



**MINISTERIO
DE RELACIONES
EXTERIORES**



UN-OHRLS

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**

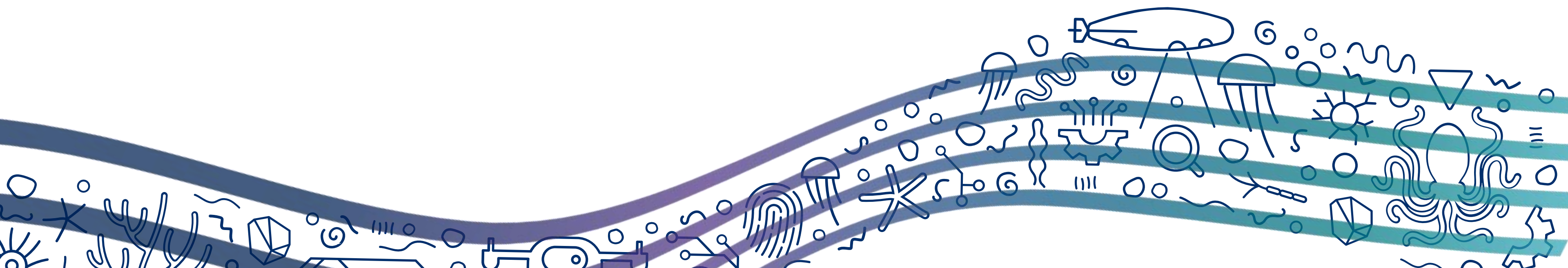




Agenda Item 9 - From terrestrial mining to participation in the Area

Linkages between terrestrial mining experience and engagement with the ISA

Kaiser de Sousa | International Seabed Authority





Why connect terrestrial mineral experience with participation in the Area?

For LLDCs, existing mineral-sector capacities can provide an important starting point for engagement with the Area

1- LLDCs already participate in mineral development

Experience in geology, mining, environmental management, mineral economics, regulation, research and resource governance.

2- The Area is a different environment and legal regime

Participation requires knowledge of deep-ocean science, technology, international governance and the UNCLOS/ISA framework.

3- The practical question is how to build the bridge

Identify what is relevant, what must be adapted, what new capacity is required and which partnerships can support participation.

Understanding this bridge can help LLDCs identify realistic pathways for participation without assuming that participation begins with seabed mining.



Terrestrial mining and the Area are not the same

The experience is relevant — but the context is fundamentally different



Terrestrial mineral development

Within national jurisdiction

National mineral legislation

Established mining technologies

Direct physical access

Terrestrial infrastructure and value chains

Mineral activities in the Area

Beyond national jurisdiction

International regime under UNCLOS

Common Heritage of Humankind

Deep-ocean environment

ISA organization, control and benefit-sharing

Terrestrial experience provides a foundation — not a blueprint.



The bridge: capabilities rather than techniques

We should ask how much adaptation is required



Transferable

Geology
Geochemistry
Resource assessment
Data management
Institutional
governance
Mineral economics

Adaptable

Exploration methods
Environmental
assessment
Monitoring
Engineering
Risk management
Regulatory oversight

New capacity

Deep-ocean science
Seabed technologies
Area-specific law
ISA processes
Deep-sea environmental
monitoring
Compliance in the Area

Terrestrial capacity is relevant when it is translated into participation capacity.



Geology: probably the easiest bridge

The medium changes —
scientific reasoning remains relevant

Terrestrial experience

Geological mapping
Mineral systems
Geochemistry and geophysics
Resource assessment
Geological databases

Adaptation

Marine geoscience
Oceanographic context
Remote sensing and sampling
Seabed morphology
Integrated resource
+ environmental data

Area context

Nodules
Sulphides
Cobalt-rich crusts
Deep-ocean data
Scientific cooperation

A geological survey can become a platform for marine scientific participation.



Regulation: another important bridge

Mining institutions carry transferable knowledge

Terrestrial regulators already assess

Applications and work plans

Technical and financial capability

Environmental obligations

Reporting, inspections and compliance

Closure, liability and public interest

The Area adds another layer

UNCLOS and Part XI

Common Heritage of Humankind

ISA institutions and procedures

Sponsoring-State responsibilities

International environmental and

benefit-sharing dimensions

Regulatory experience is transferable; the legal framework is not.



Environment: transferable principles, different ecosystem

Environmental-management experience transfers —
environmental assumptions do not

Terrestrial mining teaches

Baseline studies

Impact assessment

Monitoring during operations

Cumulative-effects thinking

Closure planning

Adaptive management and oversight

Deep-sea ecosystems add

Remoteness

Limited baseline knowledge

Slow ecosystem processes

Large spatial scales

Connectivity and uncertainty

Monitoring complexity

The principle is familiar; the science and scale are different.



The critical-minerals connection

One mineral transition — different resource environments

Security of supply

Countries are examining diversification, responsible sourcing and strategic partnerships.

Value chains

LLDCs may already participate through mining, processing, logistics, research or policy.

Capabilities

Geology, regulation, mineral economics and environmental expertise become strategic assets.

The Area

Not simply another source of minerals, but a distinct UNCLOS regime.

Critical minerals are the entry point; transferable capabilities are the real subject.



From mining capacity to participation capacity

A country does not need to be a contractor before its capacities become relevant



Participation grows when existing capacity is connected to ISA pathways.



Participation begins before mining

Participation in the Area is wider than becoming a seabed mining contractor

Governance

Assembly, Council
processes and regulatory
discussions

Science

Marine scientific research,
data and research networks

Capacity development

ISA programmes,
contractor training and
institutional partnerships

Expertise

Legal, scientific,
environmental, economic
and regulatory expertise

Economic participation

Mineral economics,
benefit-sharing and future
EPC-related expertise

Institutional cooperation

Enterprise, universities,
regional organizations and
coastal-State partners

Participation ≠ extraction. It also means knowledge, governance, institutions and benefits.



Landlocked does not mean disconnected

Partnerships can convert national capacity into international participation



No State needs to develop every capability alone.



A practical LLDC capability map

A way to translate existing capacity into Area participation



Existing capability	Adaptation required	Possible pathway	First step
Geological survey	Marine geoscience	Scientific cooperation	Identify experts
Mining ministry	Area regulatory knowledge	ISA governance	Training/briefing
Environmental authority	Deep-sea environmental science	Environmental capacity	Partner with researchers
Universities	Ocean-science specialization	Research networks	Joint projects
Geological databases	Marine/seabed datasets	Data participation	Data-capacity plan
Mineral economists	Area economics/CHM	Economic governance	Policy analysis

The map is not definitive — it is a method for identifying practical entry points.



The strategic question for each LLDC

Different countries may follow different pathways



1

What capabilities do we already have?

2

Which could support participation in the Area?

3

What additional specialization is required?

4

Which partnerships can close the gap?

5

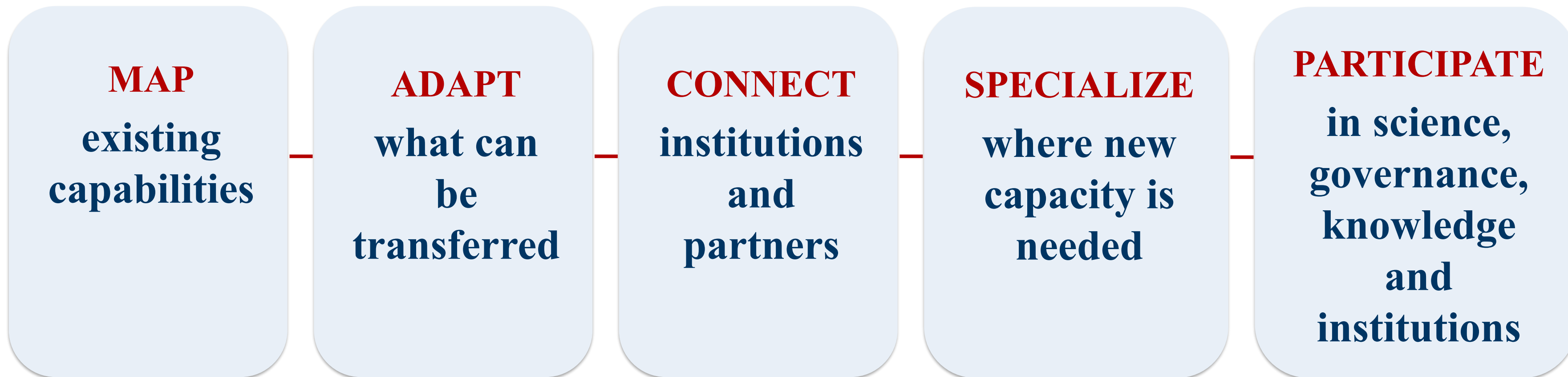
What is the first realistic step?

The objective is not one pathway for all; it is a realistic pathway for each State.



From capacity to action

Participation in the Area is a pathway —
not a single decision



The practical task is to move from aspiration to organized participation.



For discussion

Inputs for the Santa Cruz Roadmap

1

Which terrestrial mineral-development capabilities in your country could contribute to participation in the Area?

2

Which capabilities would require adaptation or new specialization?

3

Which partnerships would make that possible?

4

What practical action could be reflected in the Santa Cruz Roadmap?

Let us identify a small number of practical, realistic and useful follow-up actions.



Thank you

