

50 BILLION TONNES OF SAND EXTRACTED GLOBALLY EVERY YEAR

(Sand and Sustainability: Finding New Solutions for Environmental Governance of Global Sand Resources, 2019)



THE SAND CRISIS: THE MINING OF RIVERINE AND FLOODPLAIN SANDS WITHIN INDIA

ALICE WASSELL & NAMRATHA ASHOK



ABOUT SAND



Concrete, asphalt, glass,
land reclamation,
chemical production,
cosmetics, fracking, etc.



Second most consumed
natural resource

(Beiser, 2019)

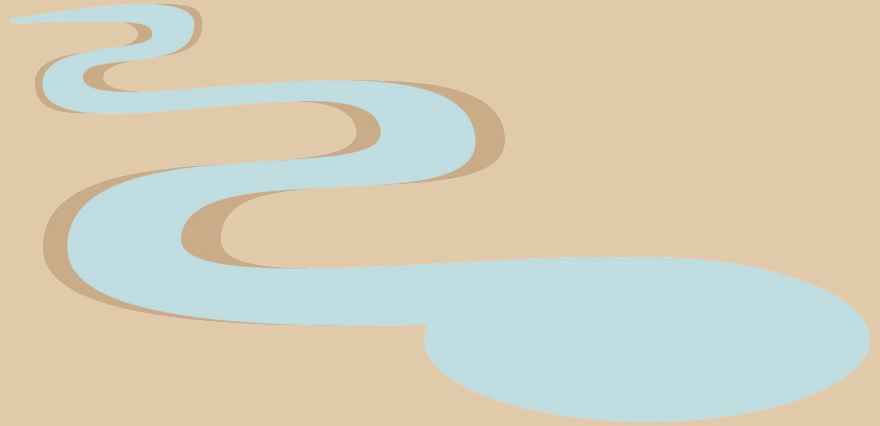


Common-Pool Resource

FOCUS



India



Rivers and Floodplains

MAIN DRIVERS

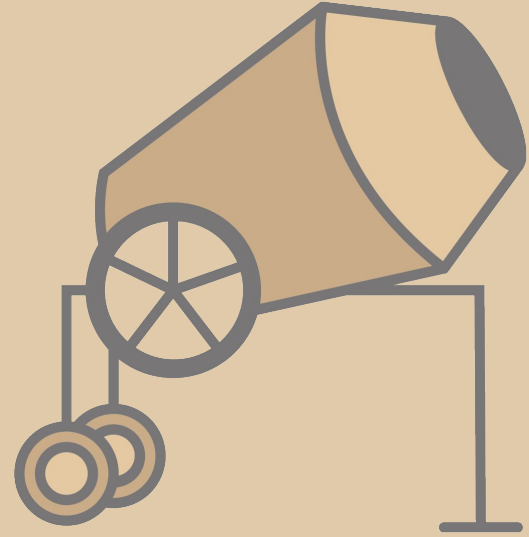
URBANISATION



By 2050, 68% of the world's population will live in urban areas

(Sand and Sustainability: 10 strategic recommendations to avert a crisis., 2022)

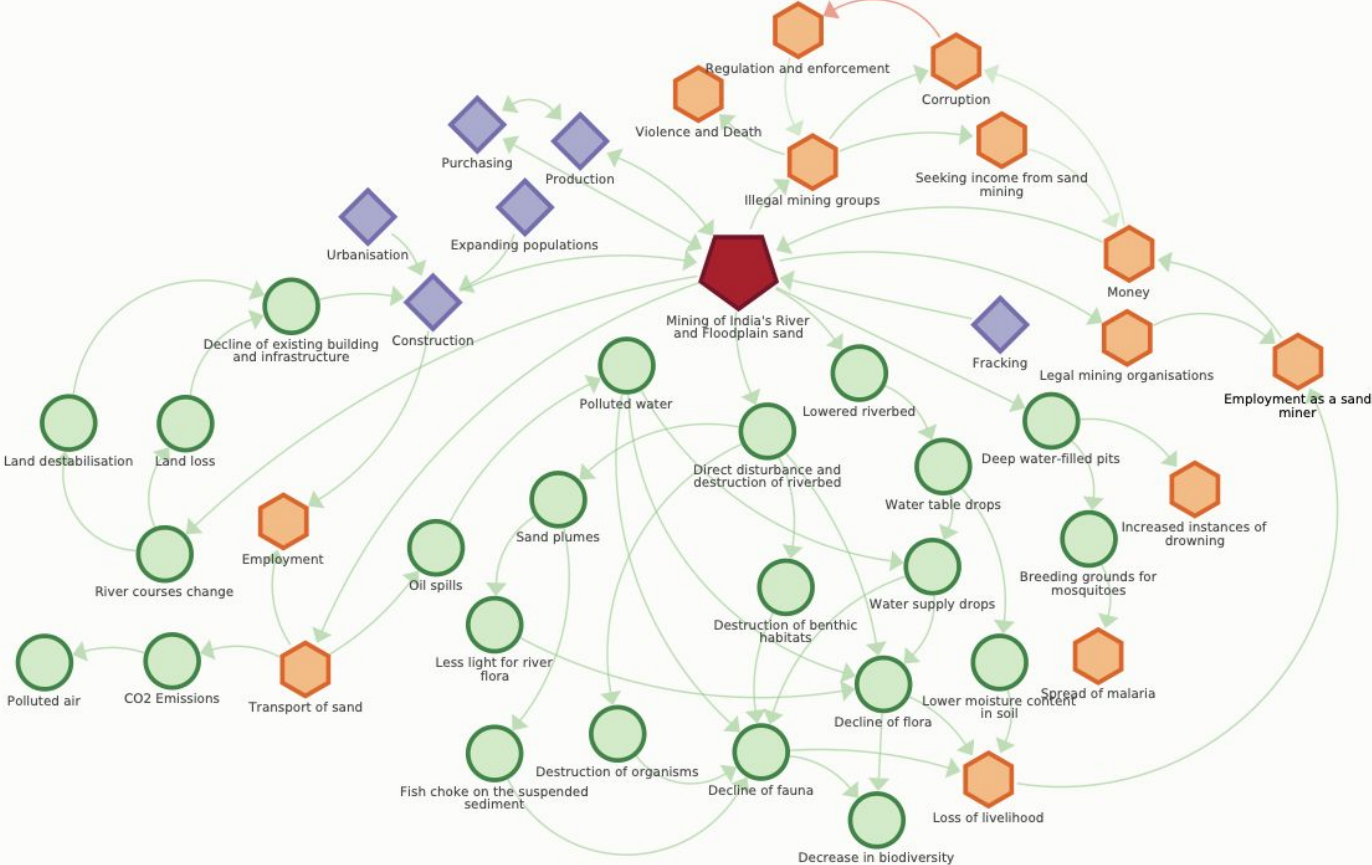
CONSTRUCTION



Since 2000, the amount of construction sand India uses yearly has tripled

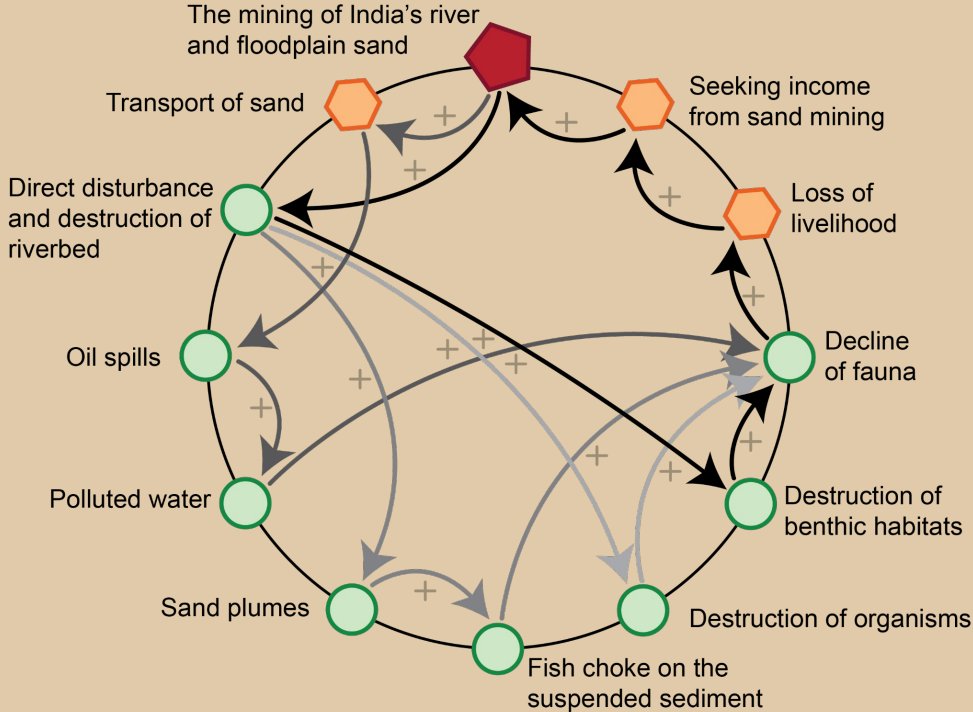
(Beiser, 2019)

CAUSAL MAP

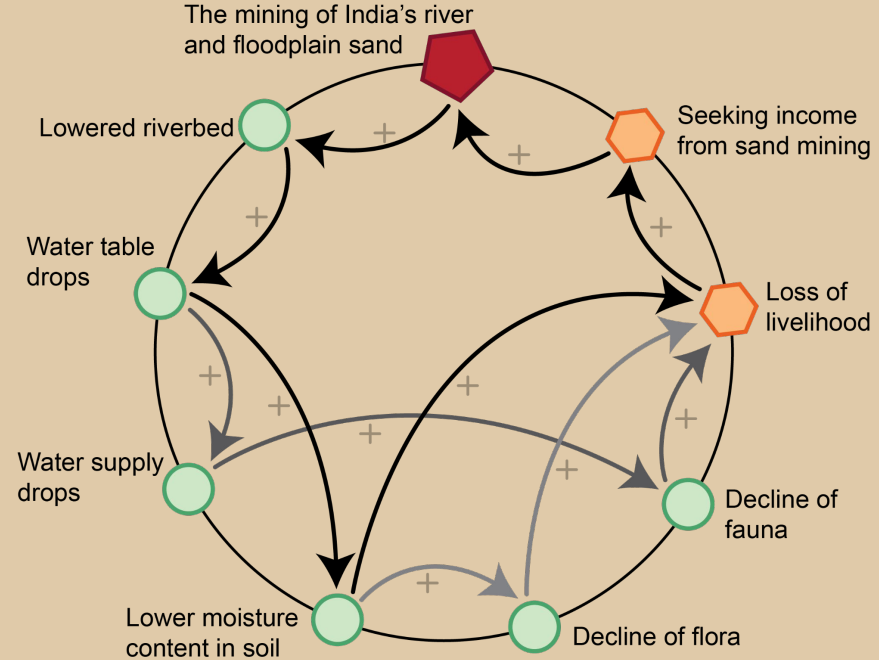


LIVELIHOOD LOOP

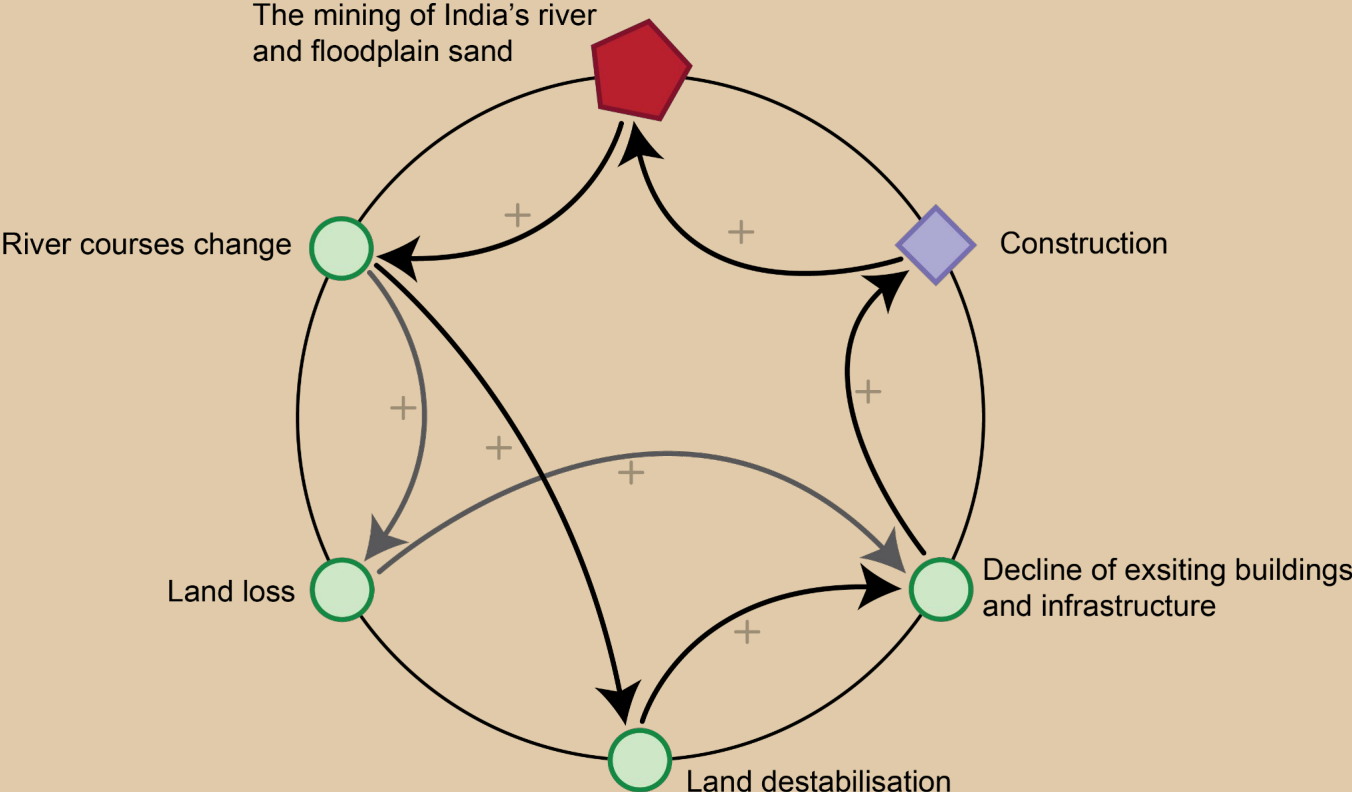
FISHERFOLK



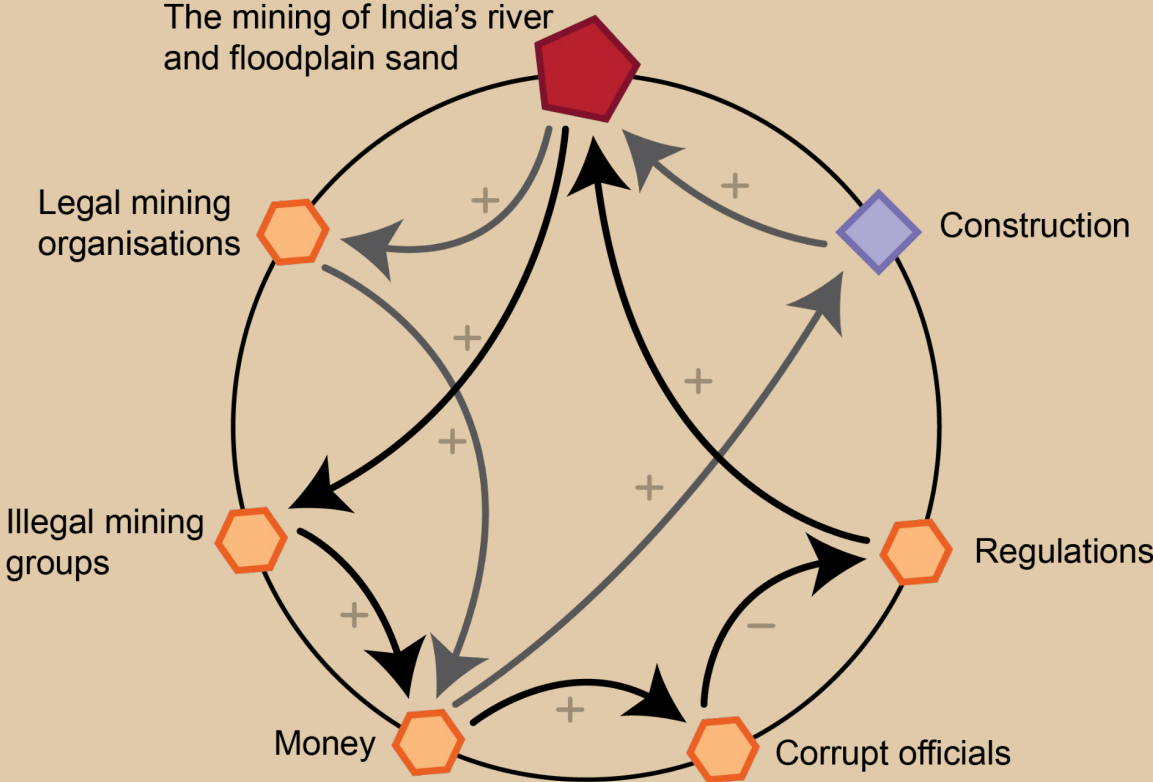
FARMERS



CONSTRUCTION LOOP



CORRUPTION LOOP



ICEBERG MODEL

Spread of diseases Rivers change courses Water table drops Threatened food and water supply

Air and water pollution Sand Mafias Lower moisture levels in the soil Land destabilisation

Threaten existing buildings and infrastructure CO2 emissions Sand plumes **Events**

Increase in construction Degradation of habitats Loss of biodiversity Increase in illegal sand mining

Increase in corrupt politicians & authorities Increase in price of sand Increase in urban populations

Increase in farmers & fisherfolk turning to sand mining as a source of income

Increase in sand usage Increase in violent crimes **Patterns of Behaviour**

Lack of co-ordination between states Politicians & authorities taking bribes No national framework

Poor regulation & enforcement of laws Lack of information Concrete focused construction industry

Lack of resources for enforcement of laws Misaligned policies across the country Reinforcing loops

Lack of communication between stakeholders **Understanding Systemic Structure**

Common misconception that sand is sustainable.

Disconnect between sand, where it comes from and what it's used in

Assumption that sand is infinite

Mental Models

SOLUTIONS LANDSCAPE

1. BETTER REGULATION OF SAND MINING:

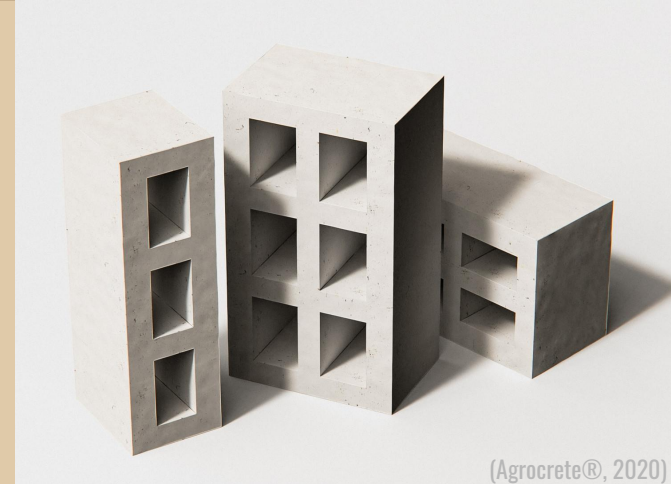
- National Guidelines exist but are not well enforced
- High degree of variation between States regarding sand mining
- Corruption prevails
- Difficult to regulate common pool resource with limited resources



SOLUTIONS LANDSCAPE

2. ALTERNATE MATERIALS & SAND-SUBSTITUTES

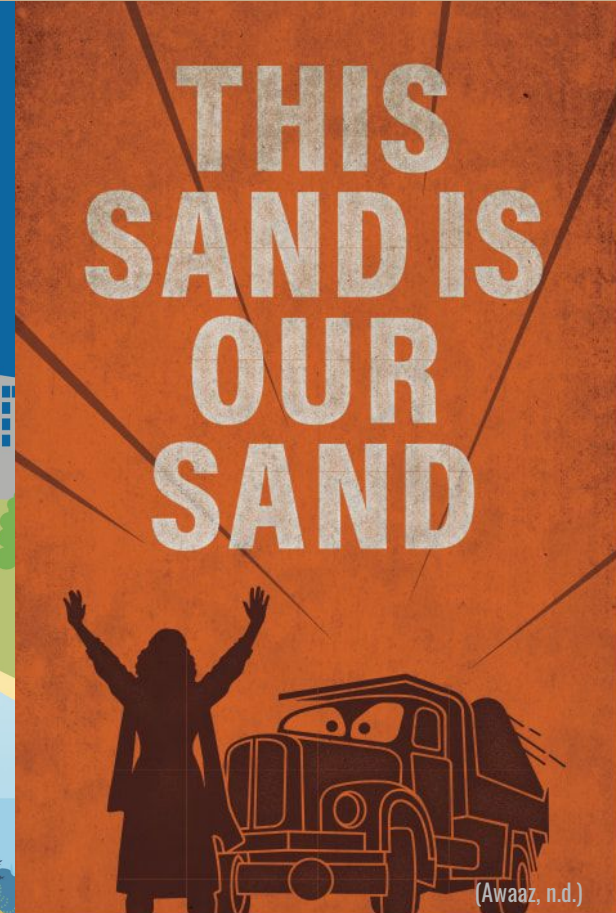
- Crop residues: Agrocrete® by GreenJams
- Straw: AgriBioPanels™ by Strawcture Eco
- Sand-substitutes: Copper slag, bottom ash, shredded plastic waste, recycled-aggregate



SOLUTIONS LANDSCAPE

3. INCREASE AWARENESS OF THE CRISIS

- UNEP Report
- N.G.O Awaaz



1. IMPACT GAPS & LEVERS

STRONGER REGULATORY FRAMEWORKS - NATIONAL & GLOBAL INTEGRATION



(The Frontier Post, 2021)



(The Frontier Post, 2021)

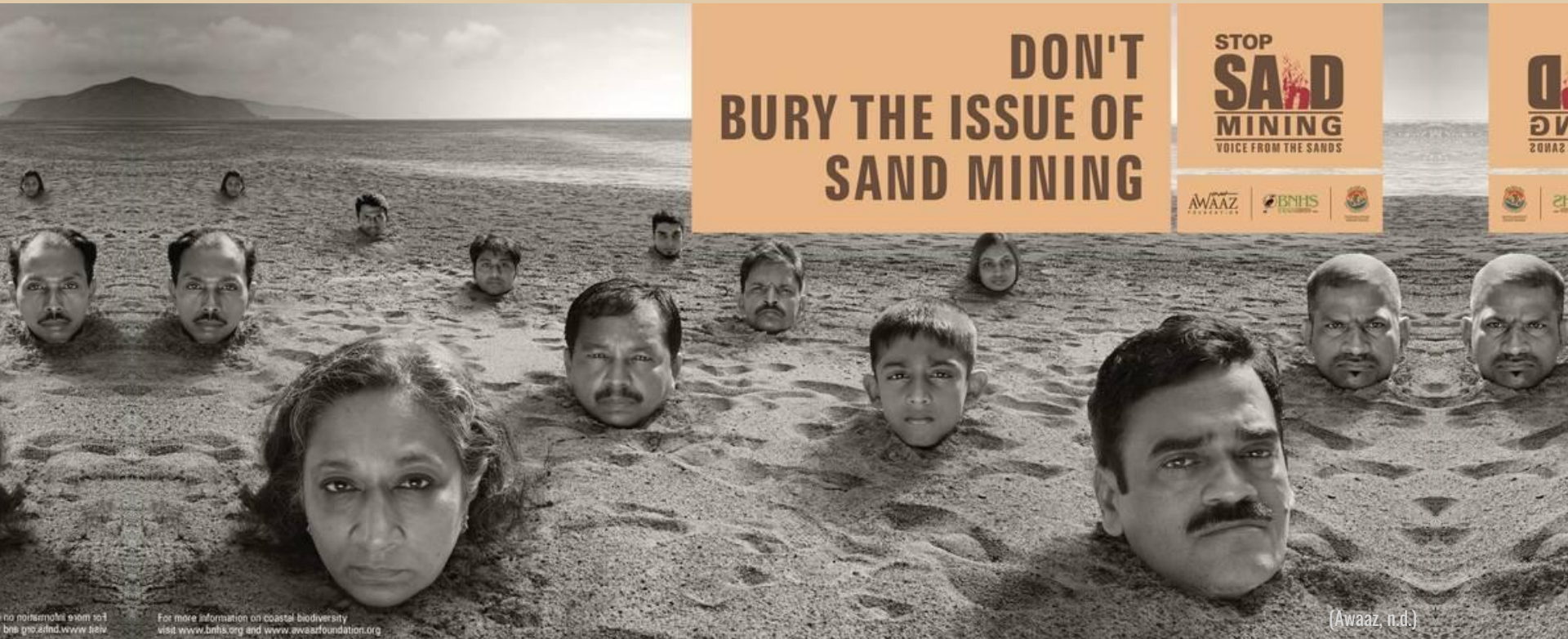
2. IMPACT GAPS & LEVERS

INCREASE USE, RESEARCH & FUNDING OF SAND-SUBSTITUTED CONCRETES & ALTERNATIVE BUILDING MATERIALS



3. IMPACT GAPS & LEVERS

NEED FOR INCREASED EDUCATION AND AWARENESS



LESSONS LEARNED



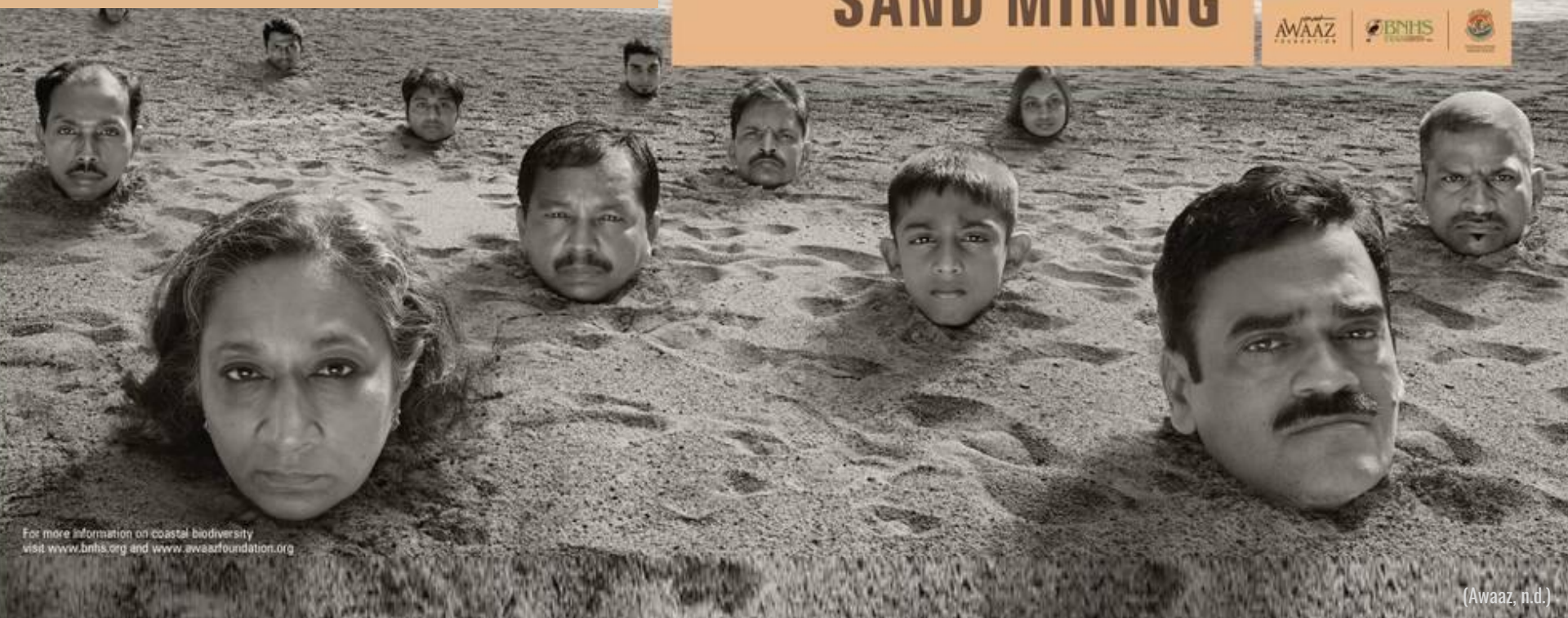
THANK YOU

DON'T BURY THE ISSUE OF SAND MINING

STOP
SAND
MINING
VOICE FROM THE SANDS

AWAAZ
FOUNDATION

BNHS
BIOLOGICAL
NATURALS
HERITAGE
SOCIETY



For more information on coastal biodiversity
visit www.bnhs.org and www.awaazfoundation.org

(Awaaz, n.d.)