or operational cooperation agreements between PT Vale and the government, as well as other related parties.
		➤ Social Development Program Division	Carrying out functions related to PPM including education, health, economy, institutions, and other support schemes, such as arts and culture that are included in the partnership program.
		➤ Stakeholder Relations Division	Carrying out the function of building good relations with stakeholders and encouraging the resolution of complaints related to the impact of PT Vale's operations and community empowerment through an integrated problem-solving mechanism. [POJK51-6.c.3.b]
	➤ Communications Department		Carries out the communications function to maintain the Company's reputation, by managing overall company key messaging to stakeholders, including managing the Company's internal communications, media relations, digital media, public relations and company reporting for current operations and growth agenda.



For sustainability performance improvements, the Board of Directors is active involved in competency development in the Company's sustainability aspects. Competency development is carried out through a global leadership workshop held annually. In addition, during 2021 there were several other activities held to develop the Board of Directors' competencies, including participation in global climate change conferences. [2-17][POJK51-5.b]

Code of Conduct Compliance and Violation Reporting Channels [2-26]

The Company has a number of internal policies that serve as guidelines for implementing the principles of good corporate governance (GCG). These policies include the Code of Ethics and Conduct, Procurement Norms, Board of Commissioners Charter, Board of Directors Charter, Governance Committee Charter, Audit Committee Charter, Internal Audit Charter, Corporate Secretary Charter, and other policies and procedures.



The Company continuously disseminates its Code of Conduct to all parties within the Company and other parties outside the Company. Socialization activities carried out in 2021 included:

- Promotional activities for ethics and compliance programs through video films about behavior to be observed by employees with internet access. There were four series of behavioral video films made as part of the code of conduct socialization in 2021.

- Online Ethics and Compliance program training activities attended by 1,639 employees, 91% of the targeted 1,810 employees with intranet access.

Anti-corruption and bribery program training activities were conducted online attended by 172 employees whose work is considered vulnerable to the risk of corruption and bribery.

We have a whistleblower channel called the Vale Whistleblower Channel (VWC) that is connected to the Vale S.A. Code of Ethics and Conduct Section. We provide several channels for reporting violations. Matters that can be reported include corruption, conflicts of interest, discrimination, and other matters that are considered to have violated regulations, or are not in accordance with the Company's code of ethics.

Violation Reporting Facilities Through VWC		
Telephone 0 800 100 2233	Fax +62 21 2993 8456	Email vwc@tipoffs.info
Website //valewhistleblowerchannel.tipoffs.info	Letter Vale Whistleblower Channel, PO Box 3035, JKP 10030	SMS +62 812 80400622

VWC is managed by an independent and professional whistleblowing service provider in Indonesia. Each report will be responded to and investigated with procedures that protect the whistleblower's rights and the rights of the reported parties, in accordance with applicable laws. The Company guarantees confidentiality and independence (no intervention), and impartiality and immunity in the handling, investigation and storage of information received through the VWC.

During 2021 VWC received 33 reports. All reports are investigated to ascertain if they should be followed up or not. Investigations

can be carried out internally or by appointed external parties. Based on category, the most reports investigated related to violations in the form of acts of theft and fraud. The form of sanctions given is related to violations proven by employees, including 16 employees receiving the lightest sanctions in the form of written directions, 40 employees receiving written warnings according to the level of the violation. Throughout 2021, none of the employees received the heaviest sanction in the form of termination of employment. Complete information disclosure regarding VWC is presented in the 2021 Annual Report of PT Vale Indonesia Tbk.

Violation Reporting Handled Through VWC			
Description	2021	2020	2019
Number of Allegations Received	33	74	24
Percentage of Valid Allegations	85	99	92

Percentage of Valid Allegations Confirmed After Investigation* (%)			
Description	2021	2020	2019
Not confirmed	18	19	54
Inconclusive	7	16	13
Confirmed	75	65	33

Notes:

* Per year of investigation completed

Anti-Corruption Support [EM-MM-510a.1]

PT Vale already has an anti-corruption policy that have signed by the President Director in 2015. Detail about this policy can refers to <http://www.vale.com/indonesia/EN/sustainability/our-approach-in-indonesia/Pages/policies.aspx>. We have zero tolerance of corruption and abuse of power for personal gain. The Company has various channels that can be used by stakeholders to submit information or reports on any violations or indications of corruption. In 2021, PT Vale did not conduct a re-assessment to identify operational activities that pose a risk of corruption, as there has already been an assessment for identifying the risk of corruption with Hadiputranto Hadinoto & Partners (HHP) Law Firm in the Company. Meanwhile, PT Vale held anti-corruption socialization and training for employees, the public and other stakeholders. [\[205-1\]](#) [\[205-2\]](#)

During the reporting period, there was no special anti-corruption training for governance body officials, however PT Vale periodically held refresher training for the Board of Directors concerning compliance with the Code of Conduct, to ensure they always act with integrity and transparency, and listen actively. Anti-corruption communication and socialization to all employees was carried out through email blasts and banners, while socialization on PT Vale's Supplier Code of Conduct was carried out with work partners. [\[205-2\]](#)

During 2021, PT Vale held online anti-corruption socialization and training for employees, the public and other stakeholders. Activities included:

- Ethics and Compliance Training attended by 1,639 participants from a target of 1,810 participants;
- Anti-Corruption and Bribery Training for employees whose work is considered vulnerable to the risk of corruption and bribery, attended by 172 participants (91%) out of a target of 189 participants;

PT Vale has an e-procurement process containing anti-bribery and anti-corruption clauses to minimize the risk of corruption, which has become part of contract management transparency. We provide Vale Global Anti-Corruption Guidelines for intranet facilities. During the reporting period PT Vale approved 421 applications for gifts and hospitality, out of a total of 456 applications submitted. During the reporting period PT Vale did not receive any complaints concerning anti-corruption violations, either by employees or working partners. [\[205-3\]](#)

Human Rights Self Assessment [EM-MM-210a.3]



In 2021 PT Vale conducted a Human Rights (HAM) Self-Assessment as part of PT Vale Indonesia's commitment to Respect, Protect and Remedy Human Rights conditions in the Company and all stakeholders. To ensure its human rights commitment, PT Vale organized Human Rights Training for 94%

- of its leaders and staff.
- The Human Rights Self-Assessment is part of the Social Key Performance Indicators (KPI) and consists of:
 - Relationship with local communities
 - Relationship with Indigenous Peoples
 - Involuntary Resettlement
 - Socioeconomic risks and impacts
 - Community Health and Safety

Sustainability Risk Management Process Effectiveness

Risk management on the implementation of sustainability is part of implementing the Framework for Integrated Risk Management (FIRM), which was prepared to take into account ISO 31000, ISO 55001, and COSO-ERM on Risk Management and Asset Management. Risk management involves the Board of Directors and Board of Commissioners with the Board of Directors supported by management functions, namely Risk Management, Line Management, and Internal Audit. The Board of Commissioners assisted by the Risk Mitigation Committee supervises risk management. The Board of Directors and Board of Commissioners hold regular meetings to discuss risk management to ensure it is included and runs effectively in the 2021 sustainability. [\[2-18\]\[POJK51-5.c\]](#)

During the reporting period, PT Vale carried out several activities involving stakeholders through the gemba walk and town hall meeting mechanism so stakeholders could convey important matters to the Board of Directors. The gemba walk was attended by functions and employees who conveyed a number of areas for improvement to the President Director and CEO of PT Vale. The town hall meeting was carried out by PT Vale employees and contractors/

suppliers workers to convey important matters, including those related to safety, production, and financial performance. [\[2-16\]](#)

Constraints and Challenges for Implementing Sustainability

Not all stakeholders understand the importance of a balance between economic, social and environmental aspects that forms the basis for sustainability performance. Diverse perceptions and interests among stakeholders can become obstacles and challenges in achieving sustainability performance, especially in the social and environmental aspects. Management of negative impacts also requires a lot of measurement and documentation that can be a problem due to limited capabilities or the variety of calculation methods. To overcome these obstacles and challenges, PT Vale is always improving its communication and training, as well as monitoring the calculation data as a basis for performance evaluation. [\[POJK51-5.e\]](#)

Economic Performance To Build The Nation

"Throughout 2021, PT Vale carried out critical maintenance in the operational processes, and maintained its production and sales, despite the challenges of tackling the COVID-19 pandemic, which is still our shared responsibility."

Material Topics Management Disclosure

The direct economic value generated and distributed is an important basis for PT Vale's sustainability. In 2021 we produced 65,388 metric tons of nickel in matte, with sales reaching 65,388 metrik ton nickel in matte, with operating revenues of AS\$953.17 million. Evaluation of the social community investments is carried out through direct monitoring of beneficiaries, and the achievement of Key Performance Indicators (KPI) targets. [\[3-3a\]\[3-3b\]\[3-3c\]\[3-3.d\]](#)
[\[3-3.e\]\[3-3.f\]](#)

During the COVID-19 pandemic, we applied various ways to maintain the Company's stability. We also continued our innovation and superior operational activities by implementing the Vale Production System (VPS). The VPS requires the involvement

of all the key elements, employees, operations, maintenance, and management. The average production cost of nickel in matte in 2021 reached US\$8,430 per ton, an increase from US\$6,898 per ton in 2020 due to an increase in energy prices.



Nickel Production Costs (USD per Ton)		
2021	2020	2019
8,430	6,898	7,456

Nickel in Matte Production Costs						
Production Cost Component	2021		2020		2019	
	Cost (Million US\$)	%	Cost (Million US\$)	%	Cost (Million US\$)	%
Fuel and Lubricants	113	16	88	14	146	22
Depreciation, Amortization	157	22	149	23	131	20
Indirect Materials	120	17	129	20	119	18
Employee Costs	84	12	75	12	77	12
Coal	60	8	42	7	44	7
Taxes and Insurance	36	5	32	5	29	5
Royalties	19	3	15	2	16	2
Others	127	17	117	18	94	14
Production Cost	716	100	647	100	656	100

Economic Value Generated and Distributed

During 2021 we optimized the consolidated economic value generated from our Operating Revenue and Operating Profit. This report includes information on the economic value generated and distributed for PT Vale's operations in Indonesia.

Economic Value Generated and Distributed (Thousand US\$) [201-1a][201-1b]			
Description	2021	2020	2019
Economic Value Generated			
Operating Revenue	953,174	764,744	782,012
Other Income	2,714	4,472	4,759
Total Revenue	955,888	769,216	786,771
Economic Value Distributed			
Operating Costs	639,352	573,475	597,367
Employee Salaries and Allowances	84,881	79,447	84,58)
Payments to Providers of Capital	0	0	(1,525)
Payments to Government	142,966	103,060*	129,029
Community Investments	4,892	4,493	3,456
Total Economic Value Distributed	872,091	760,475*	815,864
Economic Value Retained (Total Economic Value Generated – Total Economic Value Distributed)			
Total Economic Value Retained	83,797	8,741*	(29,093)

Note:

- The Company's economic performance is presented in a consolidated manner based on the audited financial statements, not by region, area or product.

- The calculation of economic value presented in the Sustainability Report uses a cash basis method, as recommended by the GRI Standard, so the figures presented may differ from the Audited Financial Statements.

- This report does not include disclosure of information on sustainable financial performance targets related to financial literacy and inclusion, as the Company's line of business is nickel ore mining and nickel processing.

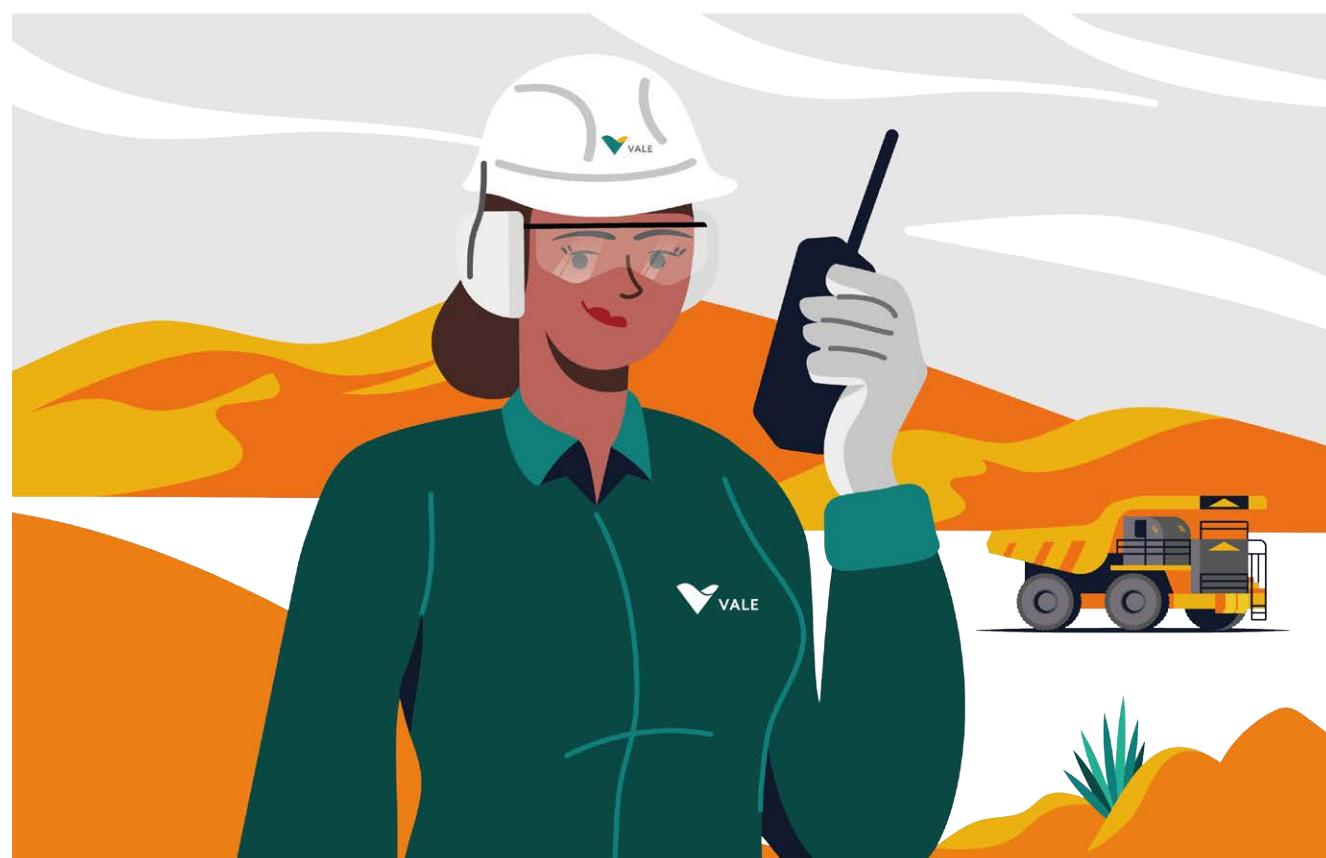
*Restatement of the 2020 Sustainability Report [2-4]

By the share ownership structure, the Government indirectly owns the Company's shares through the ownership of MIND. ID, which is one of the shareholders of PT Vale. However, the

financial assistance provided is general and is also given to other business entities in Indonesia and still complies with GCG principles. [201-4a][201-4b] [201-4c]

Production and Sales Target and Realization

During the reporting period, we faced physical climate change in the form of weather anomalies, which affected the nickel ore mining operations, as well as the delivery of nickel in matte to customers. This impacted PT Vale's finances, which experienced additional operating expenses. However, the Company optimized its nickel ore and nickel in matte production, and sales and delivery of nickel in matte, thus meeting the set targets. [201-2ai][201-2aii][201-2aiii][201-2aiv][201-2v]



Nickel in Matte Production Sales Target and Realization in 2021 (Ton) [POJK51-6.b.1]

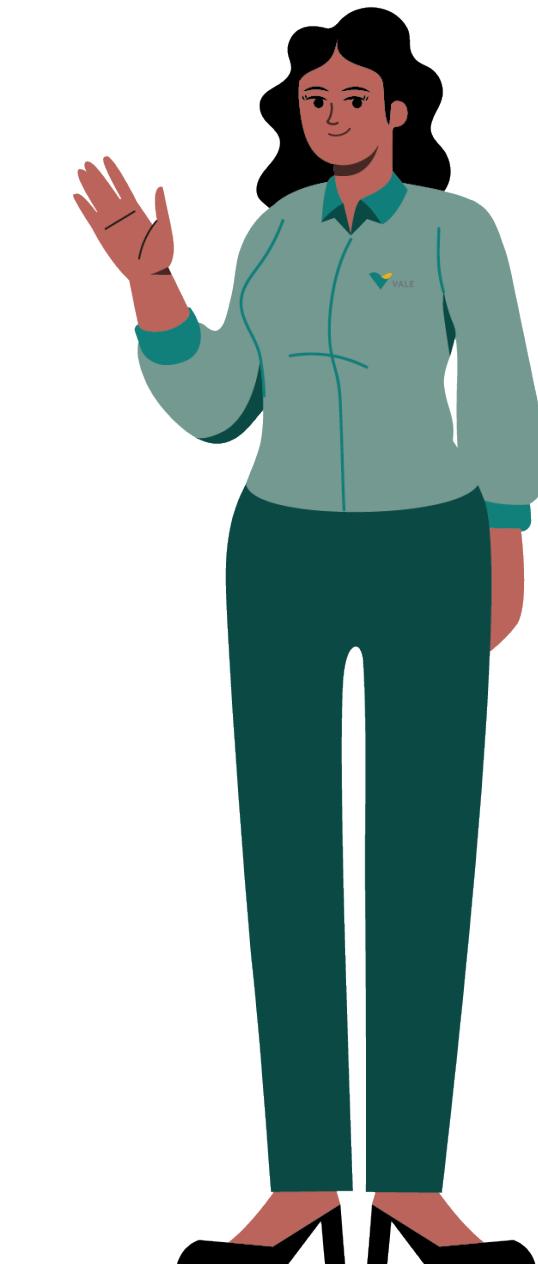
Description	2021			Percentage (%)
	Target	Realization		
	1	2	3	
Production	64,083	65,388	102	
Sales	64,781	66,615	103	

Actual Production and Sales of Nickel in Matte (Ton)					
Description	2021	2020	2019	Δ%	
	1	2	3	1:2	2:3
Production	65,388	72,237	71,025	-9	0.3
Sales	66,615	72,846	72,044	-9	1.1

Realization of Nickel in Matte Sales to Buyers						
Buyers	2021		2020		2019	
	Ton	%	Ton	%	Ton	%
Vale Canada Limited (VCL)	53,265	80	58,297	80	57,617	80
Sumitomo Metal Mining Co.Ltd	13,350	20	14,548	20	14,427	20
Total	66,615	100	72,846	100	72,044	100

Employment Benefits [202-1] [405-2]

PT Vale pays remuneration to all employees without discriminating between male and female employees. However, the Company's employee remuneration has been adjusted to the minimum wage regulations. In 2021, the Company spent US\$33,738,393 for both male and female employees, 114% of minimum wage regulations in East Luwu District.



Employee Pension Funds

[201-3a] [201-3b] [201-3c] [201-3d] [201-3e]

We include employees in a Defined Contribution Pension Program (PPIP) managed by the Financial Institution Pension Fund (DPLK), the Old Age Security Program and the Pension Guarantee Program managed by BPJS Ketenagakerjaan. PPIP is mandatory for employees who have worked for more than three years. 10% of the DPLK contribution is paid by the Company, and 2% by the employees. In 2021, the total pension funds reached US\$51,979,558.01 million, up from US\$26.7 million in 2020. This amount is sufficient to meet the payment of the Company's obligations to 3,071 employees retiring in 2021.

Contribution to State Revenue and Tax-Related Policies

Another form of economic value distributed is for payment of taxes and Payment of Non-Tax State Revenue (PNBP) to the Government.

Total tax and PNBP payments in 2021 reached US\$142,966 thousand, up 39% from US\$103,060 thousand in 2020.

This is due to an increase in nickel prices, which is one of the factors in the formula for paying royalties and water levy (Surface Water Tax for hydroelectric power) and corporate income tax due to the increase in Taxable Profit.

Taxes and PNBP Payments (US\$ Thousand)			
Description	2021	2020*	2019
Payments of Taxes and Levies	117,780	81,937	100,713
Payments of Non-tax State Revenue (PNBP)	25,185	21,124	28,316
Total Payments (Taxes and PNBP)	142,966	103,060	129,029

Components of PNBP Paid To The Government (US\$ Thousand)			
Description	2021	2020	2019
Production Royalties	19,187	15,505	15,860
Land Rent for Contract of Work Areas	504	528	472
Other Non-tax State Revenue	5,494	5,091	11,984
Total	25,185	21,124	28,316

Components of Taxes and Levies Paid To The Government (US\$ Thousand)			
Description	2021	2020*	2019
Value Added Tax	1,242	1,300	868
Land and Building Tax	2,405	2,407	2,379
Employee Income Tax	10,859	8,184	11,917
Corporate Income Tax	66,024	38,372	55,430
Regional Taxes, Levies and Grants	23,539	22,774	20,784
Third Party Withholding Tax	9,017	4,437	4,467
Duties	4,695	4,462	4,868
Total	117,780	81,937	100,713

* Note: *Restatement of the 2020 Sustainability Report [2-4]

Sustainable Development

During 2021 we continued our development efforts to increase the production capacity to 90,000 tons of nickel in matte, which is targeted for 2026. The strategic steps taken by the Company included:

- The Company signed a Project Cooperation Framework Agreement/ PCFA for the construction of a nickel processing plant in Bahodopi, Morowali Regency, Central Sulawesi with one of the strategic agreements using LNG.
- The Company plans to build a processing plant using High Pressure Acid Leach (HPAL) technology

in Pomalaa, Kolaka Regency, Southeast Sulawesi.

Product Responsibility

During the reporting period, PT Vale did not innovate any of our products, but continued to improve production efficiencies for nickel in matte, our intermediate product that is further processed by our buyers, VCL and SMM. Nickel in matte products do not directly affect the safety and security of customers, and do not directly impact the users, so no special handling is required. Nickel that has been processed into the final product can be recycled. During the reporting period, PT Vale did not receive any claims for products or product recalls. [POJK51-6.f.1] [POJK51-6.f.3] [POJK51-6.f.4]

During 2021, there were no recalled products as we already had long-term contracts with established

standards. In addition, PT Vale has implemented an Integrated Vale Production System as a standard for evaluating the safety and quality of each product (100%) starting at the operational level. [POJK51-6.c.1] [POJK51-6.f.2]

All (100%) of PT Vale's products have been assessed for their health and safety impacts, so there were no complaints regarding safety, health and security from our employees, contractor workers or customers. The nickel in matte production process and products comply with the safety, health and security requirements. The assessment process takes place concurrently with the Restriction of Hazardous Substances (RoHS)

standards compliance, and is based on ISO 9001:2008 and ISO 17025:2008 certifications. [416-1][416-2]

Nickel in matte to buyers is shipped in special packages with a capacity of 3.3 tons. On the outside of the package are labels explaining the product specifications and handling methods. During 2021, there were no complaints made by buyers regarding discrepancies in the information on the labels.

PT Vale has conducted compliance assessments on labeling procedures for all (100%) of its products. [417-1] [417-2]

Indirect Economic Value Management

[2-6] [POJK51.6.c.3.a]

PT Vale's operations and business activities provide indirect benefits to the community through employment opportunities for local communities as employees in contractor/supplier companies in the Company's supply chain. Local companies are defined as companies located and/or operating in East Luwu Regency.

Contractor/supplier company employees are compensated for their work, which they use to meet the necessities of life including shopping, creating a chain effect on the local economy.

As of December 31, 2021, there were 295 local companies as part of the Company's supply chain, or 28.45% of the total number of vendors/suppliers.

Supplier Engagement Proportion

Description	2021		2020		2019	
	Total	%	Total	%	Total	%
Local Suppliers	295	28	295	29	295	31
National Suppliers	560	54	516	51	463	49
International Suppliers	183	18	200	20	187	20
Total	1,038	100	1,011	100	945	100

Contract Value by Supplier (US\$)

Description	2021		2020		2019	
	Total	%	Total	%	Total	%
Local Suppliers	39,185,111	10	65,795,288	13	61,339,562	11
National Suppliers	265,305,103	69	346,663,150	68	398,597,328	68
International Suppliers	77,377,305	20	99,439,738	19	125,028,445	21
Total	381,867,519	100	511,898,176	100	584,965,335	100

In 2021, 386 suppliers were evaluated with 209 or 54% passing the evaluation. Evaluations were carried out to ensure they meet PT Vale's standards and criteria. The evaluation

results also showed that 100% of local suppliers met PT Vale's environmental management standards and criteria.

[308-1]

Supplier Evaluation for 2021			
Description	Number of Suppliers Evaluated	Number of Suppliers Passing the Evaluation	%
Local Suppliers	118	118	100
National Suppliers	236	86	36.44
International Suppliers	33	5	15.15
Total	386	209	54