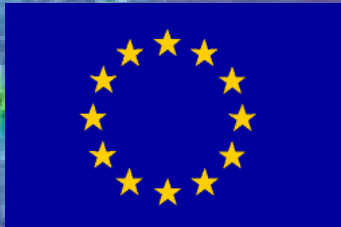


Impacts of Terrestrial and Deep Sea Mineral Activities: A Comparison



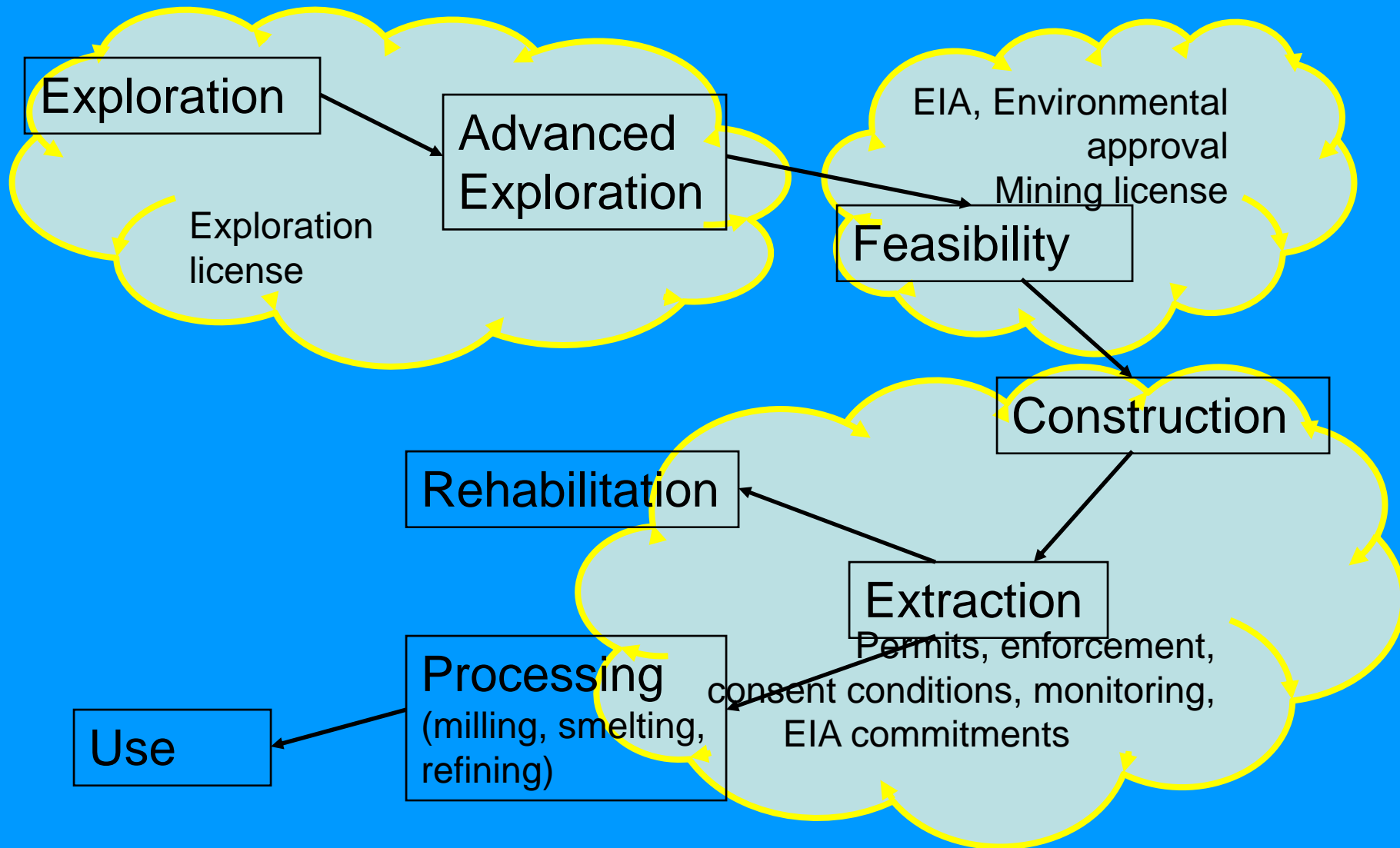
Hawaii

Clarion Fracture Zone

SPC-EU Deep Sea Minerals Project 3rd Regional Training Workshop
"Social Impacts of Deep Sea Mineral Activities and Stakeholder Participation"
10th – 14th June 2013

Akuila Tawake
SOPAC Division, SPC

From Exploration to Mining...



Exploration – Negative Impacts

Activity	Terrestrial	Marine
Mapping	Very low (geological mapping, aerial photos, etc)	Very low (multi-beam survey, side scan sonar, magnetics)
Geophysics	Very low - Low (Ground (e.g. IP) and Airborne , e.g. magnetic survey)	Very low (use of ROVs and AUVs)
Sampling / Analysis	Low (sediment, soil, rock samples)	Low (sediment, rock)
Trenching	Low – Moderate	Not applicable
Drilling	Moderate - High	Moderate for SMS and CRC Not applicable for MN
Infrastructure (roads, bridges, campsites)	Moderate – High	Not applicable
Trial Mining	High – Very high	High – Very high??
Environmental Monitoring	Very low	Very low

Exploration – Positive Impacts

Activity	Terrestrial	Marine
Mapping	Low - Moderate (full and part-time employees)	Low (observers / trainees on the boat)
Geophysics	"	"
Sampling / Analysis	"	"
Trenching	"	Not applicable
Drilling	"	Very low for SMS and CRC (an observer / trainee on the boat) Not applicable to MN
Infrastructure (roads and bridges, campsites)	Very high	Not applicable
Trial Mining	Low	Low
Environment Monitoring	Moderate (employment, knowledge)	Moderate (employment, knowledge)

Mining – Negative Impacts

Activity	Terrestrial	Marine (Assuming mineral processing is done elsewhere)
Vegetation clearance	High	Not applicable
Construction (processing plant ,offices, campsite)	High – Very high	Not applicable
Infrastructure development (roads, bridges, wharf, etc)	High – Very high	Moderate (far less infrastructures need to be built)
Excavation and haulage	Very high	Moderate – Very high??
Drilling and blasting	High – Very high	Not applicable
Metallurgical Processing	Moderate - High	Not applicable
Waste rock dumping	Moderate - Very high	Low – High??
Tailings disposal	Moderate – Very high (depending on disposal methods used)	Not applicable

Mining – Positive Impacts

Activity	Terrestrial	Marine (Assuming mineral processing is done elsewhere)
Vegetation clearance	Low	Not applicable
Construction (processing plant ,offices, campsite)	Low – Moderate	Not applicable
Infrastructure development (roads, bridges, wharf, etc)	High – Very high	High (far less infrastructures need to be built)
Excavation and haulage	Low – Moderate (employment)	Low – Moderate
Drilling and blasting	Low – Moderate(employment)	Not applicable
Metallurgical Processing	Moderate - High	Not applicable
Waste rock dumping	Low – High (employment, used as road materials)	Low ?? Not applicable to MN
Tailings disposal	Low	Not applicable
Revenue Generation	Very high	Very high

Impacts of DSM-specific Activities

Activity	Negative Impacts	Positive Impacts
Mining Vessel	Low – High?? (release of effluent)	Potential FAD
Lifting System	Low – Moderate?? (pumping)	Potential FAD
Seafloor Mining Tools	Low – High?? (extraction)	Low
Mining of Active SMS	High – Very high (destruction of biological communities, creation of plume near the seabed)	Very high (revenue generation, employment, etc)
Mining of Inactive SMS	High – Very high (destruction of biological communities, creation of plume near the seabed)	Very high (revenue generation, employment, etc)
Mining of MN	High – Very high (destruction of biological communities, creation of plume near the seabed)	Very high (revenue generation, employment, etc)
Mining of CRC	High – Very high (destruction of biological communities and creation of plume near the seabed)	Very high (revenue generation, employment, etc)

Comparison of Terrestrial and Deep Sea Mining

Terrestrial	Marine
Significant overburden	Huge water body (ocean) that needs to be dealt with
Generate significant amount of waste (overburden, tailings, leachates)	Reasonably less amount of waste generated
Huge footprint	Small footprint (SMS) Reasonable footprint (MN & CRC)
Often isolated and difficult to access	Located with national EEZ
Huge infrastructure development	Far less infrastructure to be built
Acid Rock Drainage	Sulphuric acid cannot form in ocean (seawater being "alkaline")
Complex resource ownership system	Common heritage of the nation
Reasonable knowledge of environment	Limited knowledge of environment