



DEVELOPING A MINING ROADMAP: INTEGRATING UPSTREAM, DOWNSTREAM, AND ASSOCIATED TECHNOLOGIES

**MINING PHILIPPINES 2023
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1

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PRESENTATION OUTLINE

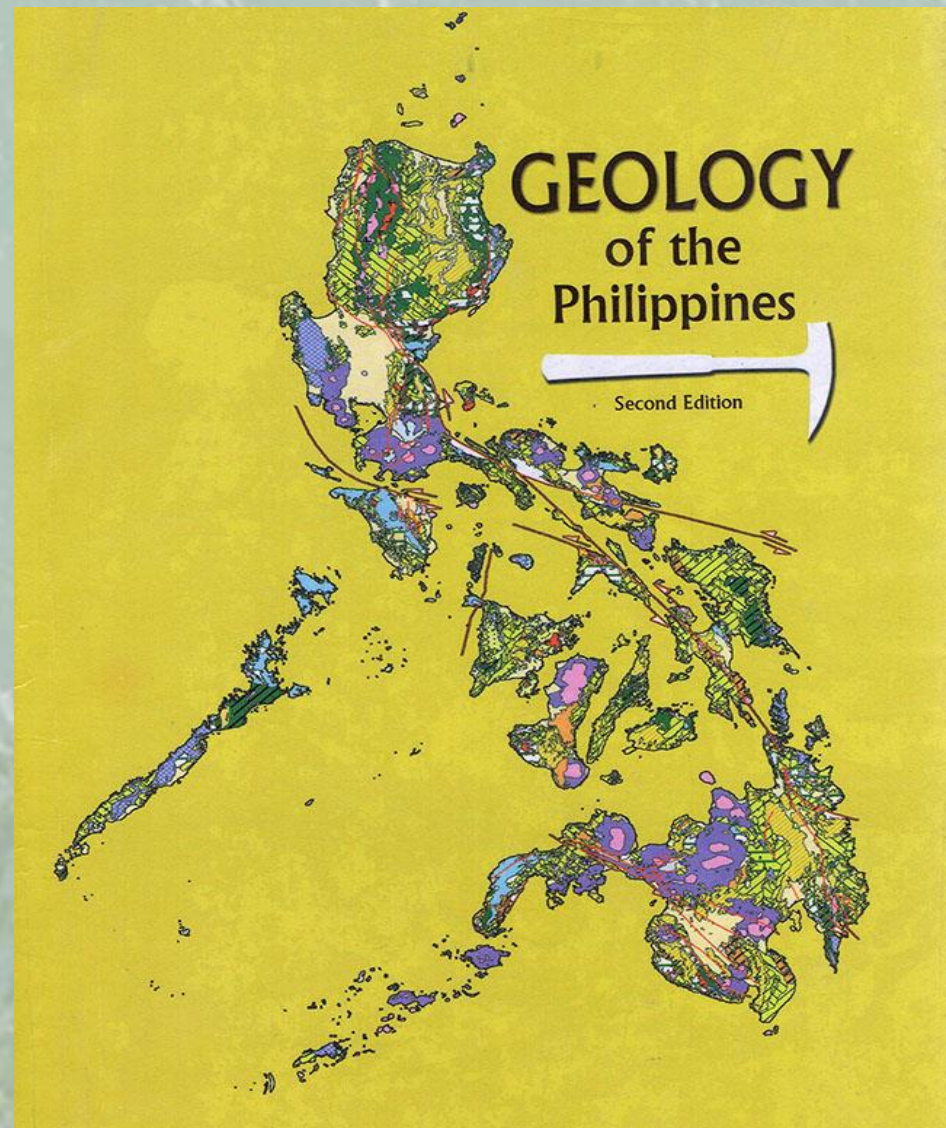
1. UPSTREAM, MIDSTREAM & DOWNSTREAM

2. INDUSTRY INTEGRATION

3. VISION AND STRATEGIES

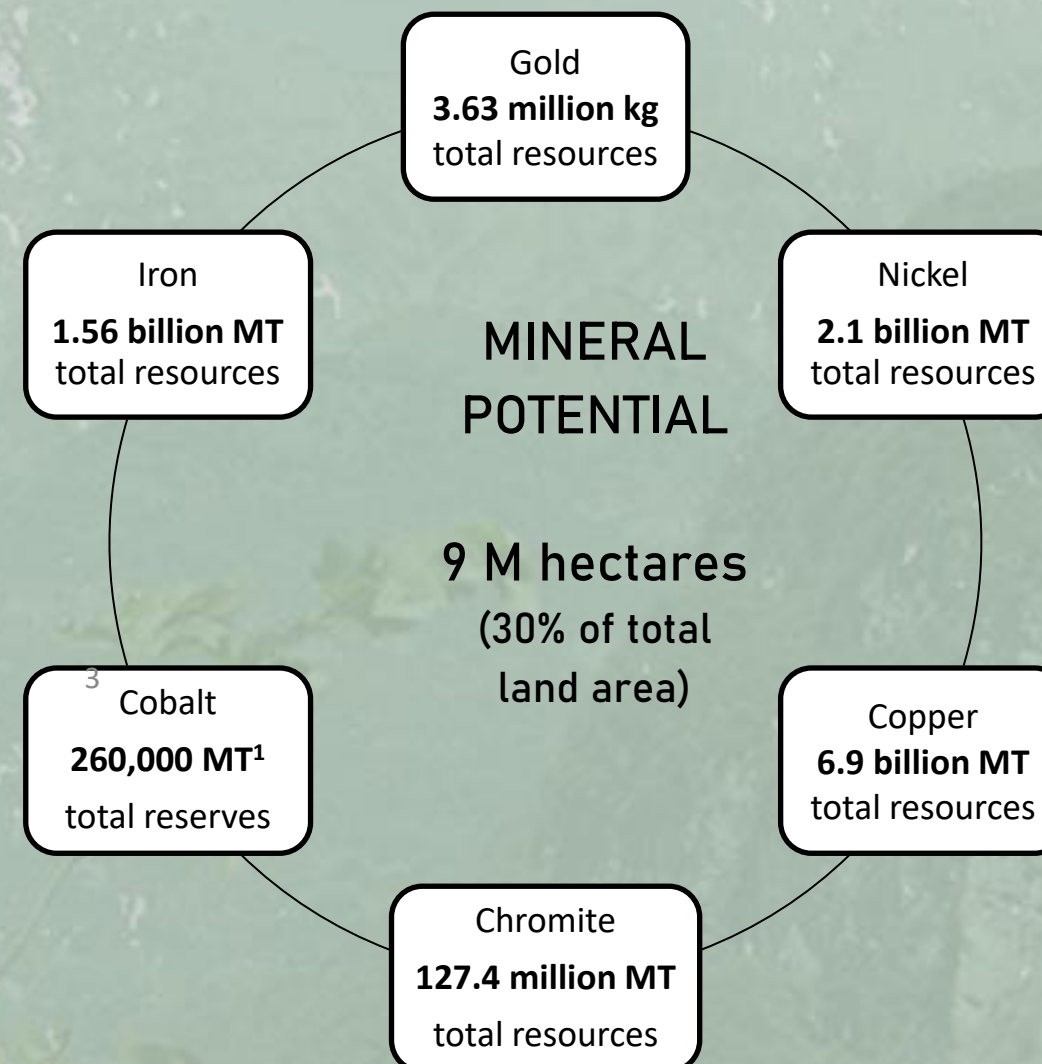
UPSTREAM

RESOURCES



AREA COVERED BY MINING TENEMENTS

779,446.41 hectares
(2.60% of total land area)



OTHER MINERAL RESOURCES:

Manganese minerals, Sulfur minerals, Bauxite, Gypsum minerals, Quartz

Sources:

Mineral Accounts of the Philippines (2022), released 06 July 2023; USGS Mineral Commodities Summary as of January 2021 for cobalt
Philippine Mineral Industry at A Glance as of July 2023, DENR-MGB

Notes: Resources mean both discovered and undiscovered deposits; reserves are those that have been discovered

UPSTREAM

PRODUCTION

Au

Ag

Ni

Cu

Cr

Fe

Limestone and shale

Marble/marbleized limestone

Silica

Greywacke/pozzolan

Aggregates

Sand and gravel

Dolomite

Clay

Volcanic Tuff

Nickel Direct Shipping Ore

Mine production, DMT	29 million
Average nickel content	0.9-1.1%
Value, billion PhP	51

Major export market of Nickel Direct Shipping Ore:



4

Copper concentrates

Mine production, DMT	238,000
Average copper content	30-35%
Value, billion PhP	19

Major export market of Copper concentrates:



MIDSTREAM



MIXED NICKEL COBALT SULFIDE



SCANDIUM OXALATE



COPPER ANODE



COPPER CATHODE

Mixed nickel-cobalt sulfide

Sulfide production, DMT	81,000
Average nickel content	55-58%
Value, billion PhP	39

- Locally sourcing nickel ores
- Fully exports products
- Local production can supply to another processing facility

Copper cathodes

Production capacity	210,000 MTPY
Exports (2022)	210,000 MT
	USD 1.9 billion

- Imports raw material sources
- Fully exports products
- Local production is insufficient to supply the demand of the lone copper smelter

DOWNSTREAM



SOLAR PHOTOVOLTAICS use silicon, tellurium, gallium, and indium

FUEL CELLS use elements from the Platinum Group

EV BATTERIES AND ENERGY STORAGE use lithium, nickel, and cobalt

WIND TURBINES AND EVs use dysprosium, terbium, europium, neodymium, and yttrium

VISION FOR THE INDUSTRY

LOCAL SITUATION TRANSLATED TO OPPORTUNITIES

Majority exports the minerals to neighboring countries with minimal or no processing

“MINERAL EXPORTER”



Majority processes critical minerals for the production of intermediate mineral products used in cleaner energy technologies

“MINERAL PROCESSOR”

“MINERAL PROCESSING HUB”



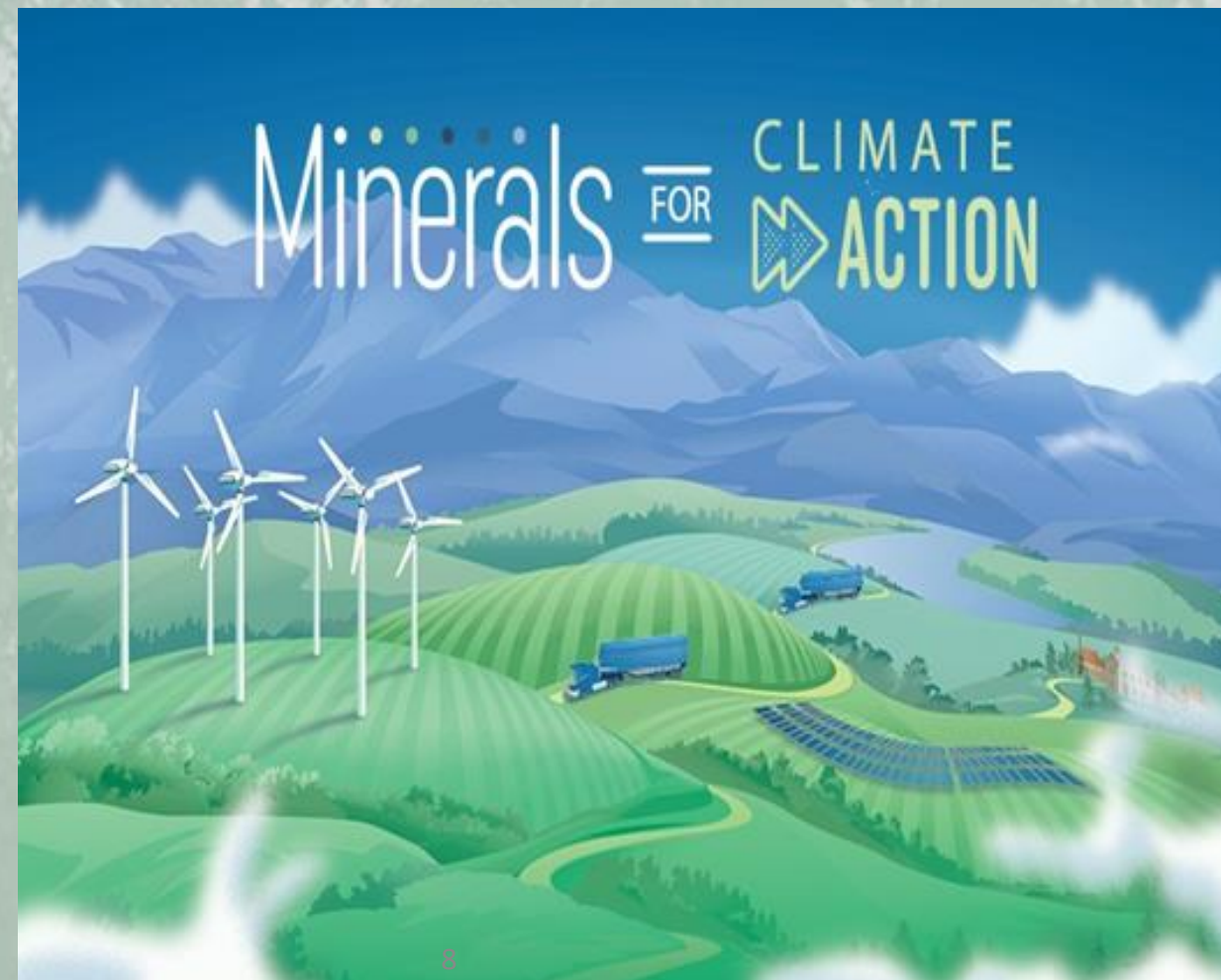
Estimated loss of value:

(from directly exporting DSO)

Value of contained nickel in the ore: **15%-16%** of LME nickel metal price

Value of contained nickel in the mixed sulfide: **75%-80%** of LME nickel metal price

INDUSTRY INTEGRATION



The World Bank Group estimates that the production of minerals could increase by nearly 500% or over 3 billion tons of minerals and metals by 2050 to meet the growing demand for clean energy technologies, e.g., renewable energy, electric vehicle, battery storage systems.

INDUSTRY INTEGRATION

POSITIONING STRATEGY:

Regional Hub for **Sustainability, Connectivity and Innovation-Driven** Manufacturing and Services

PRIORITY SECTORS



Electric Vehicles



High-Tech Light Manufacturing



Outsourced Semicon Assembly and Test



Green Metals



High-Tech Agriculture



Renewable Energy



Data Centers / Telco Infrastructure

CORE STRENGTHS:



STRATEGIC LOCATION



HUMAN RESOURCES



NATURAL RESOURCES

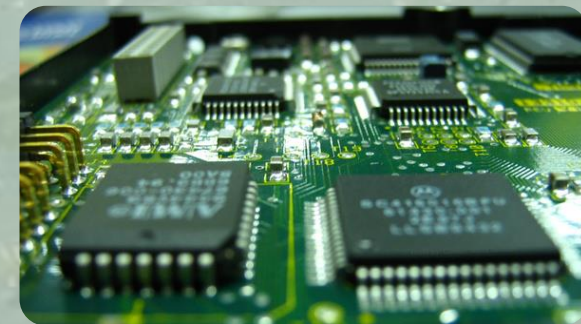


PHILIPPINE ADVANTAGE

G.E.M.S.



10



01

Green metals

In abundant supply as critical raw materials of batteries

Exports

Nickel DSO	38.4 million MT
Copper concentrates	110,863 MT
Copper cathode	209,848 MT
Mixed nickel cobalt sulfide	57,336 MT

Resources

Ni	2.1 billion MT
Cu	6.9 billion MT
Co	260,000 MT

02

Electronics manufacturing

Expertise needed in developing the supply chain for electric vehicle parts

USD49.09 billion (up by 6.8%)
TOTAL EXPORT VALUE in 2022

62.7% share in PH's total exports

MINING

about 500 local electronics and semiconductor companies



PHILIPPINE ADVANTAGE

G.E.M.S.



03

Market

Size and demand for electric vehicle products



huge domestic market with
113 million young and
dynamic population
(2022)

preferential access in major
markets
(Free Trade Agreements and Generalized System of
Preference)



125 million
by 2030

8% average growth rate
vehicle market sales in 10
years
(2013-2022)

11



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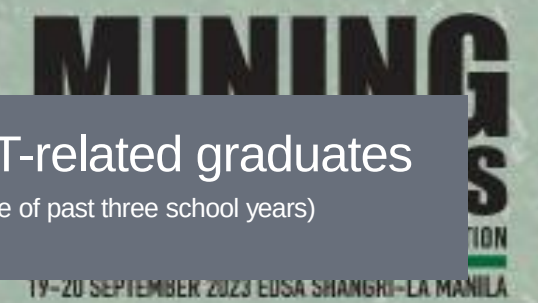
Software Development Talent Pool

Necessary for developing battery management systems as well as other software to integrate the different functions of an electric vehicle



86,000 engineering &
technology graduates
(average of past three school years)

78,000 IT-related graduates
(average of past three school years)



INDUSTRY INTEGRATION

VALUE PROPOSITION FOR GREEN METALS

The Philippines is positioning itself in the regional and global value chains of electric vehicles, battery technologies (EV and energy storage system).

COPPER

- Major component of EVs: anode current collector of Li-ion batteries, stator and rotor of induction motors, inverters and wirings
- Electric vehicle market growth to boost copper demand to 1.84 million tonnes.

COBALT

- Ensures battery stability and safety
- Forecast global cobalt demand to increase by 85,347 tonnes in 2025 from 24,530 tonnes in 2020.

NICKEL

- Enhances energy density and vehicle range
- Primary nickel consumption in passenger plug-in EVs forecast to increase to 451,995 tonnes from an estimated 99,000 tonnes in 2021

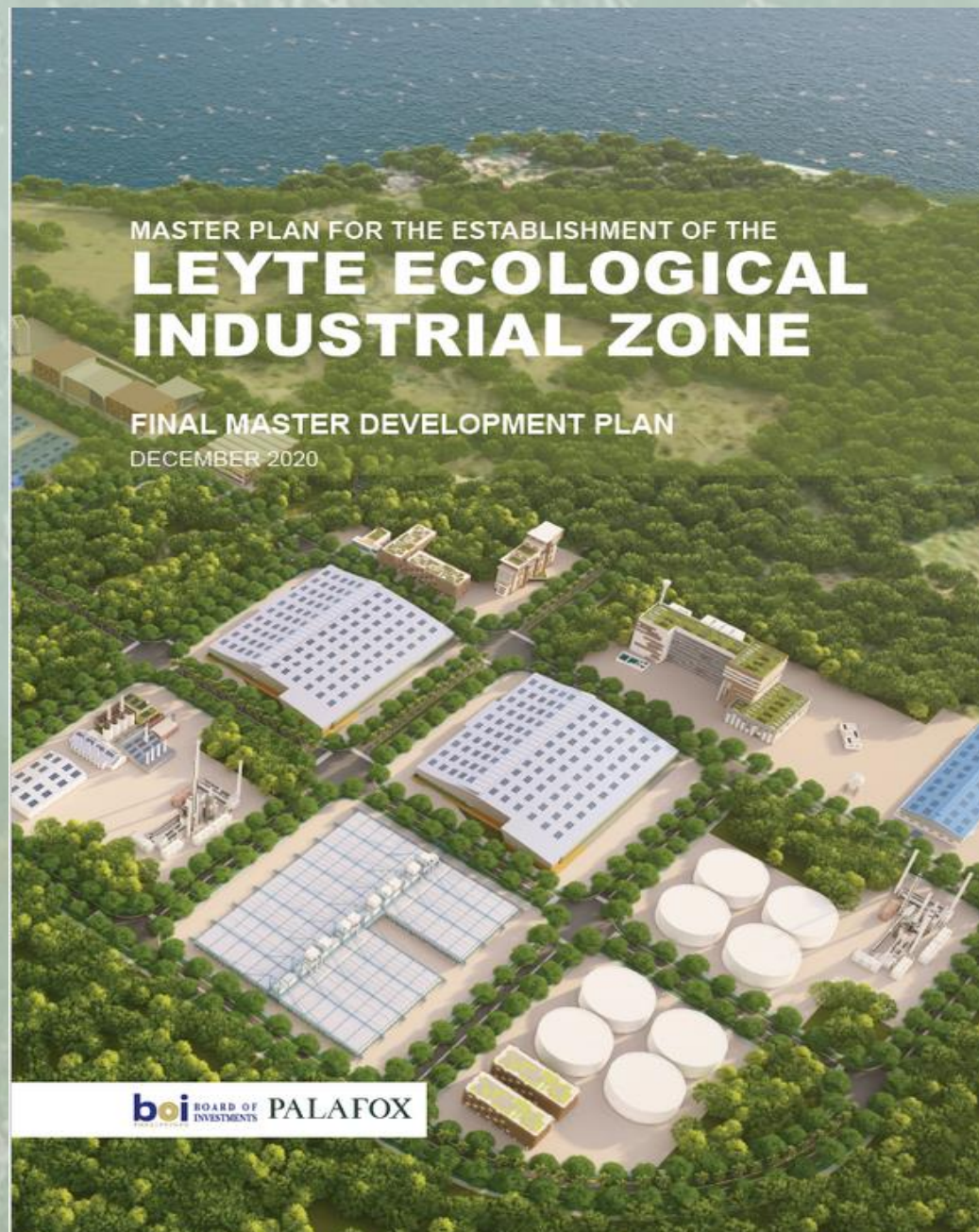
INDUSTRY INTEGRATION

OPPORTUNITIES

- **EXPLORATION AND MINING** of mineral resources
- **3rd NICKEL PROCESSING PLANT** to locally process nickel ores instead of direct exportation to produce intermediate product – e.g. mixed hydroxide
- **MANUFACTURING OF BATTERY MATERIALS** from intermediate products for battery storage
- **EXPANSION OF COPPER CATHODE CAPACITY AND ESTABLISHMENT OF COPPER DOWNSTREAM FACILITIES** for use in EVs, RE equipment, and battery storage

INDUSTRY INTEGRATION

LEYTE ECOLOGICAL INDUSTRIAL ZONE – A possible processing hub



The Leyte Ecological Industrial Zone (LEIZ) is envisioned to be the Philippines' first ecological industrial zone guided by the principles of circular economy and eco-industrial parks. The establishment of the LEIZ is initially seen to address the critical gap in the Philippine copper value chain which hinders its full integration from mining to downstream manufacturing but considered its effects on the development of the Eastern Visayas region.

Possible industries:

Copper wire rod processing, nickel processing (HPAL), copper wires



Manufacturing hub
for copper and other allied industries
(e.g. iron and steel, shipbuilding, appliance)

1,054 ha

TOTAL PLANNING AREA

592 ha

TOTAL LEASABLE AREA

INDUSTRY INTEGRATION

INCENTIVES TO QUALIFIED PROJECTS

FULL INCENTIVES

(under CREATE Act)

Tier 1: Production of pure metals (refined at least 99.99% purity), whether or not under a Mineral Processing Permit

Tier 2:

Green ecosystems – e.g. EV parts and components

Industrial Value Chain Gaps – e.g. green metals processing

LIMITED TO CAPITAL EQUIPMENT INCENTIVE

(under Special Laws – RA 7942)

1. Exploration of mineral resources
2. Processing of metallic and non-metallic minerals to produce semi-processed mineral products, e.g. metallic ore concentrate, whether or not integrated with mining / quarrying operations

POWER OF THE PRESIDENT TO GRANT INCENTIVES

President's flexibility in granting incentives for highly desirable projects with minimum investment capital of PhP50B or its equivalent in US dollars, or at least 10,000 job generation, with a total period of availment of up to 40 years, subject to certain conditions.

INDUSTRY INTEGRATION

INCENTIVES TO QUALIFIED PROJECTS

MENU OF INCENTIVES:

1. Income Tax Holiday (ITH);
2. Enhanced Deductions (ED);
3. Special Corporate Income Tax (SCIT) of 5% for export enterprises;
4. Duty exemption on importation of capital equipment, raw materials, spare parts, or accessories; and
5. VAT exemption on importation and VAT zero-rating on local purchases for export enterprises

ENHANCED DEDUCTIONS:

1. Depreciation allowance of assets-additional 10% for buildings; and additional 20% for machineries and equipment
2. 50% additional deduction on labor expense
3. 100% additional deduction on R&D
4. 100% additional deduction on training expense given to Filipino employees
5. 50% additional deduction on domestic input expense
6. 50% additional deduction on power expense;
7. Deduction for reinvestment allowance to manufacturing industry - the amount reinvested to a maximum of 50%
8. Enhanced Net Operation Loss Carry Over (NOLCO)

INDUSTRY INTEGRATION

INCENTIVES TO QUALIFIED PROJECTS

LOCATION	EXPORT MARKET ACTIVITIES			DOMESTIC MARKET ACTIVITIES		
	TIER I	TIER II	TIER III	TIER I	TIER II	TIER III
NCR	14 (4 Years of ITH and 10 Years of ED/SCIT)	15 (5 Years of ITH and 10 Years of ED/SCIT)	16 (6 Years of ITH and 10 Years of ED/SCIT)	9 (4 Years of ITH and 5 Years of ED)	10 (5 Years of ITH and 5 Years of ED)	11 (6 Years of ITH and 5 Years of ED)
METROPOLITAN AREAS AND AREAS OUTSIDE OF AND CONTIGUOUS OR ADJACENT TO NCR	15 (5 Years of ITH and 10 Years of ED/SCIT)	16 (6 Years of ITH and 10 Years of ED/SCIT)	17 (7 Years of ITH and 10 Years of ED/SCIT)	10 (5 Years of ITH and 5 Years of ED)	11 (6 Years of ITH and 5 Years of ED)	12 (7 Years of ITH and 5 Years of ED)
ALL OTHER AREAS	16 (6 Years of ITH and 10 Years of ED/SCIT)	17 (7 Years of ITH and 10 Years of ED/SCIT)	17 (7 Years of ITH and 10 Years of ED/SCIT)	11 (6 Years of ITH and 5 Years of ED)	12 (7 Years of ITH and 5 Years of ED)	12 (7 Years of ITH and 5 Years of ED)

Export enterprise: export at least 70% of its total production or output

Domestic market enterprise (DME): any enterprise registered with IPA other than export enterprise

ITH: Income Tax Holiday

SCIT: Special Corporate Income Tax - 5% of GIE

ED: Enhanced Deductions

INDUSTRY INTEGRATION

ROADMAP IMPLEMENTATION AND OTHER INITIATIVES

Implementation of the Copper and Iron and Steel Industry Roadmaps



Industry development and promotion

- A continuous dialogue with industry stakeholders to address industry concerns
- Crafting of industry profiles, value propositions, and company pitches to potential partners – government and investors
- Industry studies and assessment geared towards industry development

STRATEGIES

MINING ROADMAP DEVELOPMENT

- Establish a realistic vision for the industry.
- Holistic, inclusive, and sustainable approach that will look into the entire value chain of minerals - local, regional, and global.
- Involvement of industry stakeholders from the drafting to the implementation phases - tri-partite collaboration between the Government, the industry, and the academe.
- Effective implementation mechanism for projects and activities



THANK YOU!



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INTERNATIONAL CONFERENCE AND EXHIBITION
19-20 SEPTEMBER 2023 EDSA SHANGRI-LA MANILA