... in the ocean depths, there exist mines of zinc, iron, silver and gold which would be quite easy to exploit.

- Jules Verne, 1870 Twenty Thousand Leagues Under the Sea



Deep Sea Mining resurces







UNCLOS –ISA International Seabed Authority



The International Seabed Authority is an autonomous international organization established under the 1982 United Nations **Convention on the** Law of the Sea (UNCLOS) and the <u>1994 Agreement</u> relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea. The **Authority** is the organization through which States Parties to the Convention shall, in accordance with the regime for the seabed and ocean floor and subsoil thereof beyond the limits of national jurisdiction (the Area) established in Part XI and the Agreement, organize and control activities in the Area, particularly with a view to administering the resources of the Area.

UNCLOS divides the ocean into different jurisdictional zones, three of which relevant to mineral development:

the **Exclusive Economic Zone (EEZ)** and the **Continental Shelf**, both of which fall under jurisdiction of the coastal state, and the seafloor beyond these zones, which is known as the **International Seabed Area** (or simply" **the Area**"). That part, still covering nearly half of the surface of the planet, is designated as the common heritage of mankind (CHM),

There are one hundred and sixty eight (168) members of the International Seabed Authority made up of 167 Member States, and the European Union, the International Seabed Authority is mandated under the UN Convention on the Law of the Sea to organize, regulate and control all mineral-related activities in the international seabed area **for the benefit of mankind as a whole.**

In so doing, ISA has the duty to ensure the effective protection of the marine environment from harmful effects that may arise from deep-seabed related activities.



ITALY is represented in ISA by **MAECI** (Ministero degli Affari Esteri e della Cooperazione Internazionale)



Strategic sourcing of minerals for energy production & consumption





Deep Sea Minerals distribution Clarion Clipperton Zone

- Administration : International Seabed Authority
- Content : nodules made up of various elements.
- Subdivision :16 mining claims for approximately 1,000,000 square kilometres
- Conservation Areas : 9 areas, 160,000 square kilometres each
- Estimated contents : total amount of nodules exceeds 21 billions of tons (Bt) of which:

about **5.95 Bt** of **Manganese** about **0.27 Bt** of **Nickel** about **0.23 Bt** of **Copper** about **0.05 Bt** of **Cobalt**







Deep Sea Minerals distribution Clarion Clipperton Zone







Typical project schedule

A deep-sea mining project schedule typically envisages about ten years of R&D (pre-feasibility and feasibility) and several years of construction and production ramp up before mining can start. Concessions are expected to last 25- 30 years.







Offshore mining system overview

A general representation of the system



- 1. Excavation of subsea resources
- 2. Transportation to surface vessel
- Dewatering of slurry & transfer of solid material to a transportation vessel
- 4. Delivery of ore to shore
- 5. Onshore ore storage
- 6. Onshore processing (concentration of ore)
- Export of ore concentrate to market



Three main types of mineral deposits



SAIPEM

Environmental challenges

Deep ocean impacts and uses

a few examples...

The sea ahead

Possible environmental impacts

FINCANTIERI The sea ahead

FINCANTIERI and Saipem for Deep Sea Mining

- Fincantieri/Saipem are monitoring the DSM evolution to assess the strategic relevance and the opportunities to take part in the Deep Sea Mining exploitation, bringing engineering, technological and operational expertise
- But the main FC/Saipem commitment remains the Environmental Sustainability and Safety of people in Operations

Thank you

