



Skorpion Zinc Refinery Conversion and Expansion Project

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A Legacy Of Innovation And Perseverance



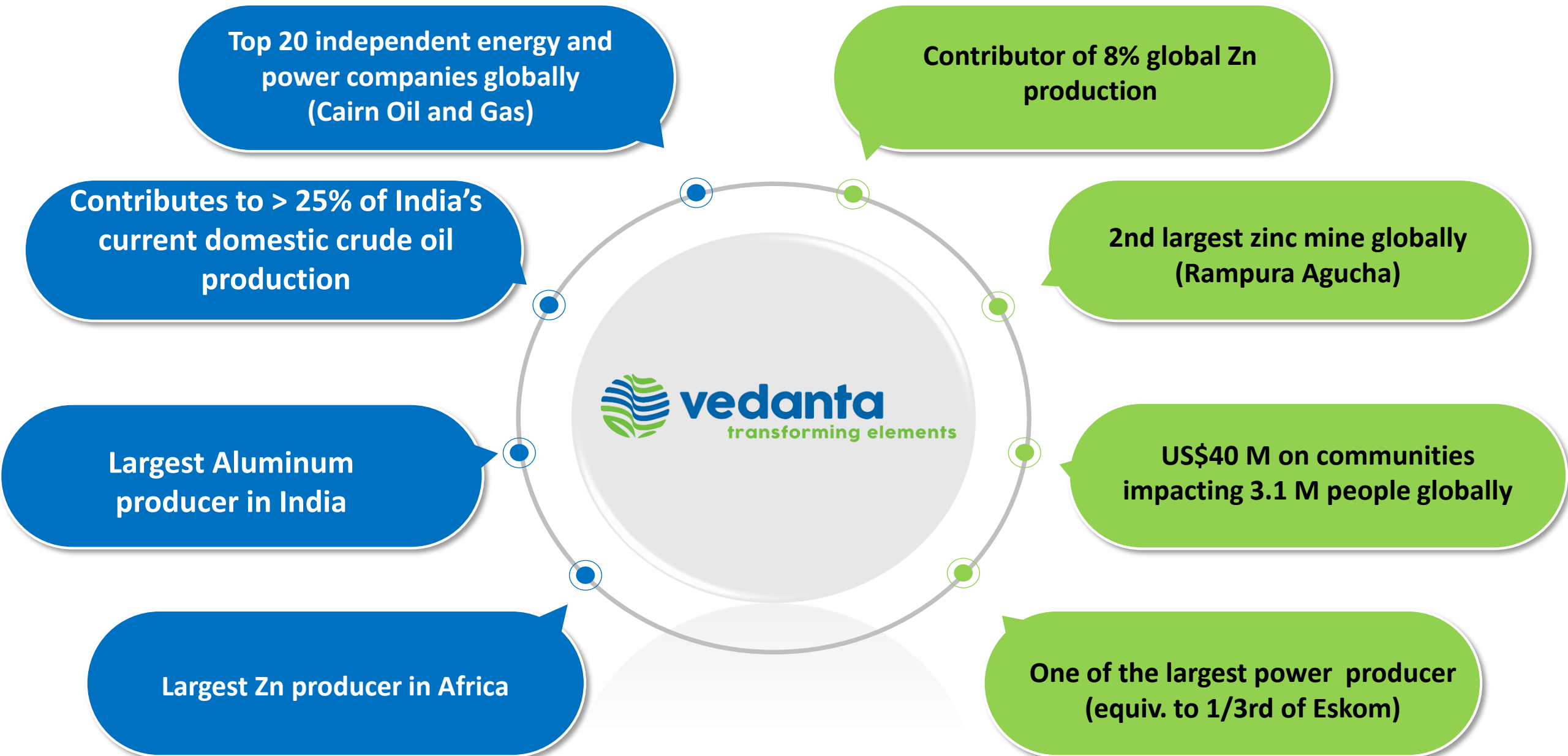
1. Introduction to Vedanta and Skorpion Zinc
2. Flowsheet principle
3. Status Update on Mining activities
4. Alternative Oxides
5. Market fundamentals
6. Refinery Conversion / Expansion Project
7. Estimated Socioeconomic benefits
8. Available opportunities for partnering



Skorpion Zinc Overview



Vedanta – 6th Largest Diversified Natural Resources Company



Overview of Vedanta Zinc International

Integrated mining and refinery operations across South Africa & Namibia



Skorpion Zinc (Namibia)

- Open pit zinc mine and refinery
- Largest integrated zinc operation in Africa
- Africa's only Zinc Refinery
- Refinery design capacity of 150ktpa
- Currently under Care and Maintenance



Black Mountain Mine (South Africa)

- Underground operation (Zinc, Lead, Silver and Copper deposit)
- Plant capacity of ~ 75ktpa Zn eq metal in concentrate
- Workforce ~ 1500



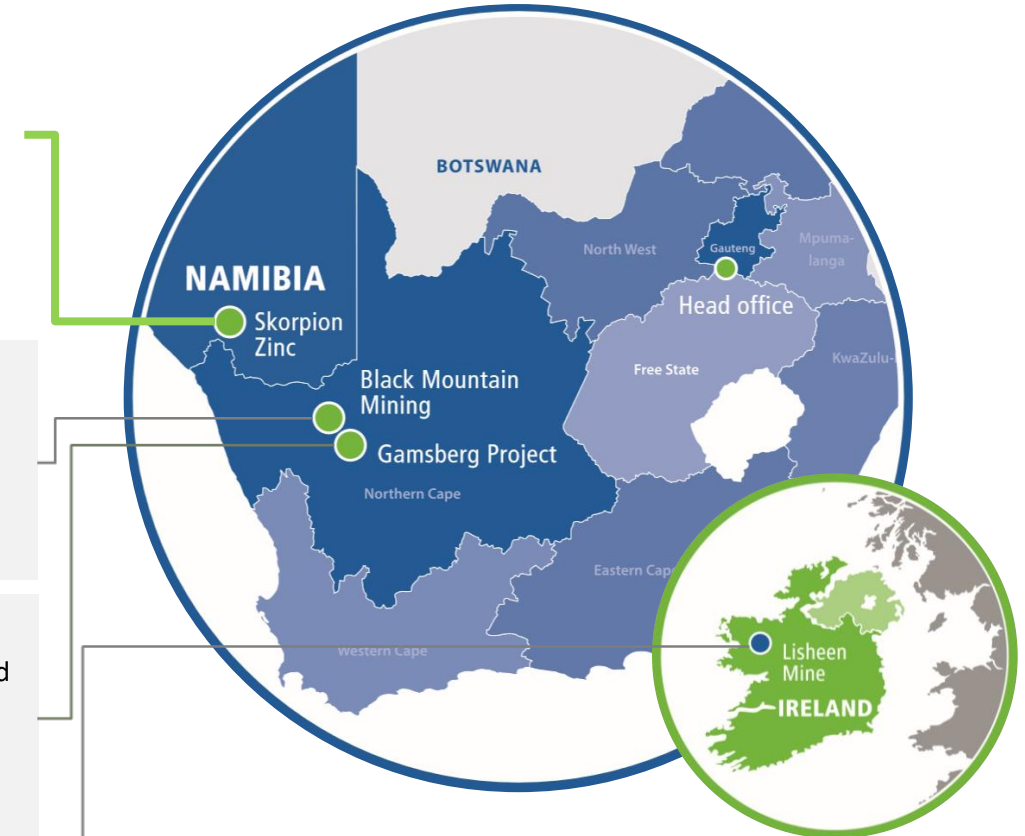
Gamsberg Mine (South Africa)

- Project development completed (2015-2018), with a capex spend of USD 400 Mill.
- Gamsberg Phase 1 in operation with capacity of 250ktpa MIC
- One of the world's largest Zn deposits
- Workforce ~ 1000



Lisheen Mine (Ireland)

- Successful closure of operations due to end of LOM in 2015
- World-class closure process underway



Status Update – Mining





- Operation placed under Care and Maintenance due to slope failures in the pit.
- Landslide barriers / wire mesh installed to minimize the risk to personnel.



Improved Slope Monitoring Systems

Work Area Monitor : Advanced slope monitoring systems on both the eastern and western margins of pit, detect movements with an accuracy of less than 1 mm, in real-time, allowing for predictive and informed responses

GroundProbe (SSR-XT)

Ground Probes SSR-XT system is currently used in western pit face. The system is mobile, and allows for improved visibility of slope performance of the lower pit margins.

Reutech (MSR)

Two Reutech systems are used for long term monitoring of the entire pit.

Optron (Geomos)

Long term 3D prism monitoring with mm accuracy

TDR (time-domain reflectometry)

3 boreholes with instrumentation are installed on the southern ramp to detect deep slope movements

GroundProbe (Agilis)

Purchased - to arrive on site Feb 2020



TDR



Ground Probe Agilis



GroundProbe (SSR-XT) Left Reutech (MSR) Right



Optron

Revised design with improved factor of safety, enabling safe extraction of remaining metal.

**Existing
opportunities**



Existing Opportunities

1. Co-treatment of zinc oxides and zinc sulfide concentrates.
2. Treatment of recycled zinc products i.e EAFD , Waelz Oxides.
3. Further extraction of metal through underground mining in the current pit.

8,000,000 tpa EAFD in 2017 at average 20% Zn = 1,600,000 tpa Zn

Year		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Global steel production	MMtpa	1,343	1,238	1,433	1,538	1,560	1,650	1,669	1,620	1,626	1,690
Global EF production	MMtpa	429	236	421	454	448	419	432	404	414	471
EAFD/ t EF steel	kg	17	17	17	17	17	17	17	17	17	17
Global EAFD production	Mtpa	7,293	4,012	7,157	7,718	7,616	7,123	7,344	6,868	7,038	8,007
EAFD zinc content	%	20	20	20	20	20	20	20	20	20	20
Global zinc in EAFD	Mtpa	1,459	802	1,431	1,544	1,523	1,425	1,469	1,374	1,408	1,601

Sources documents

Global steel production and Global EF production
EAFD/ t EF steel and EAFD zinc content

World iron and steel association
International lead and zinc study group
Recycling of EAFD DR Ruetten

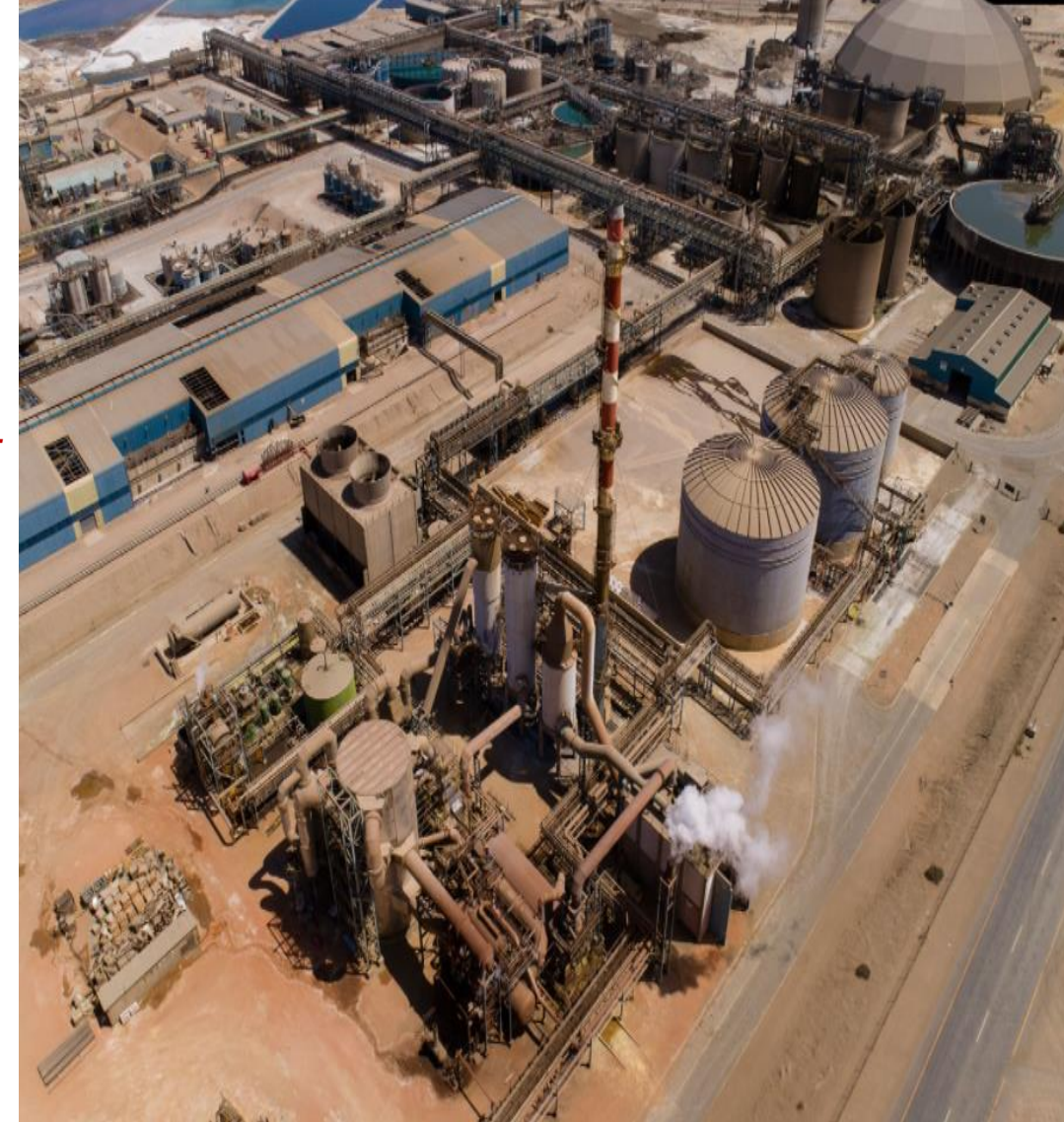


Refinery Conversion and Expansion Project Scope

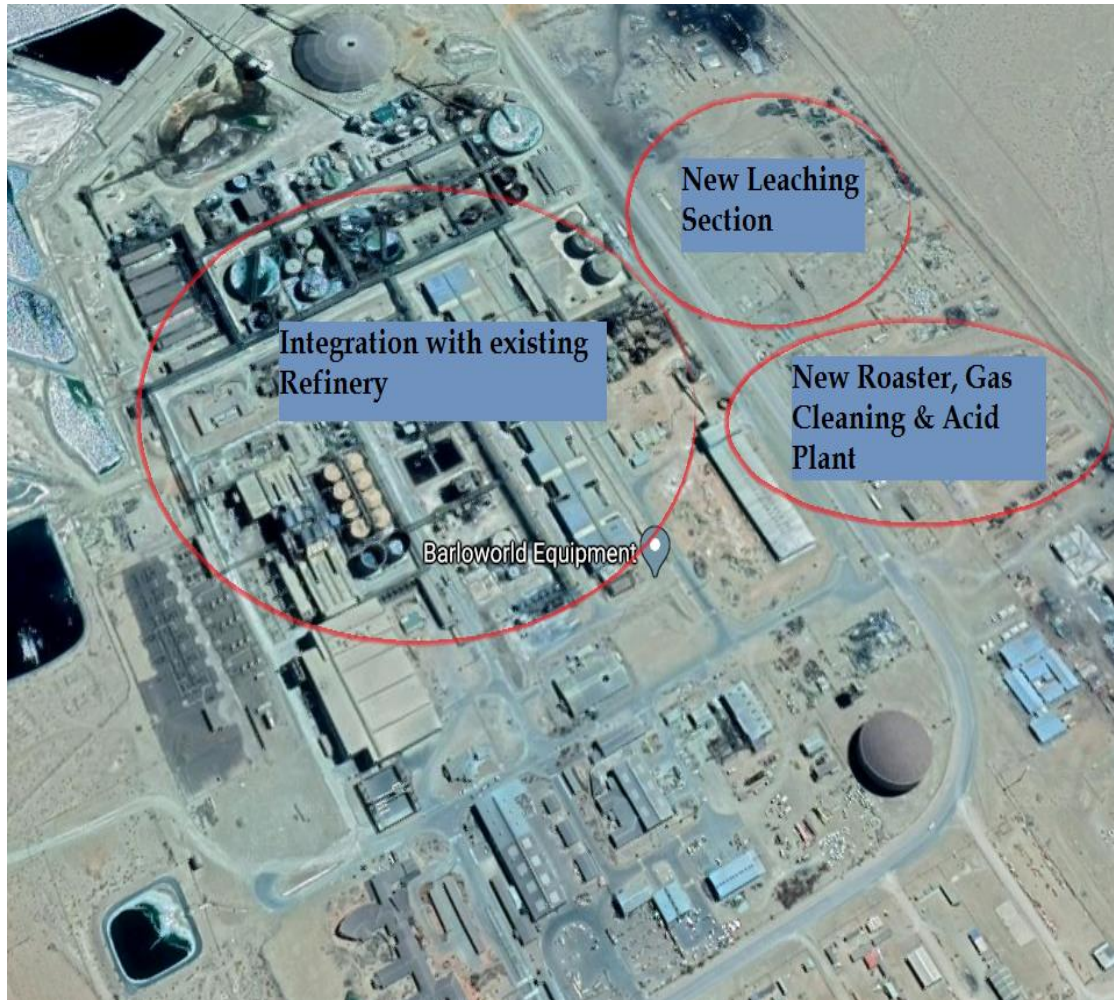


Refinery Conversion/Expansion Project

- To enable Skorpion Zinc Refinery to process zinc sulfide concentrates into refined metal.
- Will enable co treatment of oxide and sulfide concentrates.
- The primary source of zinc sulfide concentrate is Gamsberg operation in the Northern Cape. *Target Gamsberg capacity 450kT per annum*
- Gamsberg to stop selling concentrates and send to Skorpion zinc for full beneficiation.
- Trucking of concentrate feed from Gamsberg to Skorpion Zinc via Oranjemund border post.
- Increasing refinery production capacity to 300kT per annum.



Project location : Rosh Pinah and Lüderitz Port



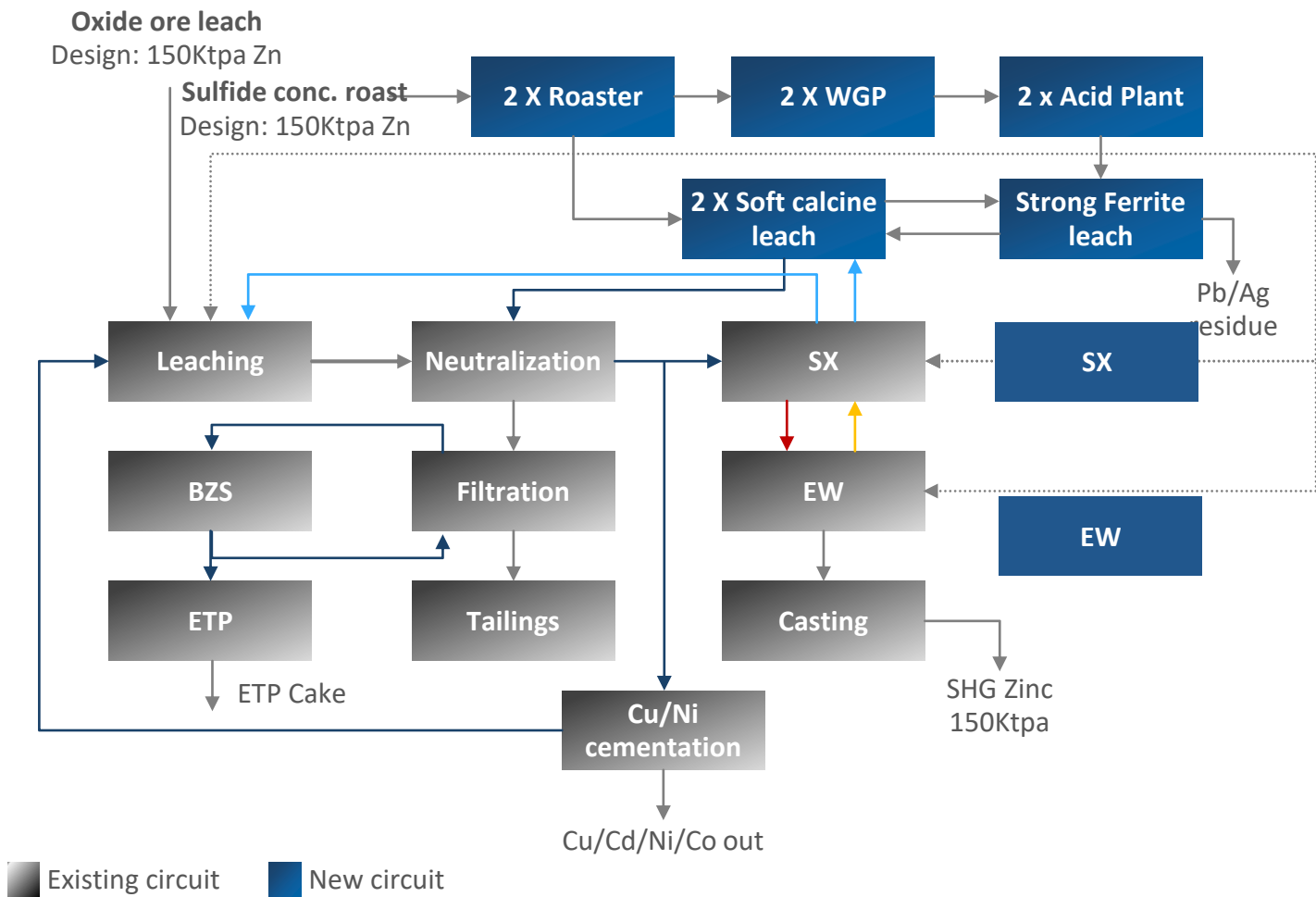
Skorpion Zinc Refinery



Lüderitz Port

Concept for 300kT per annum

Process flow



1

2 X Roaster addition to process Sulphide concentrates from

2

New Leaching circuit to treat roasted Calcine

3

Additional Solvent Extraction circuit to double capacity.

4

Additional cell house and Cast House for increased production.

Estimated Project Quantities



Excavation

210,000 m³



Concrete

90,000 m³



Steel

9,000 Tons



Piping

210,000 m



Electrical
Cabling

900 km

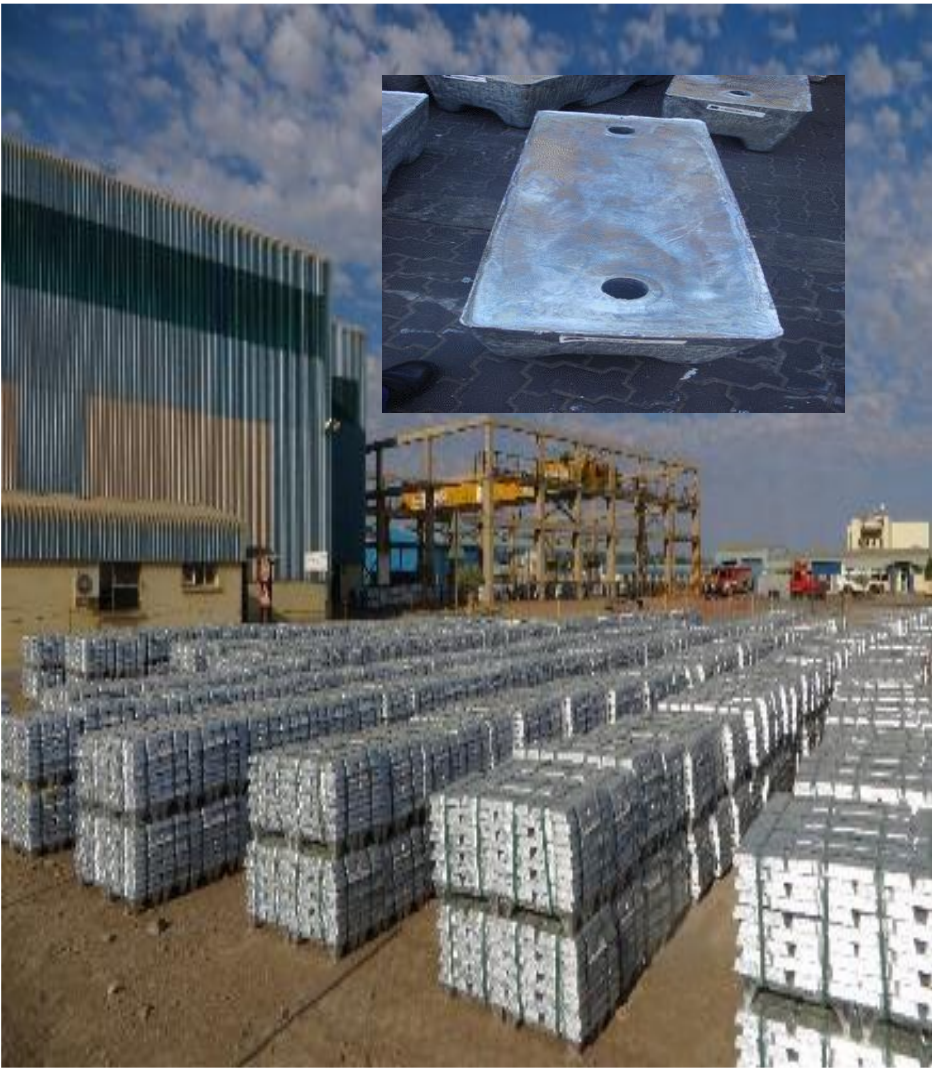
- *A significant capital spend of NAD6.2 bn over 3 years.*
- *Approx. 2 500 people to be employed at the peak of construction.*
- *Approx. 1 300 people to be employed during operations.*

Market Fundamentals



1. Global Zinc fundamentals remains strong
2. South Africa remains a major market for Skorpion Zinc SHG.
3. Expected SHG zinc metal premium to remain strong.
4. Continuous Galvanized Grade (CGG) remains critical for SA market - Skorpion Zinc has capacity to produce CGG.

Demand – Supply Gap (in kT)	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Global zinc metal demand	13,923	12,851	13,355	13,702	13,996	14,333	14,529	14,736	14,943	15,145	15,338	15,591
Africa zinc metal demand	137	112	117	122	133	141	144	146	148	150	152	155
Global Surplus (+) / Deficit (-)	-567	1,135	545	128	82	115	220	542	335	133	-60	36



Refinery Conversion Project Forecasted Socio-Economic Benefits.



Investment will be a significant contributor to Namibian economy



**N\$ 6.2 Bn
Capital Investment**

**N\$ 10.8 Bn
Annual Revenue**



**GDP
Contribution – 3%
~ N\$ 4.8 Bn**



**Direct annual
employment for
1200-1300 people
~ N\$ 0.32 Bn**



**Trade Deficit
(N\$ 7.8 Bn)–
116% improvement
N\$ 9.1 Bn annual
exports**



**Household Impact–
~ N\$ 2.2 Bn

About 8.9% flowed to low-
income households**

Available opportunities for partnering

1. Sulfuric acid offtake - excess sulfuric acid will be available for the market.
2. Recovery of Copper metal - currently have 9mil tons of low copper ore.
3. Recovery of Zinc metal from low grade ore - currently have 7mil tons of low grade Zinc on stockpiles.
4. Going green

