



**MINISTERIO
DE RELACIONES
EXTERIORES**



Workshop on the Participation of LLDCs in the Regime of the Area and the Benefit-Sharing Mechanism under UNCLOS



13 - 15 October 2026



**Santa Cruz de la Sierra,
Plurinational State of Bolivia**





Global Workshop on the Participation of Landlocked Developing Countries
in the Regime of the Area and the Benefit-Sharing Mechanism under the United
Nations Convention on the Law of the Sea

The Current Status of Exploration and Exploitation of Deep-Sea Mineral Resources

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Santa Cruz de la Sierra, 2026

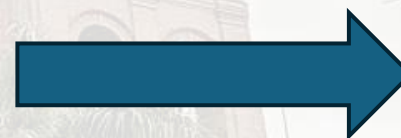


Activities in the deep-sea/Area

Marine scientific
researches

No regulations

Exploration



Exploitation

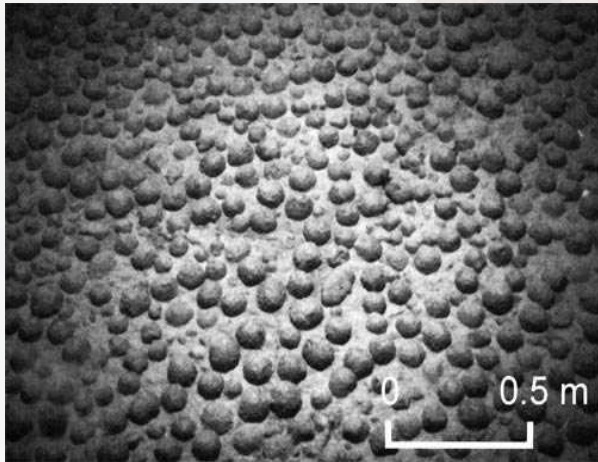
Regulations issued by ISA



Exploration Regulations issued by ISA

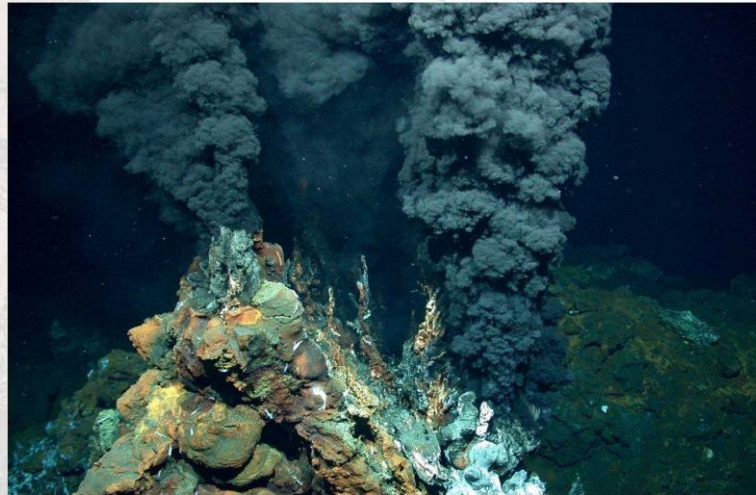


2000



Ferromanganese nodules

2010

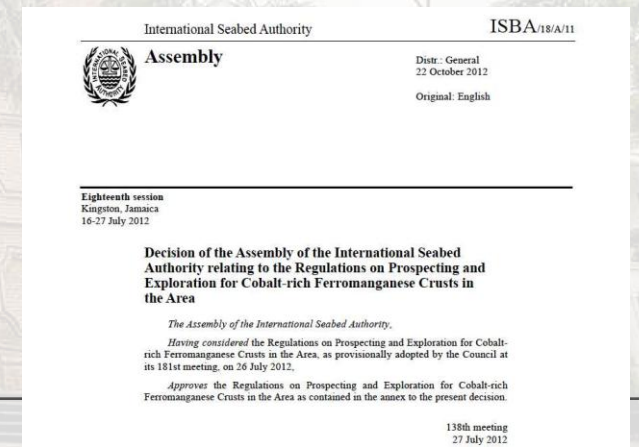
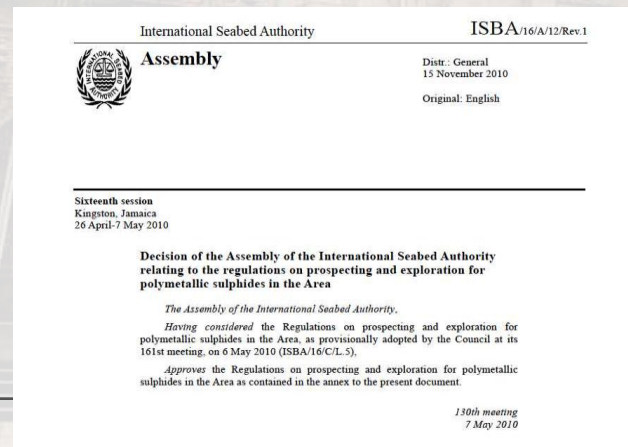
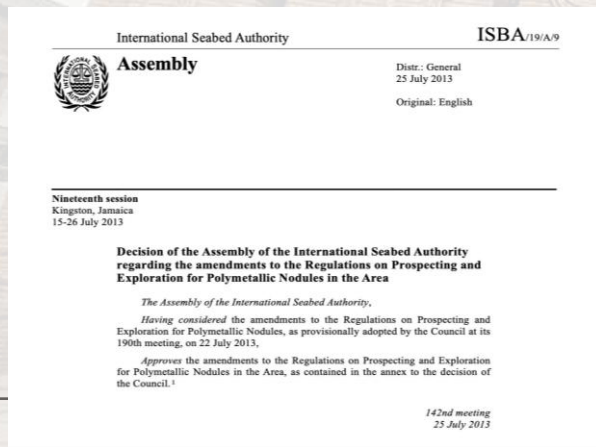


Polymetallic sulfides

201



Cobalt-rich ferromanganese crusts





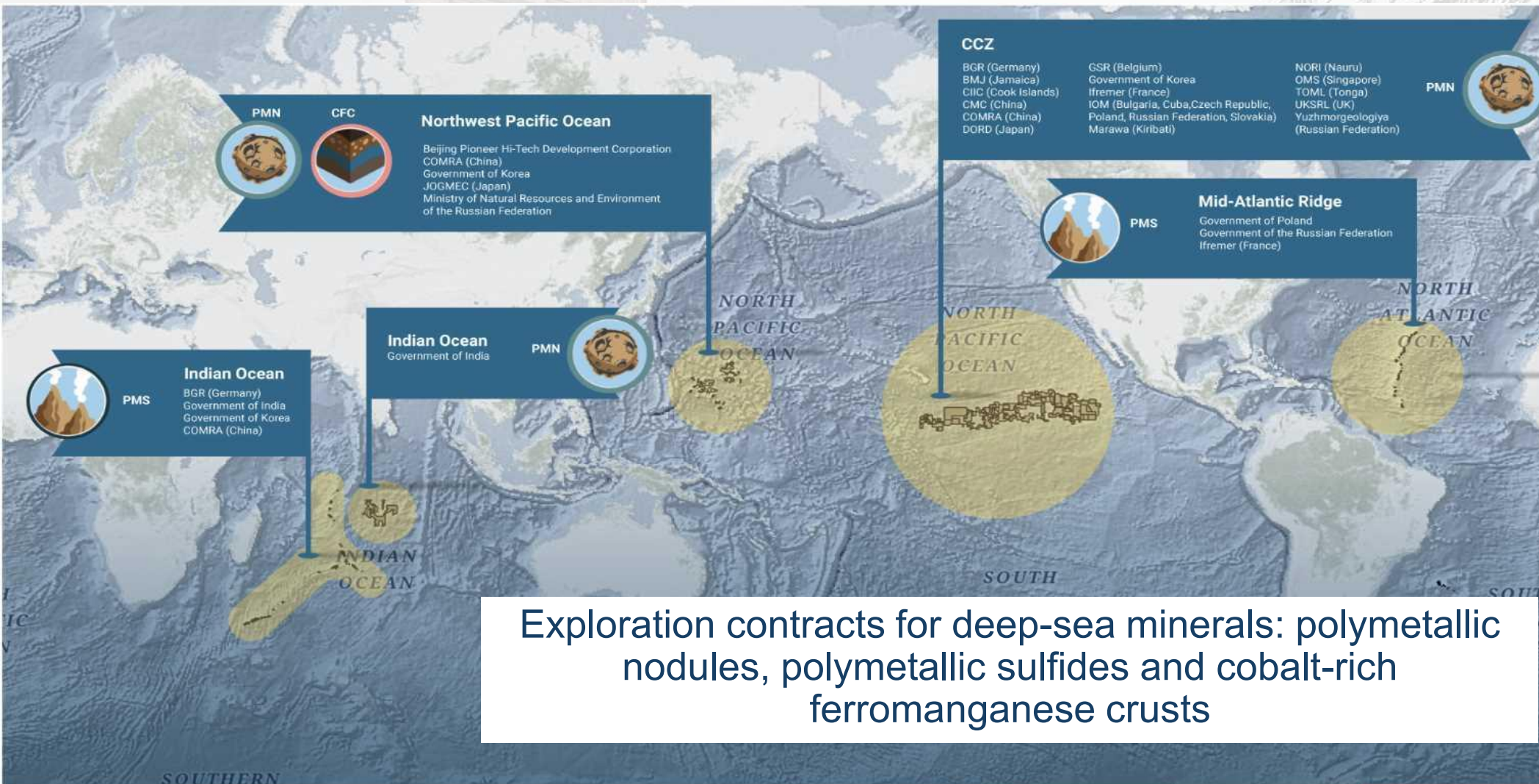
Contractors with ISA for exploration works

(year of signing contract for 15 years; extensions for 5 years).

The contractors include States, State entities and private corporations sponsored both by developed and developing States

Contractor	Nodules	Crusts	Massive Sulfides
China , COMRA, MinMetals, Beijing Pioneer Hi-Tech Development Corporation	2001*, 2017, 2019	2014	2011*
Russia , YMG, MNR	2001*	2015	2012
Japan , DORD, JOGMEC	2001*	2014	
India	2002*		2016, 2025
France , IFREMER	2001*		2014
Korea , KIOST	2001*	2018	2014
InterOceanMetal	2001*		
Germany , BGR	2006*		2015
United Kingdom , UKSRL 1 and 2	2013, 2016		
Belgium , GSR	2013		
Tonga , TOML	2012		
Kiribati , MARAWA	2015		
Nauru , NORI	2011*		
Cook Island , CIIC	2016		
Singapore , Ocean Mineral	2015		
Poland			2018
Jamaica , Blue Minerals	2021		

Exploration contracts



Exploration contracts for deep-sea minerals: polymetallic nodules, polymetallic sulfides and cobalt-rich ferromanganese crusts

The areas explored are in the CCZ, the Indian Ocean, the Mid-Atlantic Ridge and the Northwest Pacific Ocean.

Polymetallic nodules (PMN)

19 contracts

Polymetallic sulphides (PMS)

7 contracts

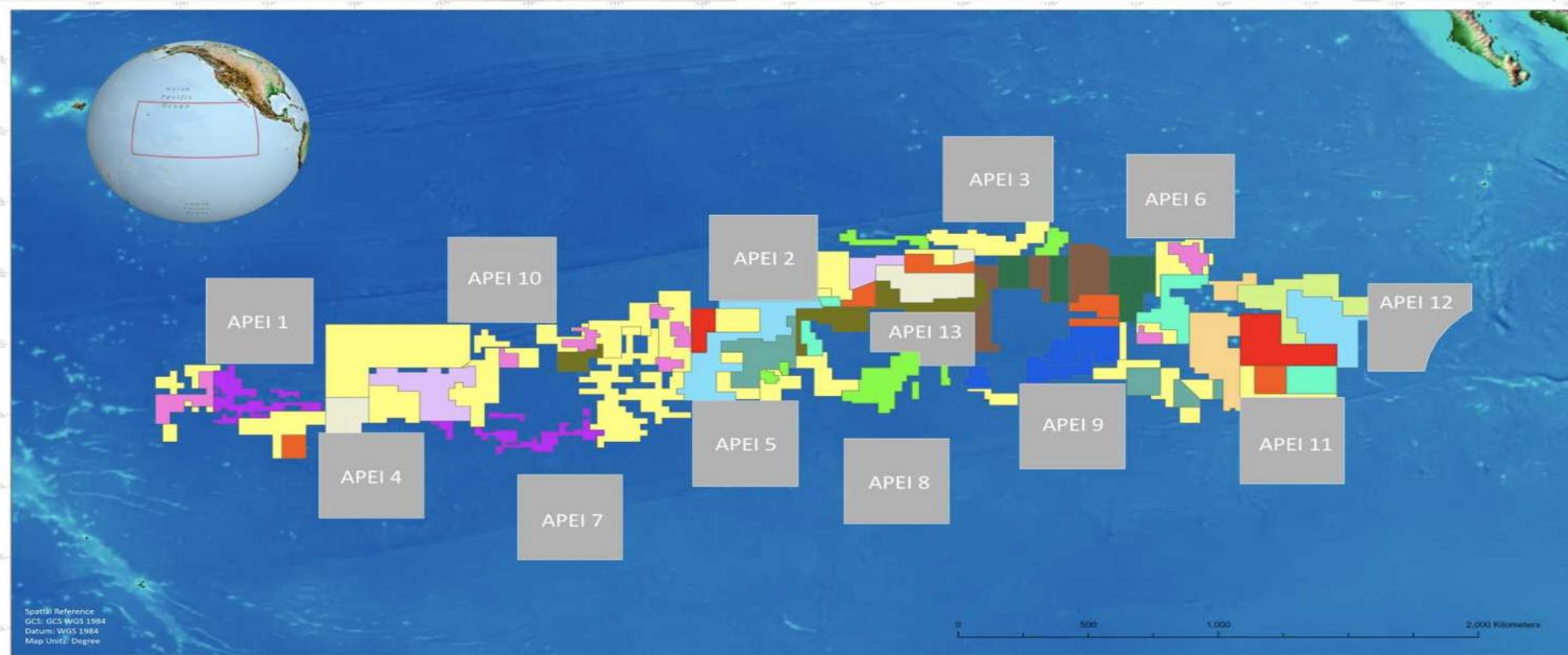
Cobalt-rich ferromanganese crusts (CFC)

4 contracts

Source:
ISA
website



Clarion-Clipperton Fracture Zone Exploration and Reserved Areas for Polymetallic Nodules



Clarion-Clipperton Fracture Zone Exploration and Reserved Areas for Polymetallic Nodules

Tonga Offshore Mining Limited (TOML; Tonga)	Cook Islands Investment Corporation (CIIC; Cook Islands)	Global Sea Mineral Resources NV (GSR; Belgium)	Marawa Research and Exploration Ltd (Kiribati)	Reserved Areas
Federal Institute for Geosciences and Natural Resources of the Federal Republic of Germany (BGR; Germany)	China Minmetals Corporation (CMC; China)	Institut Français de Recherche pour l'Exploitation de la Mer (IFREMER; France)	Nauru Ocean Resources Inc. (NORI; Nauru)	Areas of Particular Environmental Interest (APEIs)
Blue Minerals Jamaica Ltd (BMJ; Jamaica)	China Ocean Mineral Resources Research and Development Association (COMRA; China)	Interoceanmetal Joint Organization (IOM; Bulgaria, Cuba, Czechia, Poland, Russian Federation and Slovakia)	Ocean Mineral Singapore PTE Ltd. (OMS; Singapore)	
Yuzhmorgeologiya (Russian Federation)	Deep Ocean Resources Development Co. Ltd. (DORD; Japan)	Government of the Republic of Korea	UK Seabed Resources Ltd. (UKSRL; UK)	

Source:
ISA website



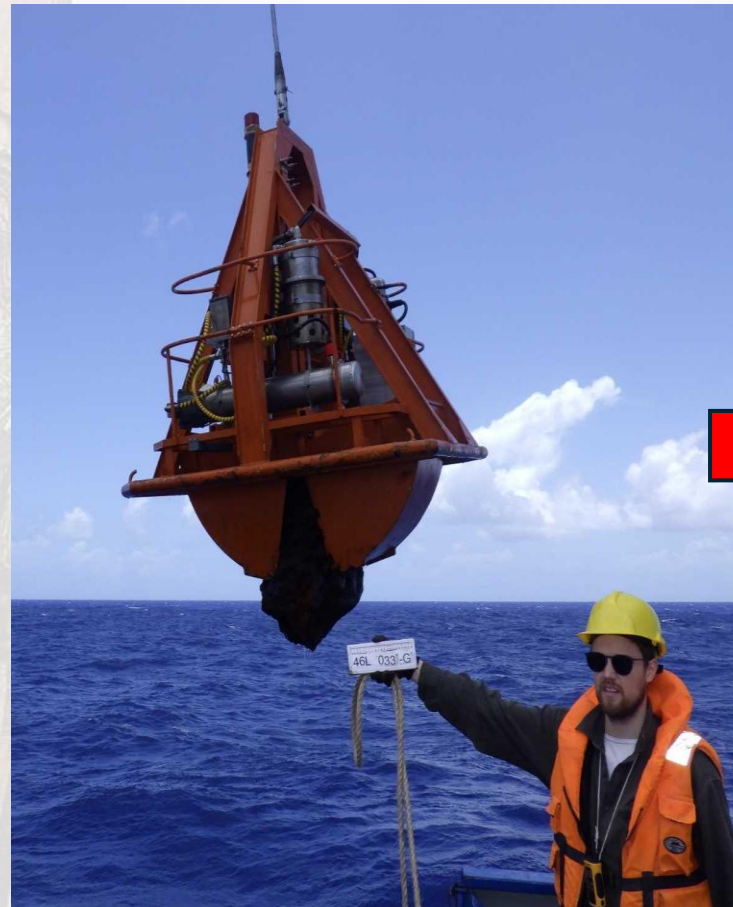
Exploration contracts: current status

TYPE OF DSM	EXPLORATION CONTRACT COMPLETION DATE		CONTRACTOR
	2024	2036	
Nodules			JSC Yuzhmorgeologiya
			Interoceanmetal Joint Organization
			Government of the Republic of Korea (KIOST)
			China Ocean Mineral Resources Research and Development Association (COMRA)
			China Minmetals Corporation (CMC)
			Beijing Pioneer Hi-Tech Development Corporation
			Deep Ocean Resources Development Co. Ltd. (DORD)
			Institut français de recherche pour l'exploitation de la mer (IFREMER)
			Government of India (NIOT)
			Federal Institute for Geosciences and Natural Resources of Germany (BGR)
Crusts			Global Sea Mineral Resources NV (GSR)
			Nauru Ocean Resources Inc NORI (TMC)
			Tonga Offshore Mining Limited (TOML)
			Marawa Research and Exploration Ltd. (MARAWA)
			UK Seabed Resources Ltd (2)
			Ocean Mineral Singapore Pte Ltd (OMS)
			Cook Islands Investment Corporation (CIIC)
			Blue Minerals Jamaica Ltd (BMJ)
			Ministry of Natural Resources and Environment of the Russian Federation
			Japan Organization for Metals and Energy Security (JOGMEC)
Sulfides			China Ocean Mineral Resources Research and Development Association (COMRA)
			Government of the Republic of Korea
			Institut français de recherche pour l'exploitation de la mer (IFREMER)
			Federal Institute for Geosciences and Natural Resources of Germany (BGR)
			The Government of India (2)
			Government of the Republic of Poland

*contractors which executed/announced Test of Mining Components and Environmental Impact Assessment

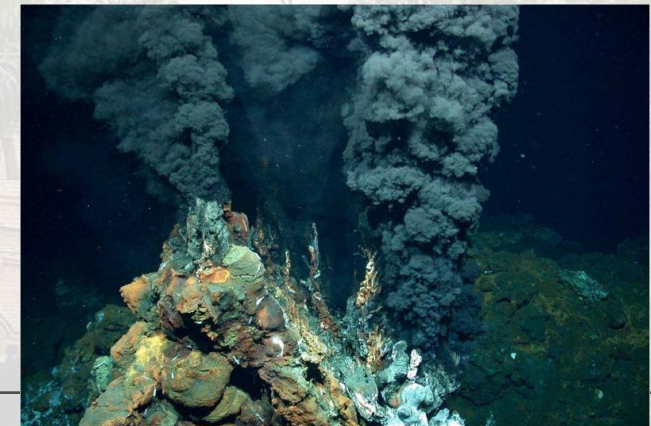
Main issues for the transition from exploration to exploitation stage of deep-sea minerals development

- Geological
- Economic
- Environmental
- Technological
- Legal



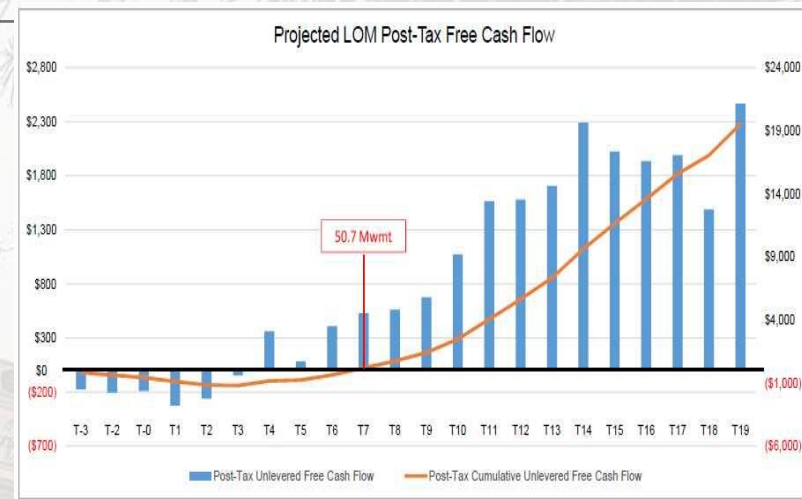
Geological aspects

- Polymetallic nodules, sulfides and cobalt-rich ferromanganese crusts are characterized by specific geological setting, grades of metals and other parameters
- According to the Reporting template of the Committee for Mineral Reserves International Reporting Standards (CRIRSCO) most of mineralization may be currently classified as an indicated mineral resource based on the data obtained during exploration process
- Polymetallic nodules are the most well studied and considered as the first deep-sea resource for transition from exploration to exploitation



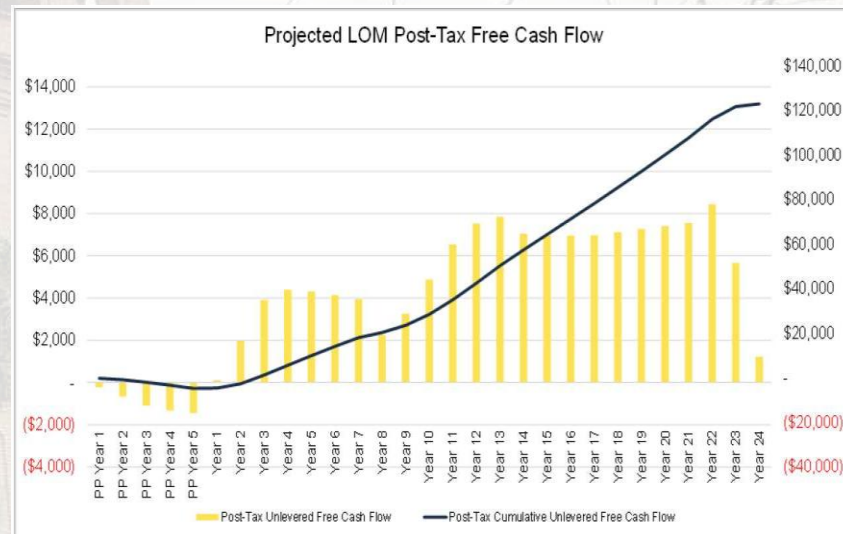
Economic aspects

- There is no single (universal) economic development model for the three types of deep-sea mineral resources due to significant differences in their geological characteristics, extraction and processing technologies, capital and operating costs, environmental considerations, and economic viability.
- The most advanced is economic model for the nodules: one contractor has already provided pre-feasibility study (PFS) for this type of DSM. However, PFS for crusts and sulfides are still not elaborated.
- The prevailing economic circumstances do not justify immediate proceeding to the exploitation stage. However, profitable production could be possible in case of a reduction in costs for the mining technology and/or an increase of production rate



Source: TMC

Note: PP = pre-production



Source: TMC

Note: PP = pre-production



Environmental aspects

- Most contractors have not completed environmental baseline studies and impact assessment during test of mining components
- Development of regional environmental management plans (REMP) as well as environmental threshold values study is not completed



Technological aspects

- Technological solutions for completing geological exploration work in terms of reserve assessment have been found for nodules, but not for crusts and sulphides. Drilling and geophysical methods for assessing the thickness of sulphide and crust deposits are under testing.
- Prototypes of mining systems, which are to be developed under exploration contracts, are currently available only to a few contractors.



Technologies for mining of deep-sea minerals

Nodules



NORI
(TMC)



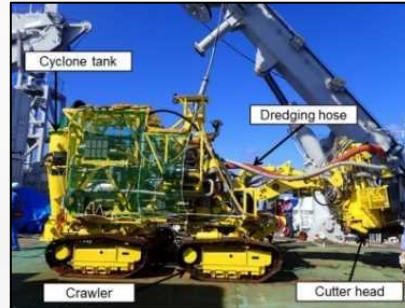
GSR

BGR



Impossible
Metals

Crusts



JOGMEC

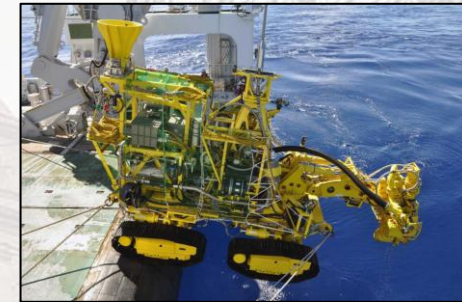


COMRA



COMRA

Sulfides



JOGMEC



BGR



Legal aspects

- The process of adopting exploitation regulations is not yet complete.
- The main issues are the financial payment model and environmental requirements.

ISBA/29/C/CRP.1
16 February 2024
English only

Twenty-ninth session
Council session, part I
Kingston,
18 – 29 March 2024

Draft regulations on exploitation of Mineral resources in the Area

Consolidated text

Explanatory note

1. Recalling the Annex to the Council decision of 21 July 2023 (ISBA/28/C/24), the Council requested that one consolidated text of the draft regulations on exploitation of Mineral resources in the Area (the Regulations) would be provided for the twenty-ninth session. The consolidated text includes the current versions of the following texts:



Press Release 30 July 2025



Conclusions

- 25 years after the adoption of the first regulation, exploration work by various contractors is at different stages of development: from initial to close to completion.
- The most advanced is the exploration of the nodules while another two types of deposits (crusts and sulfides) are less developed
- There are several issues for the transition from exploration to exploitation stage:
 - Geological
 - Economic
 - Environmental
 - Technological
 - Legal
- The adoption of the mining regulation is the critical point for transition from exploration to exploitation of deep-sea mineral deposits and development of mineral resources of the World Ocean as a whole