

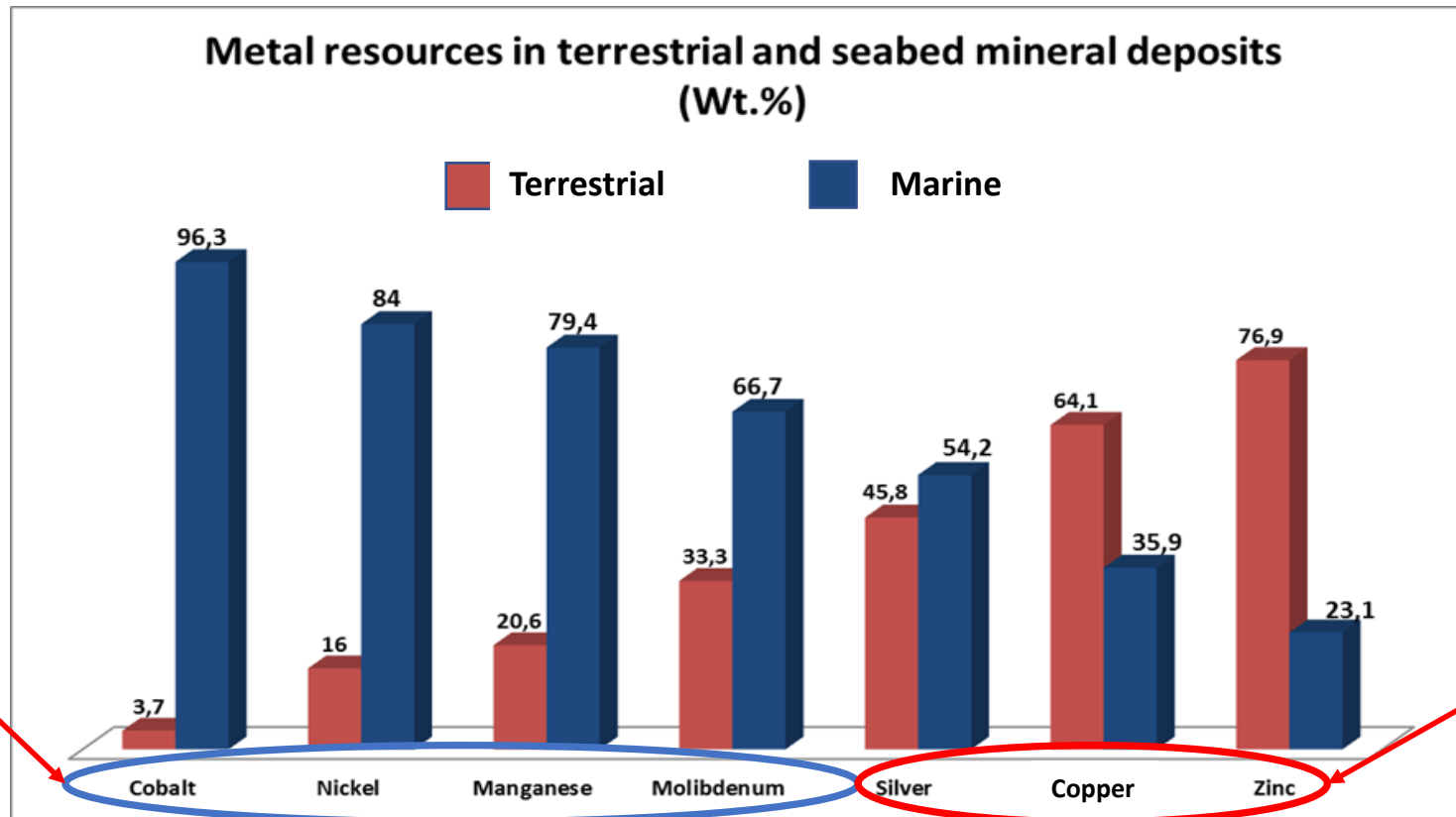
Marine Minerals Production Concept For the Future

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Technology and Operation
Loke Marine Minerals As

Why Marine Minerals?

Estimated Metal Reserves in Terrestrial vs Marine Minerals Deposits (Source: USGS)



Nodules
Crusts

SMS

Marine Minerals will play a defining role in achieving the Green Transition

The Big Question



**Can we produce Marine Minerals
with technical confidence
and at an acceptable ESG level ?**

Production Technologies

ESG concerns to be mitigated:

- Loss of habitat
- Sediment Plumes
- Habitat alterations – Light, Noise etc
- Eco-system alteration – Carbon, Nutrients etc
- Carbon Neutral Power Generation

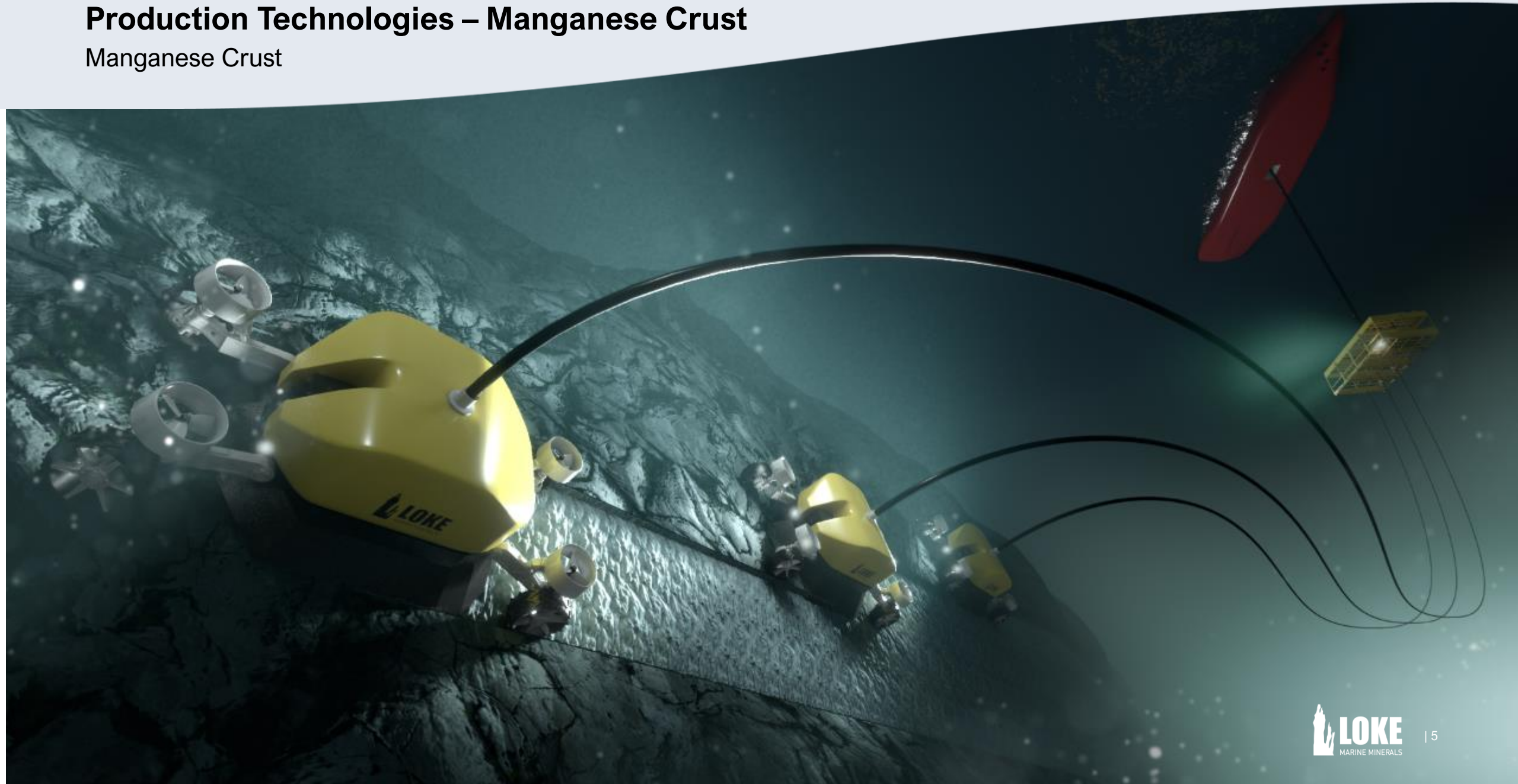
Technical concerns to be mitigated:

- Environmental conditions
- Ore Excavation Efficiency
- Vertical Transportation Efficiency
- De-Watering & cleaning
- Storage & Export



Production Technologies – Manganese Crust

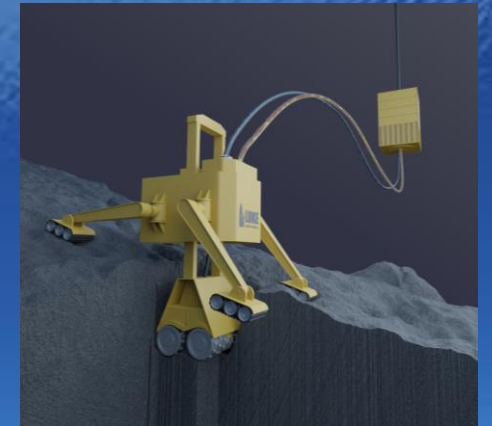
Manganese Crust



Key Attributes of a Future Marine Mining System

- Careful selection/ understanding of Mining Site
- Direct Ore Collection for plume limitation
- Autonomous seabed operation based on resource and terrain modelling – no light pollution
- Multi-stage water cleaning
- Return Water in separate riser – potential re-used for ore collection
- Zero emission Power Generation

We are confident that Marine Minerals can be produced – technically, economically and with acceptable ESG rating





Providing minerals for the green transition