

Global Sand Observatory

1st draft concept note for a possible non-prescriptive proposal as part of the implementation of the UNEA 5/12 resolution on environmental aspects of metals and minerals.

A coordinated international network of existing and new partners from all regions for improving scientific, technical, and policy knowledge with regard to sand extraction and use.

Background and rationale

Sand, gravel, and crushed rock (thereafter sand resources) are the world's most exploited solid natural resource and their use has tripled in the last two decades to reach 50 billion metric tons per year^{1, 2, 3}. Sand is used mostly by the construction sector for infrastructure; it is needed for land reclamation and other industrial uses (e.g. glass, computer chips)^{1,4}. However, sand also plays a critical role in nature, e.g. water filtration, shoreline protection, aquifers, and providing habitat for numerous species³.

Demand for sand will increase with population growth, rural-to-urban migration, and a growing need for infrastructure³. The depletion of land-based aggregate reserves around urban and industrial centres, and the shift to the extraction of rivers^{1, 5, 6} as well as in the nearshore environment^{7, 8} is a local, yet global problem, given the high number of locations affected. **Sand is a strategic and finite resource, connected to nearly all Sustainable Development Goals.**

The dependency on sand resources for our development has been overlooked and poses the question of resource scarcity⁹. Sand is one of the major, yet unaddressed, sustainability challenges of the 21st century³. **However, to date, no entity is monitoring sand extraction and use, while initiatives toward better management of sand remain siloed.** Without careful management, sand extraction will lead to significant environmental and societal impacts, impeding future sustainable development.

During the regional consultations conducted under the UNEA resolution 5/12, many **Member States and observers confirmed the challenges around sand and sustainability and expressed multiple needs** in terms of information sharing, exchange of best practices, capacity building, more data and scientific knowledge, more robust regulations and standards, and supporting technology and innovation¹. Support was expressed towards **the creation of a Global Sand Observatory (GSO), which was considered the most appropriate way of implementing the request from the UNEA resolution 5/12 concerning sand and responding to the needs expressed.**

The proposal in summary

Since 2019, UNEP/GRID-Geneva has initiated the “Global Sand Observatory Initiative” and worked with more than 40 stakeholders to break down siloes. Rather than creating a new centre, the GSO would constitute **a global network of existing partners from all world regions, coordinated by a secretariat hosted at UNEP/GRID-Geneva, open to and welcoming new partners.**

The main objective of the GSO would be to promote sustainable practices concerning sand extraction and use. Its 3 main functions would be based on the mandate of the UNEA resolution 5/12 OP4, to strengthen **(1) scientific, (2) technical, and (3) policy knowledge regarding sand.** The GSO would provide free and open access to data, case studies on policies and governance structures, standards, best practices as well as technological solutions, with capacity building as a targeted outcome, and relevant technical recommendations to address existing gaps.

¹ See summaries here : [Initiative Activities | Green Policy Platform](#)

How could the proposal work in practice?

One possibility could be for the GSO to operate under a light **structure** that includes a GSO Secretariat, a Steering Committee, and a Scientific Board, and partners that could meet in specific meetings (“working groups”).

The GSO Secretariat would be hosted by UNEP/GRID-Geneva. The Secretariat would coordinate the network of partners, the steering committee, scientific board and ensure good internal and external communication. It could create and maintain a website to provide one-entry door access to data, technological solutions, best practices, policies, standards, and case studies of good governance. The Secretariat could also organize workshops, webinars, and conferences to facilitate capacity building and knowledge sharing. Further activities could include fundraising, awareness raising, and advocacy, with the support of all partners.

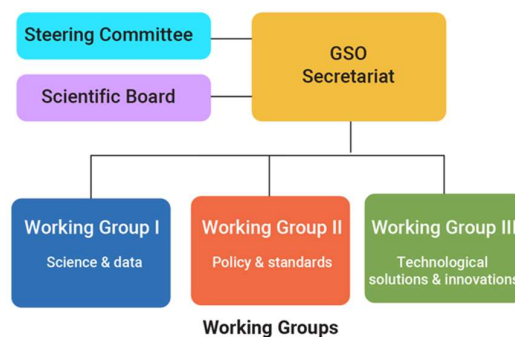


Figure 1: Proposed structure

The Steering Committee would advise the GSO secretariat. It would comprise of representatives from the GSO, relevant UN Agencies, and one member state per region on a rotating basis.

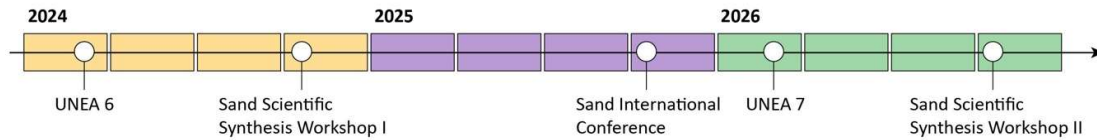
The Scientific Board would consist of renowned experts in sand resources, environmental policies, and technological solutions. These experts would be selected from academia, industry, and civil society organizations. Their primary responsibility will be to ensure the methodologies deployed, data produced, and research outputs are of the highest quality.

As for the **network partners**, UNEP/GRID-Geneva has already received expressions of interest from over 40 organizations. However, it is intended to expand this network by inviting institutes from all regions to join.

The partners could work in **3 working groups**:

- **Working Group 1 (Science and data)** is composed of partners doing research in monitoring sand extractive activities and resulting short- and long-term impacts and gathering data on sand extraction and sand use by sector.
- **Working Group 2 (Policy, rules and standards)** is composed of research partners and policy practitioners working on international, national, and local policies as well as rules and standards for regulation of the sand extractive sector and subsequently the reduction of related impacts.
- **Working Group 3 (Technological solutions and innovation)** is composed of partners working on identifying and finding new solutions for reducing the use of sand resources and improving circularity.

Possible timeline: The establishment of the GSO could be envisioned for a minimum duration of 5-10 years, with the understanding that creating meaningful change in policies and standards requires a considerable amount of time. Ideally, the initiative could commence in 2024, to respond to needs expressed following the regional consultations, assuming it would receive a mandate from the sixth session of the United Nations Environment Assembly to be held in 2024.



Budget & funding: The budget for the initiative would be estimated according to the level of activities expected and funding would be mobilized from all sources, according to relevant UN (or UNEP) rules.

Possible outputs & outcomes

The GSO would ensure open access to its database and research through the creation of an online knowledge depository and international networking activities such as organizing an international conference on sand.

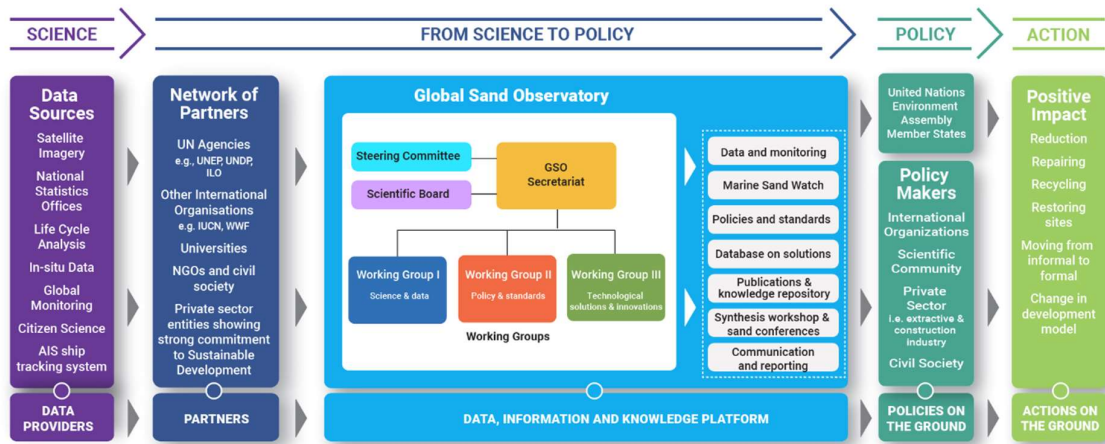


Figure 2: The GSO: Science to Policy on sand

Indicative list of possible outcomes and outputs

Possible Outcomes	Possible Outputs
Monitoring sand extraction, impacts, and sand use	A web data platform for acquiring and sharing data. Better data and statistics on the locations and volume of sand extracted and used for various purposes, which will also help in monitoring impact.
Increasing Data awareness	Reports, presentations, and communications material shared with various stakeholders (government, private sector, and public).
Improving transparency & accountability	Gathering and sharing data to contribute towards assessing the effectiveness of policies.
Toward improved policies, rules & standards	Identify policy gaps and possible ways to address them; share best policies, rules and standards, and relevant recommendations with governments and the private sector, and multilateral development banks, with a view to develop or improve existing policies/rules/standards, including by setting higher standards for extracting and using sand.
Toward a circular economy	Share existing and find new technical and institutional solutions for reducing, reusing, replacing, recycling, retrieving, and restoring sites after extraction. Break down silos to enable a holistic approach and a paradigm shift to a regenerative and circular economy. This includes thinking differently about how to use the limited sand resources in a more efficient and effective way.

Capacity building	Enhance the capacity of private and governmental institutions in different regions to manage sand resources sustainably. The GSO would conduct workshops, develop guidelines, tools, and action plans, facilitate knowledge transfer and networking, support policy development and implementation, and mobilize resources.
PROCESS	
Partnership	The Global Sand Observatory, coordinated by a secretariat, aims to deliver its vision and mission through a global partnership of actors across the entire value chain of sand.
Cross-sectoral & cross-scale dialogue	Dialogues with different stakeholders to jointly set goals, identify problems, and discuss trade-offs that are implicit in balancing competing uses and priorities within ecosystems.

Related activity: Marine Sand Watch (Launch date: September 6th, 2023)

UNEP/GRID-Geneva will be launching a platform for monitoring dredging activities in the marine environment. The primary objective of this initiative is to offer countries access to valuable data, including estimates and locations of sand extraction and dumping. By doing so, the platform aims to facilitate the identification of good and bad practices, while enabling capacity building and fostering discussions regarding extraction standards and environmental policies (<https://unepgrid.ch/en/marinesandwatch>)

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