Technical Support for Reduction and Elimination of Mercury Use in ASGM Sector

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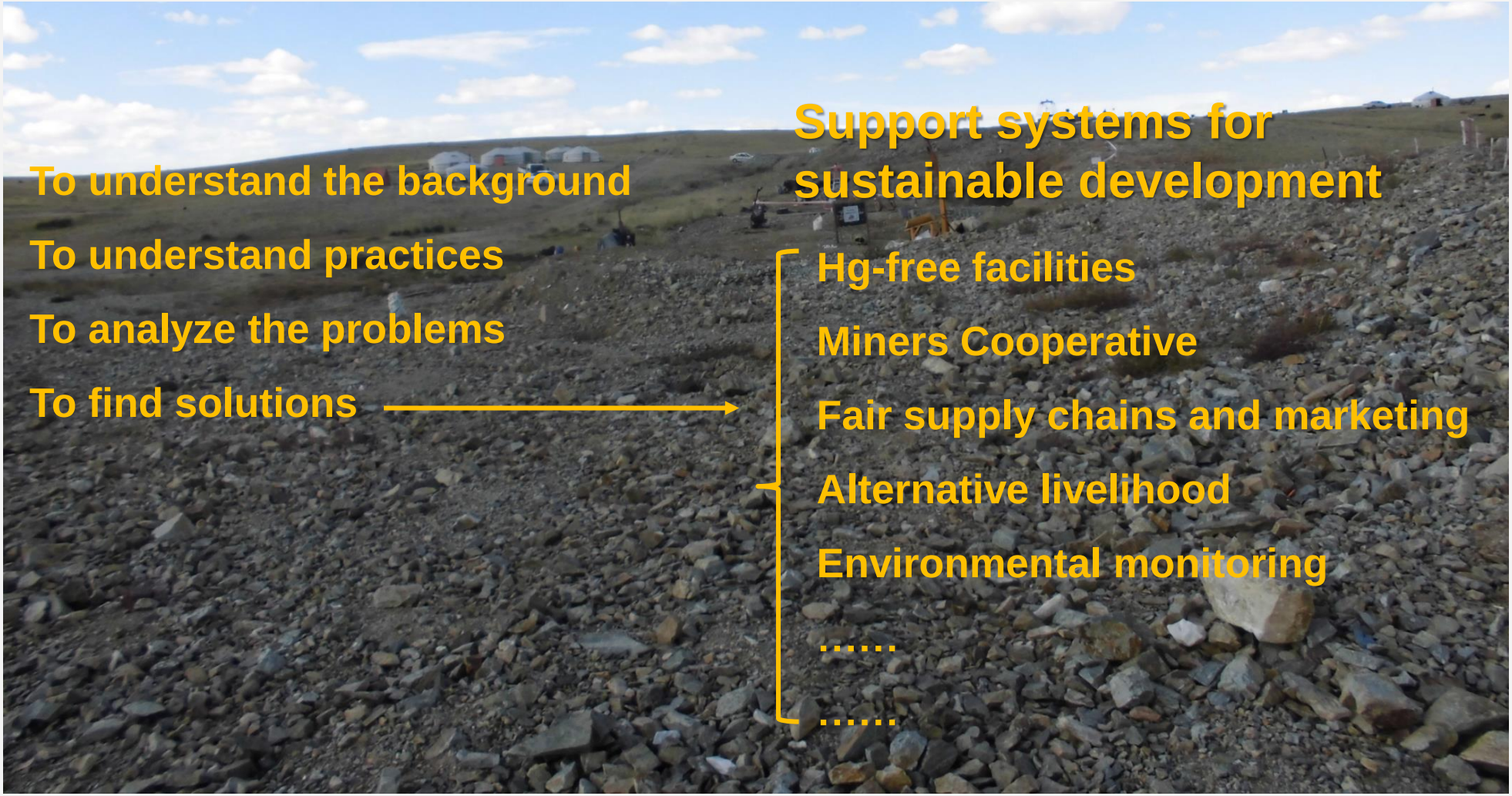
Our challenge has been



Technologies are already available.

Blue bowl

Shaking table

Borax smelting

Cyanide leaching

(1)Cyanidation

(2)Thiosulfate leaching

(3)Thiourea leaching

(4)Halide leaching

(5)Microbial cyanidation

BPPT tested most of the methods and found that cyanide is the only substance applicable to hard-rock ore in Indonesia.

ASGM training in Minamata & Tokyo (11-15 December 2017)

Follow-up study (February 2018, February 2019, January 2020)

Moving Forward

Indonesian NAP on ASGM stipulates cross cutting measures which needs intersectoral cooperation.

→**MOEJ study team has been conducting interviews on various stakeholders to identify areas* in which Japan could contribute to the implementation of the NAP**

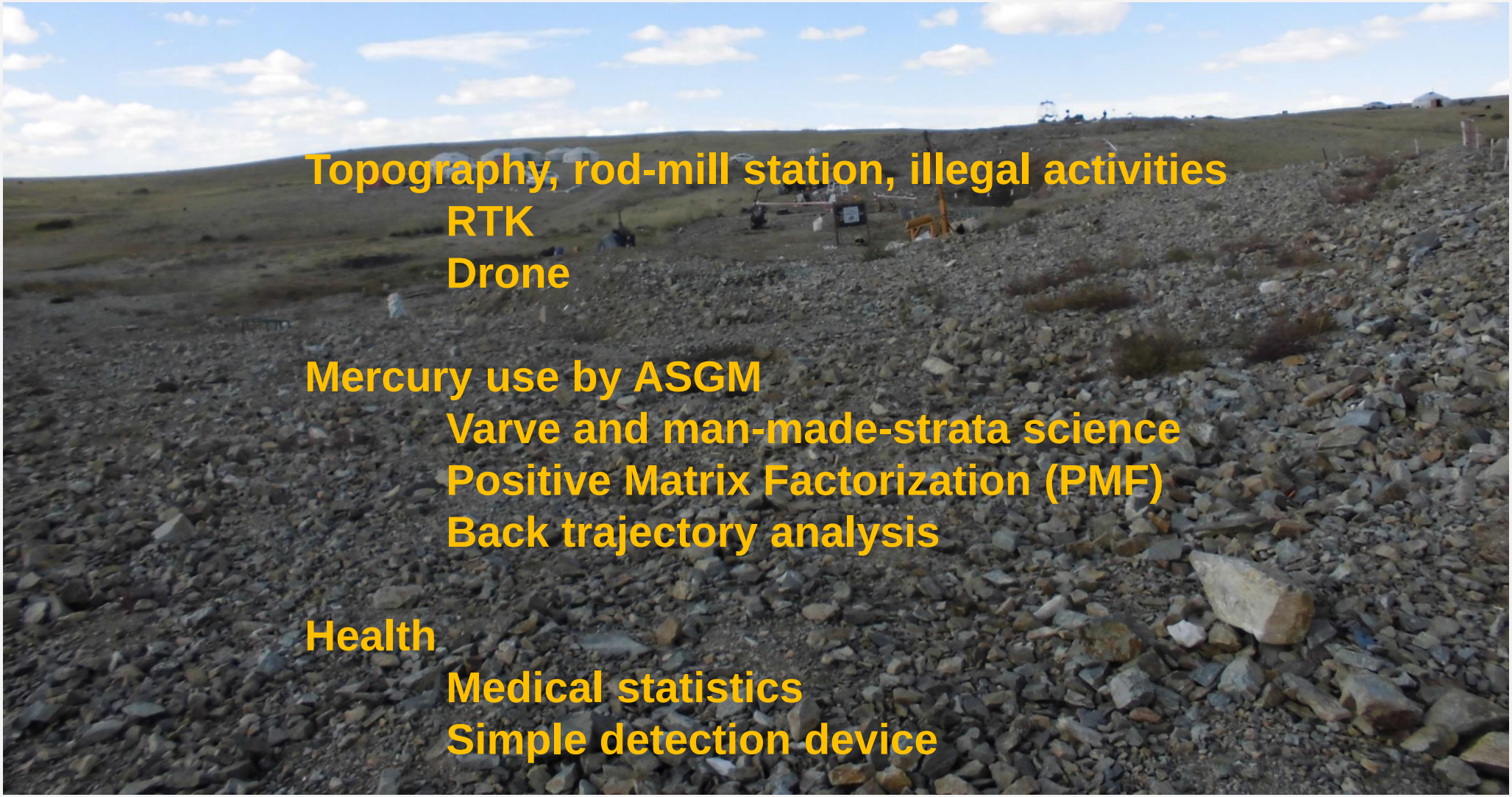
＊avoid duplication of efforts made by ongoing project (e.g. GEF-ISMIA)

Potential areas of cooperation

Area	Know-hows or techniques possibly provided by Japan
Overall	• Development of Hg inventory and material flow
Mining	• Joint research on Hg free gold extraction • Inspection of illegal activities
Environment	• Hg monitoring (sampling & analysis) • Identification & remediation of contaminated site • Storage & disposal of Hg waste
Health	• Public awareness raising • Medical diagnosis • Risk assessment & risk communication
Economics	• Fair-trade of Hg free gold (e.g., ethical jewelry)

Webinars to introduce know-hows or techniques are under consideration.

Instruments and methods to control/observe/monitor ASGM



A simple detection device

Based on a quartz crystal microbalance (QCM-Hg)

It utilizes the direct reaction of Hg and the Au electrode of the quartz crystal element via the phenomenon of Au–Hg amalgamation.

The QCM-Hg is based on the conversion of the change in the mass adsorbed on the electrode surface of the quartz crystal into a change in frequency.

Noda et al. (2020) “Basic Detection Characteristics of Quartz Crystal Microbalance-based Method of Determination of Mercury”, Sensors and Materials, Vol. 32, No. 6, 2159–2166.

Eco DRR: A new technology possibly applicable

Hg contamination is a disaster

- UN International Strategy for Disaster Risk Reduction (UNISDR) says a disaster is “a serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources”.

- Disasters are mainly social constructs: they are largely determined by how a society manages its environment, the conditions of vulnerability that are present, its capacity to face adversity and what resources are available for recovery.

Sustainable communities

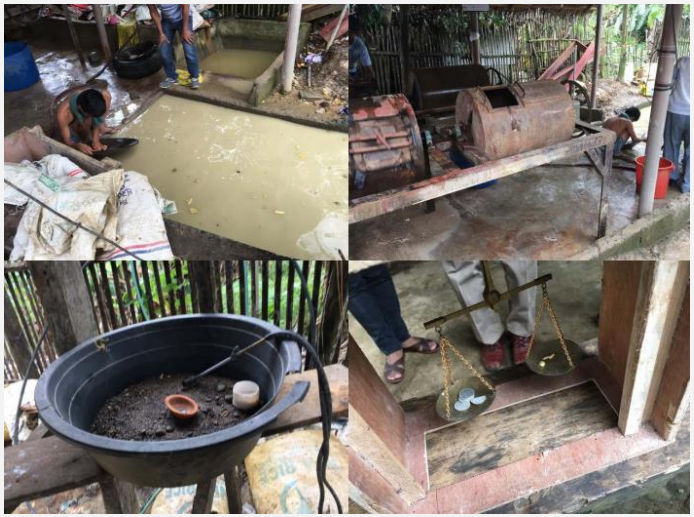
Even the ASGM was mitigated/ eliminated, most communities will be exposed to the harmful effect from residual mercury. Every community needs holistic environmental management.

Eco-DRR

"Ecosystem-based disaster risk reduction (Eco-DRR) “is the sustainable management, conservation and restoration of ecosystems to provide services that reduce disaster risk by mitigating hazards and by increasing livelihood resilience"

Where do we go?

We should consolidate idea how to build sustainable local communities with different plans depending on the reality of the target area



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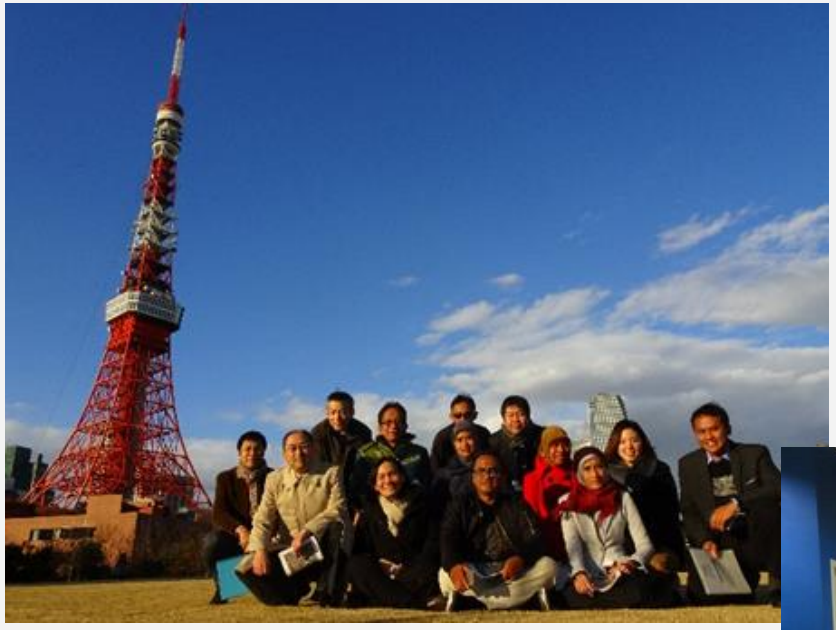
- Do miners wish to continue gold production without/with cyanide?
- Can you control elusive group such as *Technological Ninja* in Mongolia?
- Can community afford to invest on the development of new technologies?
- Do they start new business such as tourism?
- Do we prioritize rehabilitation of brown land?
- How can we secure good environment for the community?



Terima kasih banyak!