

# The Reservoir Sedimentation Crisis: Moving Toward Sustainable Management

## THE PROBLEM: GLOBAL STORAGE LOSS AND ENGINEERING IMPACTS



**0.5–1% Annual Storage Loss**

This trend poses a severe threat to global water security.

Upstream Deposition

Downstream "Sediment Starvation"

Sediment Continuity Disruption



**Critical Engineering Impacts**



Turbine Abrasion



Intake Blockage



Loss of Vital Flood Control Capacity

2022: 13–19%

2050: 26% (Projected)

## THE SOLUTION: SUSTAINABLE MANAGEMENT STRATEGIES

**Reduce and Route Inflow**

Watershed Management

Bypass Tunnels

**Remove and Adapt**

Dredging

Hydraulic Flushing

Raise Dam Heights or Intakes

**Sediment Budget Balance**

Long-term Sediment Inflow



Long-term Sediment Outflow

**System Sustainability**

Restored Sediment Continuity