



**RAMU
NICO**



2024 SYDNEY PIW

Ramu NiCo Management (MCC) Limited.

1 PRESENTATION

- ABOUT US
- OUR OPERATIONS
- CORPORATE CULTURE
- CONCLUSION



BSK wharf during construction period



• **SHAREHOLDERS**

- Metallurgical Corporation of China – 85%
- Nickel 28 – 8.56%
- Mineral Resources Development Corporation as Trustee (MRDC) – 6.44%

• ABOUT US

- The Ramu Nickel Project is operated by Ramu Nickel Management (MCC) Limited (RNML) hereafter called Ramu NiCo. Ramu NiCo is a subsidiary of China Metallurgical Group Corporation (MCC). MCC is China's largest producer of steel structures. It is ranked the world's 6th largest metallurgical construction contractor and a service provider on the ENR's (Engineering News – Record) Top 250 Global Contractors.
- Since 2015, MCC has transitioned to a fully integrated supply chain company and a subsidiary of China Minmetals Corporation (CMC), Minmetals in 2023 rated 65 in the Fortune Global 500 list 2023, with operating revenue of US\$133.5 billion.
- In 2015, Minmetals and MCC embarked on a strategic reorganization through acquisitions and mergers, transforming them into a comprehensive enterprise that covers the full industrial spectrum. This includes everything from resource acquisition and exploration to feasibility studies, engineering, design, construction, mining, processing, refining, smelting, trading, logistics, management, and operation.



• ABOUT US CONTINUE

- The Ramu Nickel Project is a world-class mine with a total capital investment of US\$2.041 billion. This marks it as the largest overseas direct investment by China in the South Pacific region.
- The refinery is designed to yield 32,601 tons of nickel hydroxide and 3,300 tons of cobalt mineral each year; the project encompasses a nickel reserve of over 78 million tons, with its total resources exceeding 140 million tons. These figures underscore the project's vast scale and position as a low-grade nickel laterite and cobalt mining operation.
- Situated in Kurumbukari (KBK), the mine is positioned 75km southwest of Madang, while the refinery and export wharf can be found in Basamuk, 55km southeast of Madang. A 135km slurry pipeline serves as a linkage between the mine and the refinery.
- Located in Madang Town, the Madang Office delivers support services to the KBK Mine site and the Basamuk Plant site, in addition to maintaining offices in Lae and Port Moresby.

KBK



BSK



Madang



• ABOUT US CONTINUE

- The Ramu Nickel Project is a world-class mining operation, signifying that our facilities are at the forefront globally in terms of technology, efficiency, and managing environmental impacts.
- Ramu NiCo has achieved global first place by pioneering the use of high-pressure acid leaching to extract nickel and cobalt from low-grade laterite ore. This innovative process, developed with proprietary intellectual property rights, stands out for its efficiency and uniqueness.
- The project has overcome numerous engineering challenges across all stages, including mining, ore processing, pulp transportation, and smelting. It excels in engineering technology, surpassing comparable projects globally. Ramu NiCo marks the world's first successful implementation of all-wet smelting technology for nickel laterite ore.
- Our operation harnesses the most sophisticated technologies in preheating, autoclave, and flash evaporation, achieving a remarkable steam utilisation rate of over 75% and an efficient leaching performance (of nickel 95.5%, cobalt 95%). Furthermore, we utilise an innovative sodium hydroxide precipitation technique and a pioneering ore-washing process involving a "cylindrical ore washing machine + trough scrubber."
- Our mining activities employ a strategic mix of hydraulic shovels and articulated trucks bolstered by hydraulic mining methods. This strategy improves both flexibility and efficiency and is particularly well-suited for the challenging heavy rainfall conditions found in tropical rain forests.

• HISTORY CONTINUE

- Ramu NiCo has achieved global first place by pioneering high-pressure acid leaching to extract nickel and cobalt from low-grade laterite ore. This innovative process, developed with proprietary intellectual property rights, stands out for its efficiency and uniqueness.
- The Ramu Project was discovered in 1962 and began operations 50 years later. This is indicative of how long developing a mining project can take in PNG to develop from resources discovery and acquisition to operation.
- Due to its complexity, high capital cost and operational cost and low return on investment, the project license owner Highlands Pacific along with PNG government struggled to find a developer interested in taking on this project. Its lack of viability led to a situation where no company was willing to develop this project.
- Through a bilateral agreement, the PNG government enlisted China's assistance to advance this project. In 2004, MCC was tasked to develop and operate this project. Today, the success of the Ramu Nickel mining project stands as a testament to MCC's legacy.
- The mine employs more than 2,600 employees.

• CHALLENGES

- **Environmental and Geographical Challenges:** Papua New Guinea is vulnerable to earthquakes and is characterized by its tropical rainforest climate and frequent heavy rainfall. These conditions demand more robust earthquake-resistant measures for mining and refining operations. The Ramu NiCo Project has implemented a mining strategy incorporating hydraulic mining as an adjunct, creatively addressing the challenges of integrating and coordinating engineering technologies across the entire mining, ore processing, slurry transportation, and refining process.
- **Technical and Process Hurdles:** The nickel ore found in Papua New Guinea is of relatively low quality, necessitating ongoing exploration and enhancements in the production process to attain technological optimization and excellence.
- **Infrastructure Hurdles:** Papua New Guinea's infrastructure may be underdeveloped, presenting challenges in logistics, transportation, and communication. The MCC Ramu Nickel project must allocate resources to enhance or accommodate these infrastructural limitations to guarantee the project's smooth operation.
- **Challenges of Market Volatility:** The market values for cobalt and nickel are relatively low. It's crucial to vigilantly observe market trends and adapt production and sales approaches flexibly to manage the risks associated with price fluctuations

• OUR HISTORY

1

1962

Ramu deposit
discovered

2

2004

MoA
signed

3

2006

Construction
launched

4

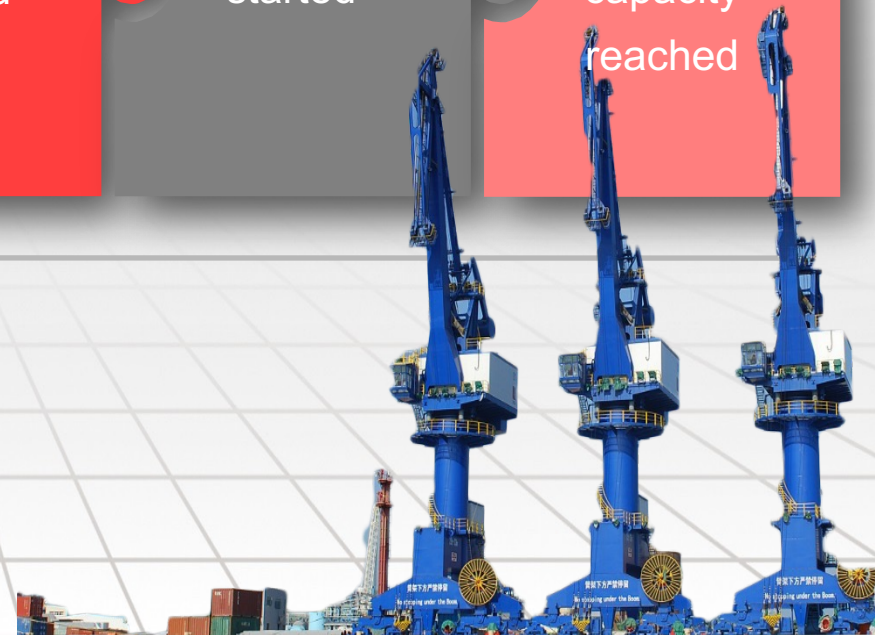
2012

Commissioning
started

5

2016

Design
capacity
reached



• 2

PROJECT OPERATIONS

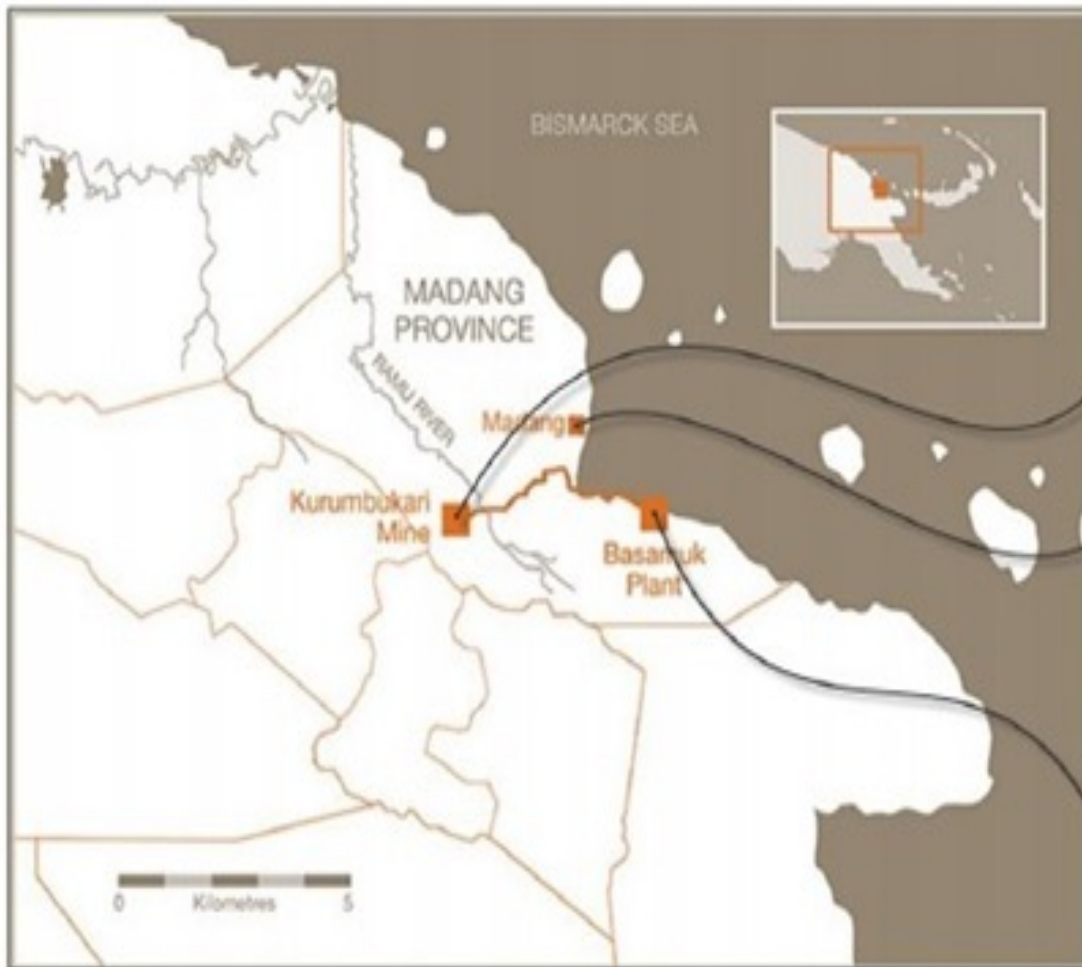




中国五矿

MCC 中冶瑞木
MCC Ramu NiCo

RAMU NICKEL MINE- Locality



1: KBK Mine Site



2. Madang Office



3. BSK Plant Site



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中冶瑞木
MCC Ramu NiCo

Kurumbukari (KBK) Mine Operation Overview





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1. Mine Ore Reserves Estimate 2022 (JORC Report)

Ore Reserves Estimate Results within Ramu Project Area

| Category | Ore Resources (Mt) | Average Grade (%) | |
|--------------|-----------------------|-------------------|-------------|
| | | Ni | Co |
| Proved | 35.4 | 0.83 | 0.09 |
| Probable | 17.2 | 0.79 | 0.08 |
| Total | 52.6 | 0.81 | 0.09 |

1: The Ni Cut off grade is at 0.5%Ni, and the minimum mineable thickness is at 0.5m

2: Any computation inconsistencies are due to rounding.

3: Ore tonnage (dry) represent the economic portion sized under 2mm of resources free of rock in ore

4: The 2023 JORC Report of Ramu is still in progress .

5: The Ore Reserves are updated up to December 31, 2022 (JORC)

6: Mineral Ore Reserves are included in Mineral Resources.

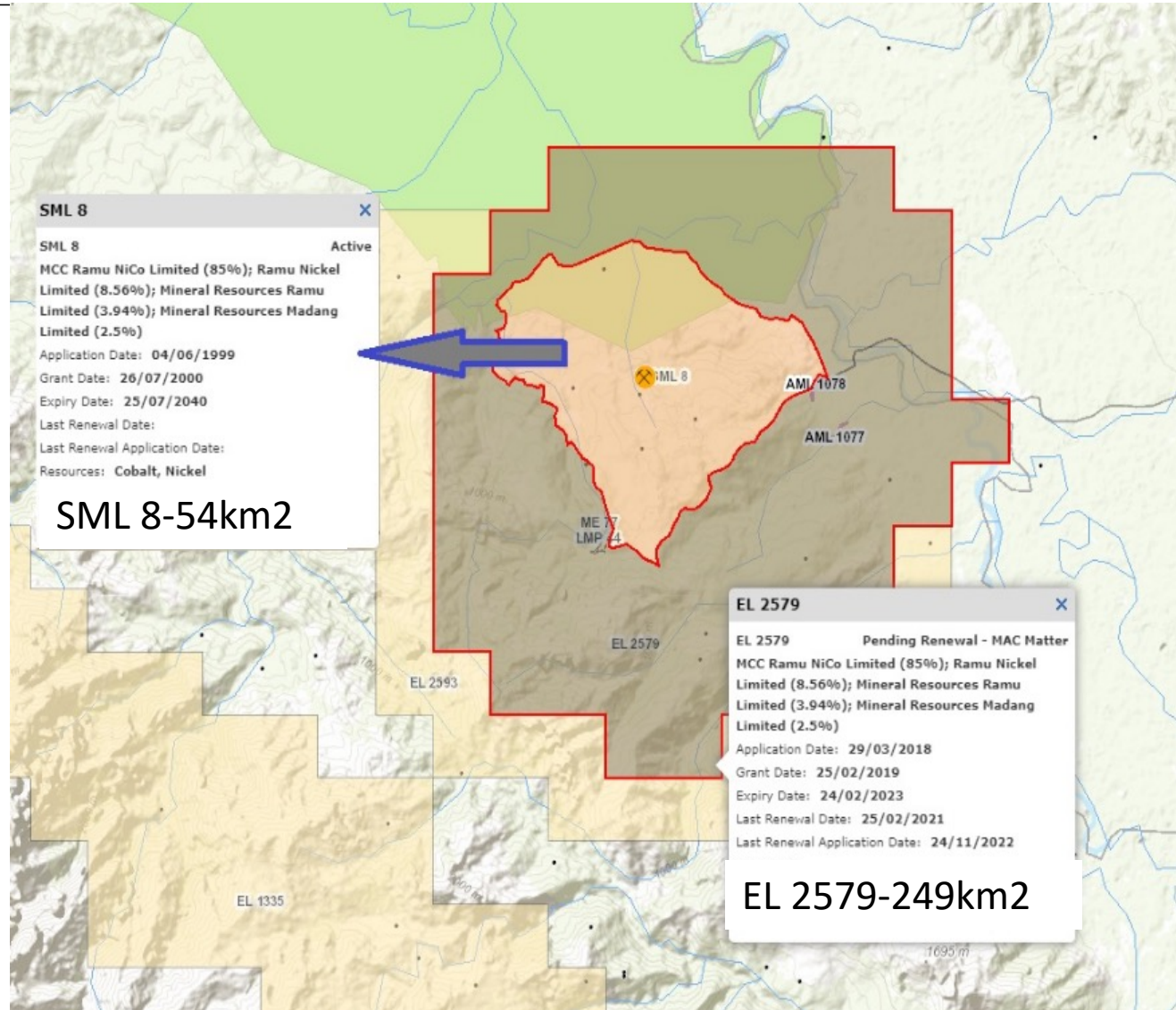


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2. SML 8 & EL2579

- ❖ The SML 8 covers an area of 54 square kilometres.
- ❖ Exploration License (EL) 2579 surrounds the Special Mining Lease 8 (SML 8) which holds the laterite nickel ore of the Kurumbukari (KBK) Mine site.
- ❖ EL 2579 at KBK Mine, covers an area of 249 square kilometres with 73 sub-blocks.
- ❖ EL 2579 is located 80km south-west of the Provincial capital of Madang and the EL is situated wholly in the Madang Province.





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Current Layout of Mining Pits at KBK Mine

- ❖ Currently, total 24 mining pits are planned at KBK mine, include Pit No. 1-23, S3.
- ❖ By the end of December 2023, area prepared for Mining is 12.1 square km, the mining active area is 9.0 square kilometer and the mine out area is 5.0 square kilometer .
- ❖ There are two mining methods of mining applied in KBK Mine:
- ❖ The proportion of two mining methods are:
 1. Conventional Mining is 65%(Excavator loading, Volvo ATD truck transportation).
 2. Hydro-sluicing Mining is 35% (Using high-pressure water to sluice the Ore body, ore pulp preparation).





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1. Load and haul mine operation





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2. Hydro-sluicing Mining Operation





3. Process Flow of KBK Mine



Ore Mining Techniques
(Conventional & Hydro-
Sluicing Mining)



Primary slurry
preparation-Washing
Plant



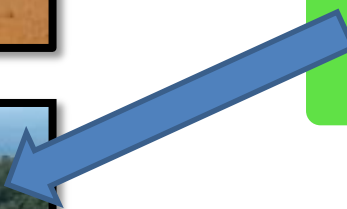
Chromite Removal-
Beneficiation Plant



Thickened slurry
preparation-
Beneficiation Plant



Slurry transported via
Pipeline to BSK
Refinery



▪ EXPLORATION AND EXPANSION

- ❖ The company is currently planning an extension of the current SML 8.
 - ❖ The plan is to convert our exploration rights into mining rights within the designated EL2579 area. Preliminary investigation and material preparation work necessary for this conversion is underway.
 - ❖ Exploration activities to expand the resources and extend the mine's life began on 10 August 2022. A total of 11 drilling rigs were employed for these tasks. By 30 April 2024, 2,988 drill holes had been completed, with a cumulative drilling depth of 28,460 meters and 24,482 samples collected.
 - ❖ It is expected that after approval for the extension is granted, activity and production at the mine site will double.
 - ❖ For downstream industry expansion, a MOU was executed between Kumul Mineral Holdings Limited and MCC Ramu NiCo and engaged ENFI on 9 January 2024 for a study into downstream processing of Nickel, and Copper smelting in PNG. The specific cooperation plans are currently being prepared and would be delivered to the PNG Government in December 2024.
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2. Basamuk Refinery

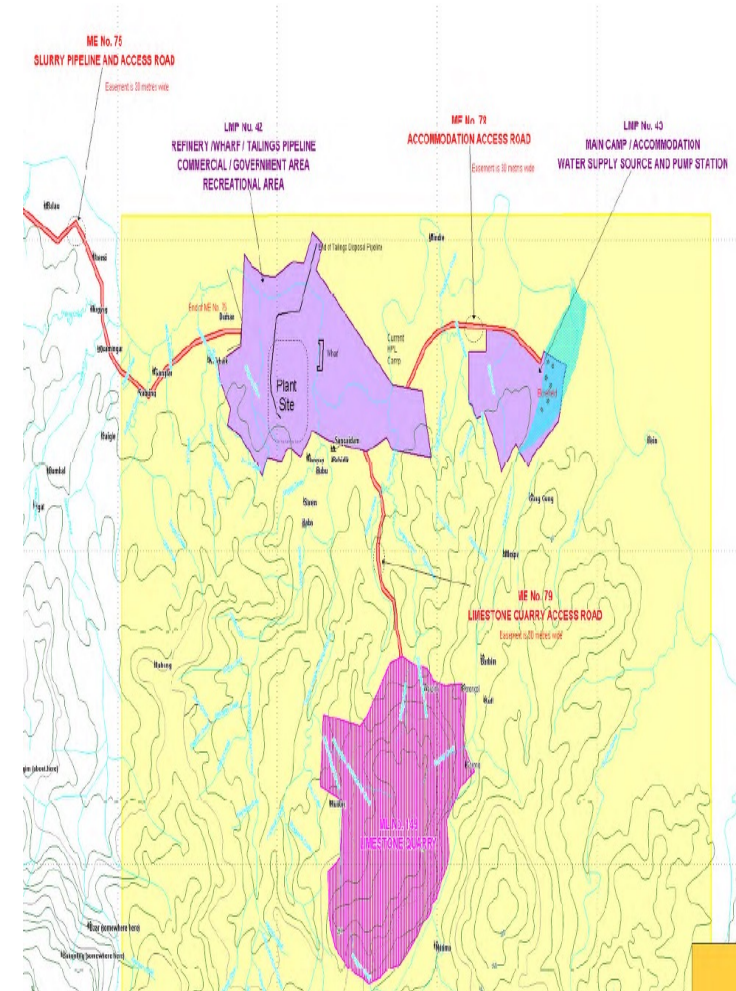


BSK Lease Areas



BSK Tenements

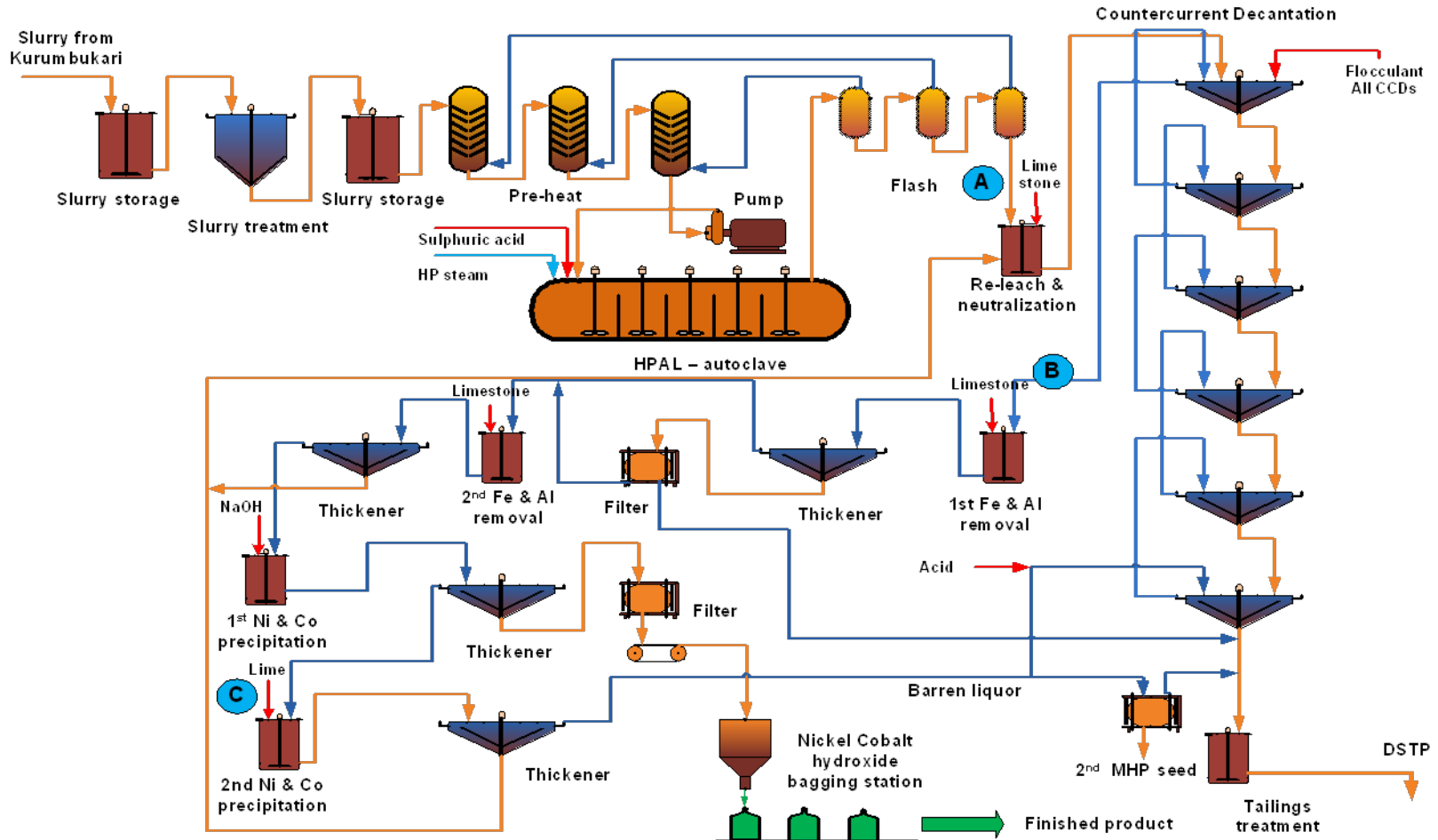
| Name | Location | Area of the Mine | Term |
|----------------------------------|--|------------------|----------------------|
| Mining Lease No. 149 | Limestone Quarry, Basamuk, Madang Province | 260 hectares | 26/07/20 25/07/30 |
| Lease for Mining Purposes No. 42 | Plant Site - Basamuk, Madang Province | 213 hectares | 26/07/00 25/07/40 |
| Lease for Mining Purposes No. 43 | Accommodation Site – Basamuk Area, Madang Province | 70 hectares | 26/07/00 25/07/40 |
| Mining Easement No. 75 | Slurry Pipeline – Kurumbukari – Basamuk, Madang Province | 384 hectares | 26/07/00 25/07/40 |
| Mining Easement No. 78 | Road from Plant Site to Accommodation, Basamuk, | 5.68 hectares | 26/07/00 25/07/40 |
| Mining Easement No. 79 | Road from Plant Site to Quarry, Basamuk, Madang Province | 4.62 hectares | 26/07/00 25/07/40 |
| Exploration Licence No. 2376 | Basamuk Madang Province | 16 sub blocks | 25/05/24 |



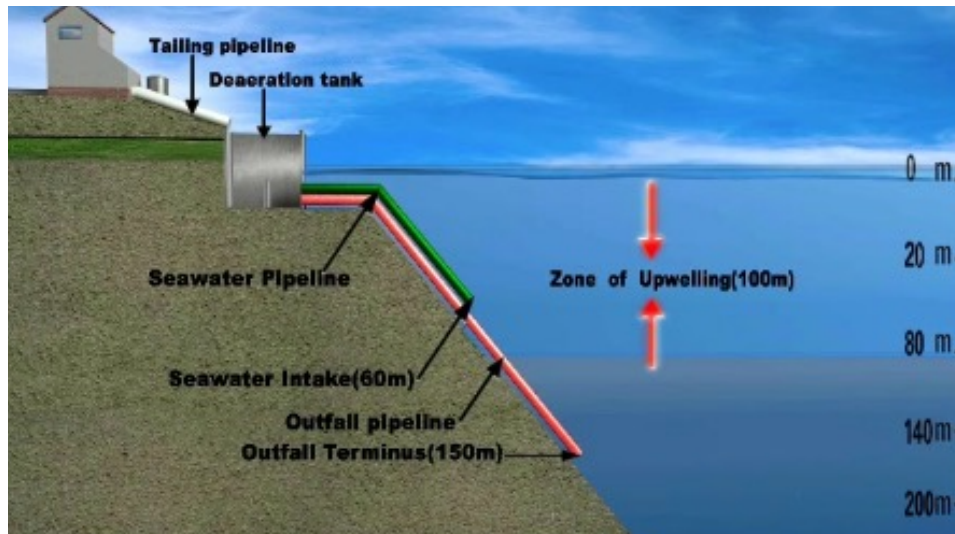
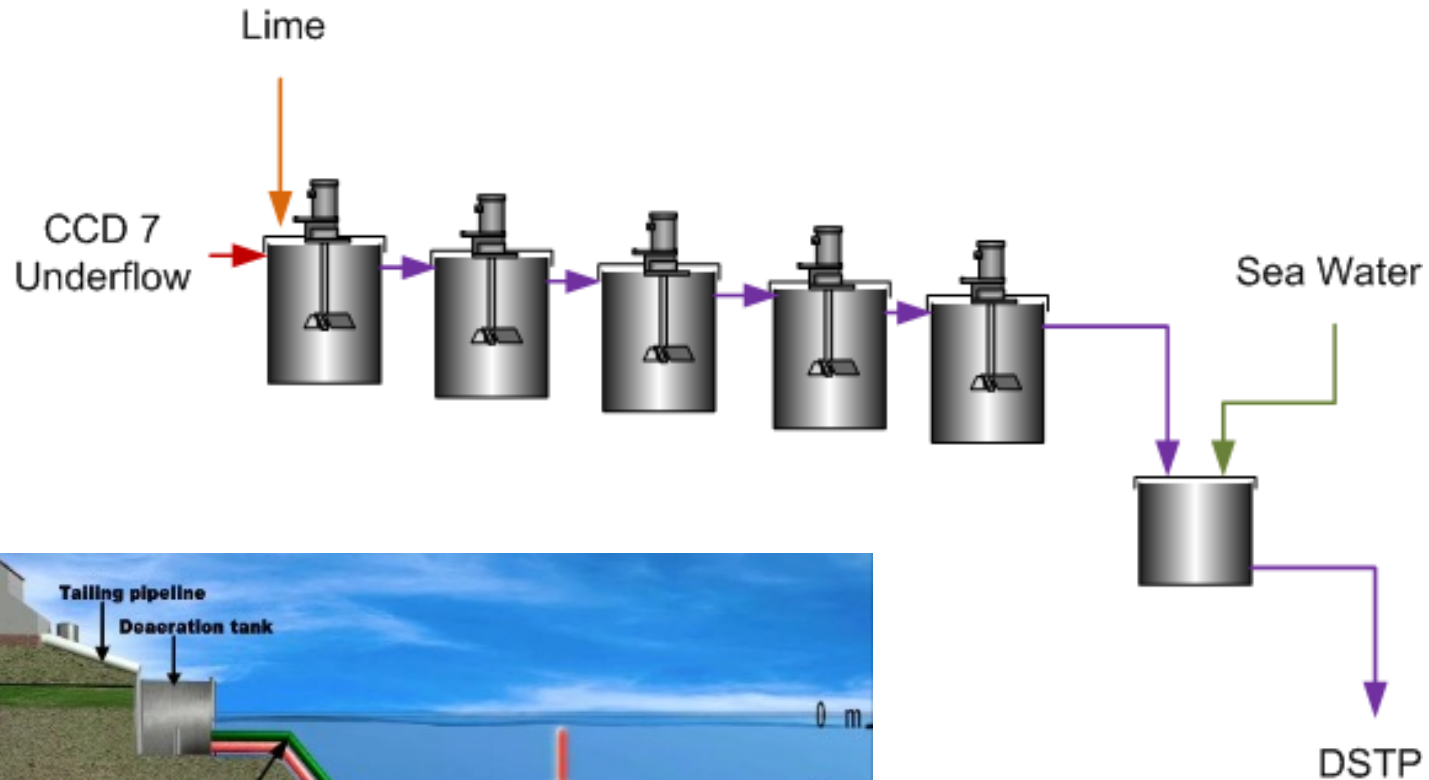
Process Overview



Ramu Nickel Project Flowsheet – Basamuk Processing Plant



Tailings Neutralisation and Disposal



• **3**

CORPORATE CULTURE



• Our Team Focus



Environmental Stewardship

- Advocate Measures to minimize environmental impact
- Initiate Sustainability initiatives
- Exercise sound Waste management practices



Social Responsibility

- Community engagement programs
- Employment and training initiatives for locals
- Health and safety standards

Ramu NiCo advocates teamwork and mutual respect as important part of its localization strategy



• SAFETY & COMPLIANCE

The Company has set up OHS-18001 safety management system and ISO-14001 environmental management system



Ramu NiCo ensures environment impact is minimal. Tailings from Refinery are neutralized before discharge

The Company won the championship for 2017 PNG EIERC, and always strives to ensure a safe and healthy work environment



Tailing samples are found fundamentally nontoxic through toxicity test by Australian laboratories, ALS and CSIRO

Environment Management



Conservation and Environmental Protection (CEPA) Environmental Permit WD-L3 (115) approval

Operational Environmental Management Plan (OEMP) CEPA approved;

OEMP Twenty-Two (22) Sub plans including formal:

- Set accountabilities
- Limit acceptance, monitoring points identification and frequency reporting
- Hazard and risk analysis
- Review and Audits



Figure 20 Marine Anemone on DSTP Discharge point 151.2m ROV Depth

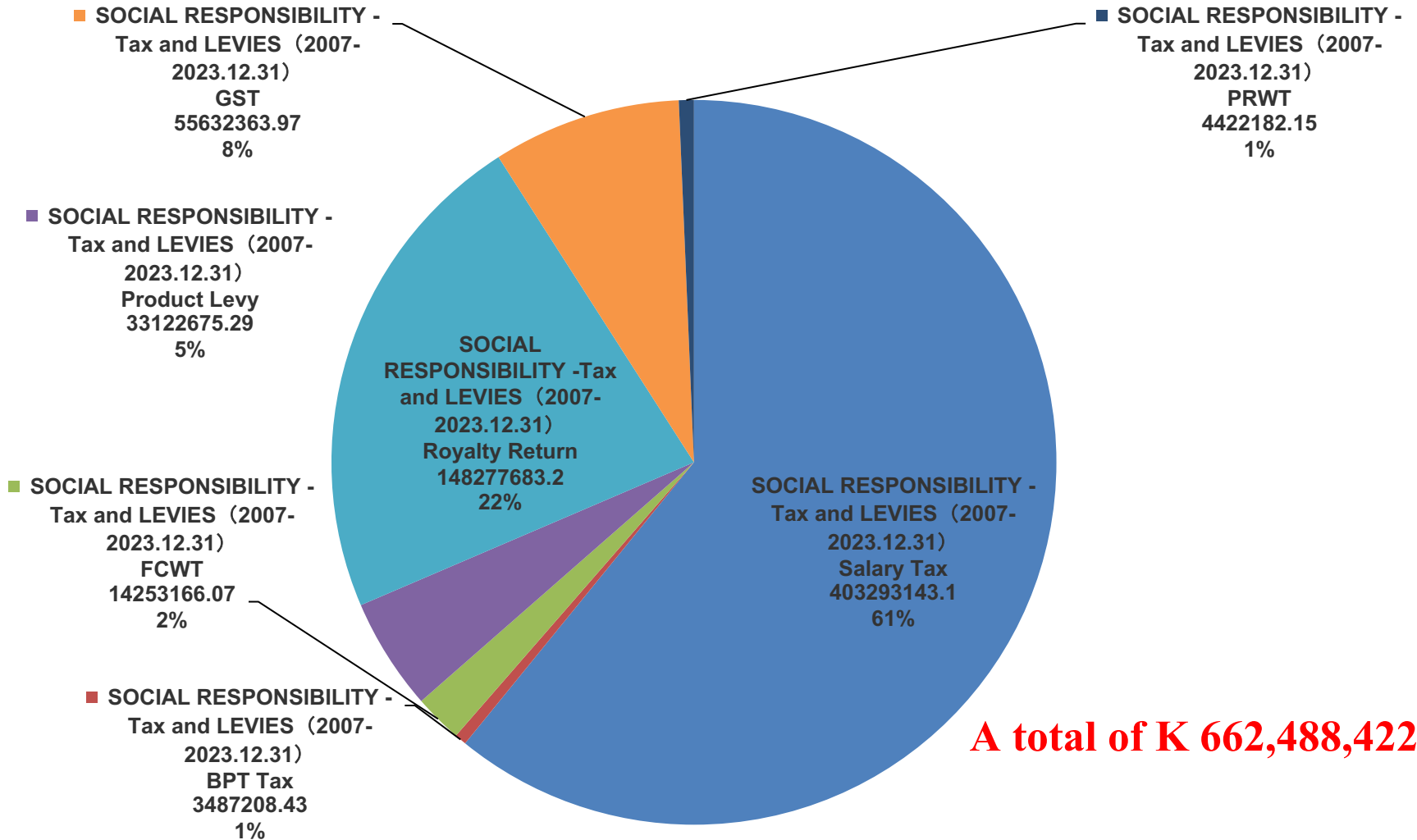
• SOCIAL RESPONSIBILITY



- ❖ Ramu NiCo is dedicated to implementing its social responsibilities under MOA through employment & training, infrastructure construction, medical care, education assistance, business development, facilitating sustainable development of local communities and contributing to social and economic prosperity of the country.

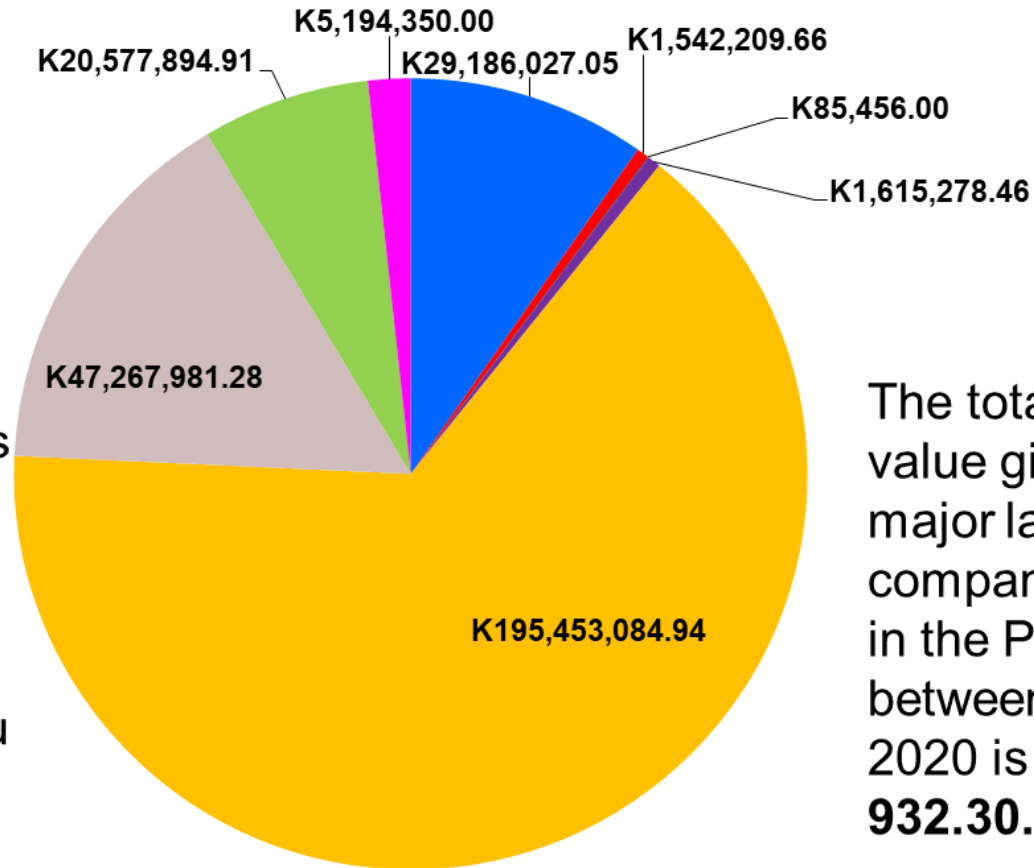
SOCIAL RESPONSIBILITY -Tax and LEVIES (2007-2023)

- Salary Tax
- BPT Tax
- FCWT
- Product Levy
- Royalty Return
- GST
- PRWT



A total of K 662,488,422.2

• SOCIAL RESPONSIBILITY – SPIN-OFF BUSINESS



K44, 164, 273. 80 is the total value of business contracts given to the major landowner companies of Ramu Nickel Project in 2021 alone

The total contract value given to the major landowner companies identified in the Pie Chart between 2013 and 2020 is **K295, 727, 932.30**.

- KBK LTD
- Maigari LTD
- Wasmatau LTD
- BSK LTD
- NCS-Raibus
- Raibus Security
- Raibus Engineering
- RTSL (Chromite)

A faint, light gray world map is visible in the background of the slide. The map shows the continents of North America, South America, Europe, Africa, and Asia. The background also features a grid of light gray lines that create a perspective effect, converging towards the bottom of the slide.

• **BUILDING ON OUR LEGACY**

• **Mine Expansion Phase Two:**

Ramu NiCo is in the process of applying for an extension of its current Special Mining Lease (SML). If approved, this expansion would effectively double the mine's size, resulting in a twofold increase in taxes and levies paid to the government. The benefits for businesses, communities, and royalty payments would substantially increase. Furthermore, this expansion would lead to higher employment opportunities and other enhancements.

• **Industrial Downstream Processing:**

On 9 January 2024, Kumul Minerals Holdings and Ramu NiCo formalized a partnership through a Memorandum of Understanding (MOU) aimed at establishing downstream processing and smelting facilities for nickel, cobalt, copper, and other base metals within PNG. The feasibility study for this initiative was launched in early April 2024, with completion targeted for December 2024. Basamuk in Madang and Finschhafen in Morobe province are the potential sites under consideration for these developments. The cost of this study is projected to surpass PGK 2 million.

• CONCLUSION

- ❑ Despite the global Covid-19 pandemic and global economic downturn, Ramu NiCo Management (MCC) Limited (RNML) overcame risks posed by the pandemic as well as uncertainties in the international economy caused by frequent fluctuations of commodity prices. RNML has successfully managed pandemic prevention and maintained a steady operation of the Project.
- ❑ RNML has honored most of its commitment under the Project's MOA and generated huge benefits in terms of employment, spin-off businesses, local procurements and other social economic benefits such as education, health, gender empowerment and agriculture.
- ❑ The Project's MOA has lapsed in December 2018 and the Company stands ready to work with the Government and other stakeholders to review the MOA.
- ❑ As a foreign investor and development partner in Madang Province, we look forward to strengthening our relationship with the local and Provincial Government and cooperate on areas of strategic common interests.



One Ramu NiCo One Community

www.ramunico.com