Environmental Windows as a Risk Management Practice

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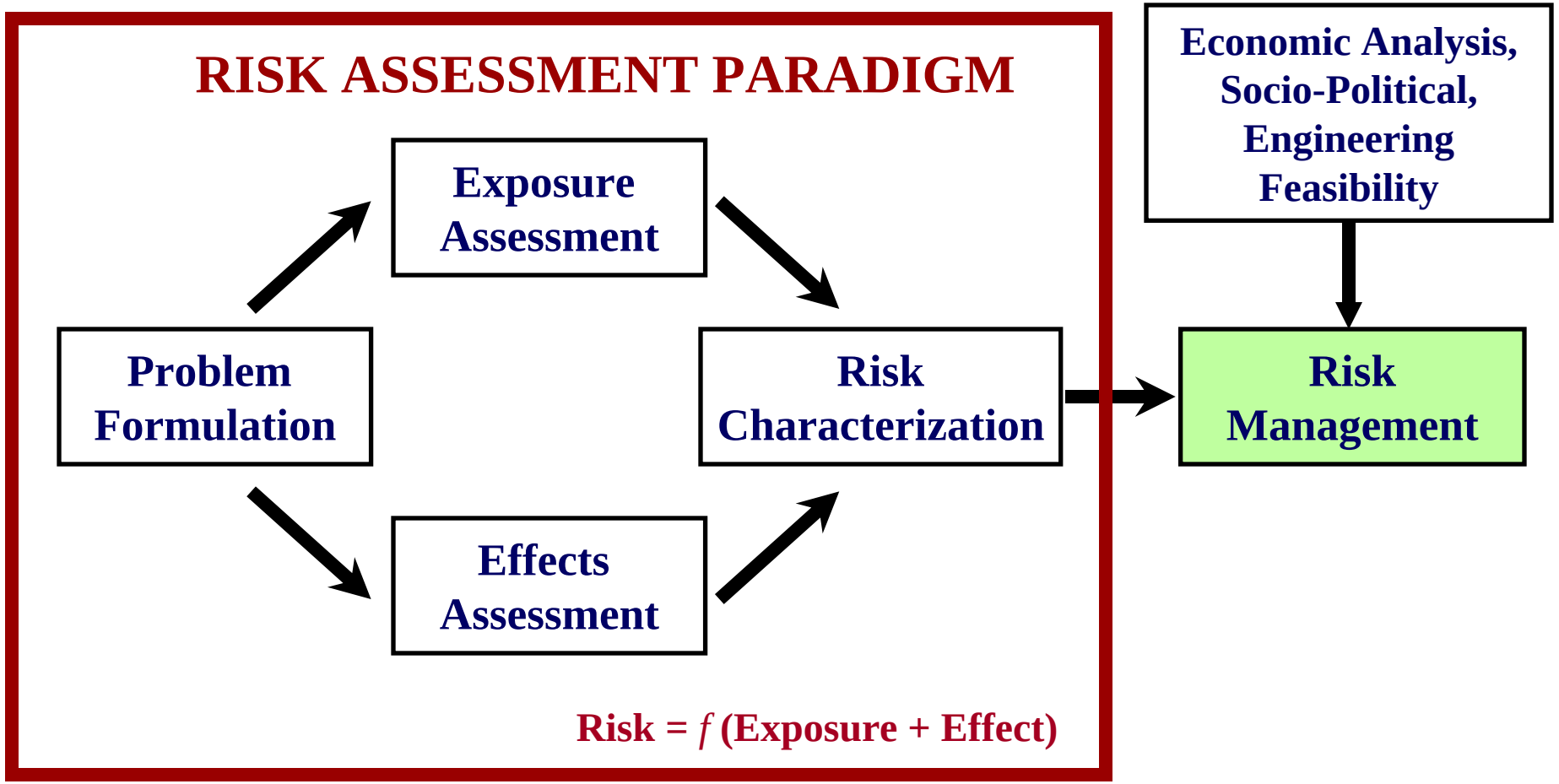
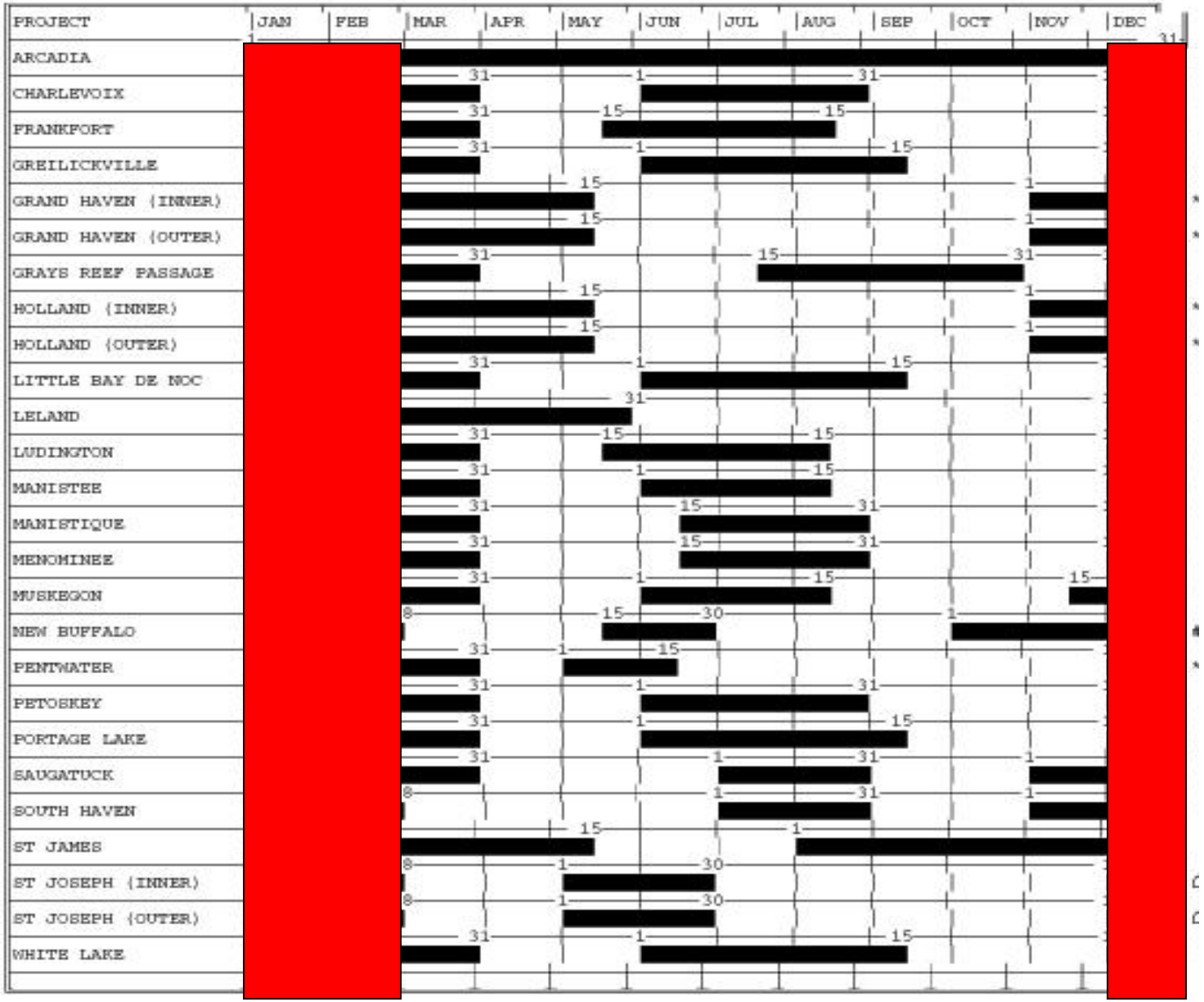
RISK FRAMEWORK



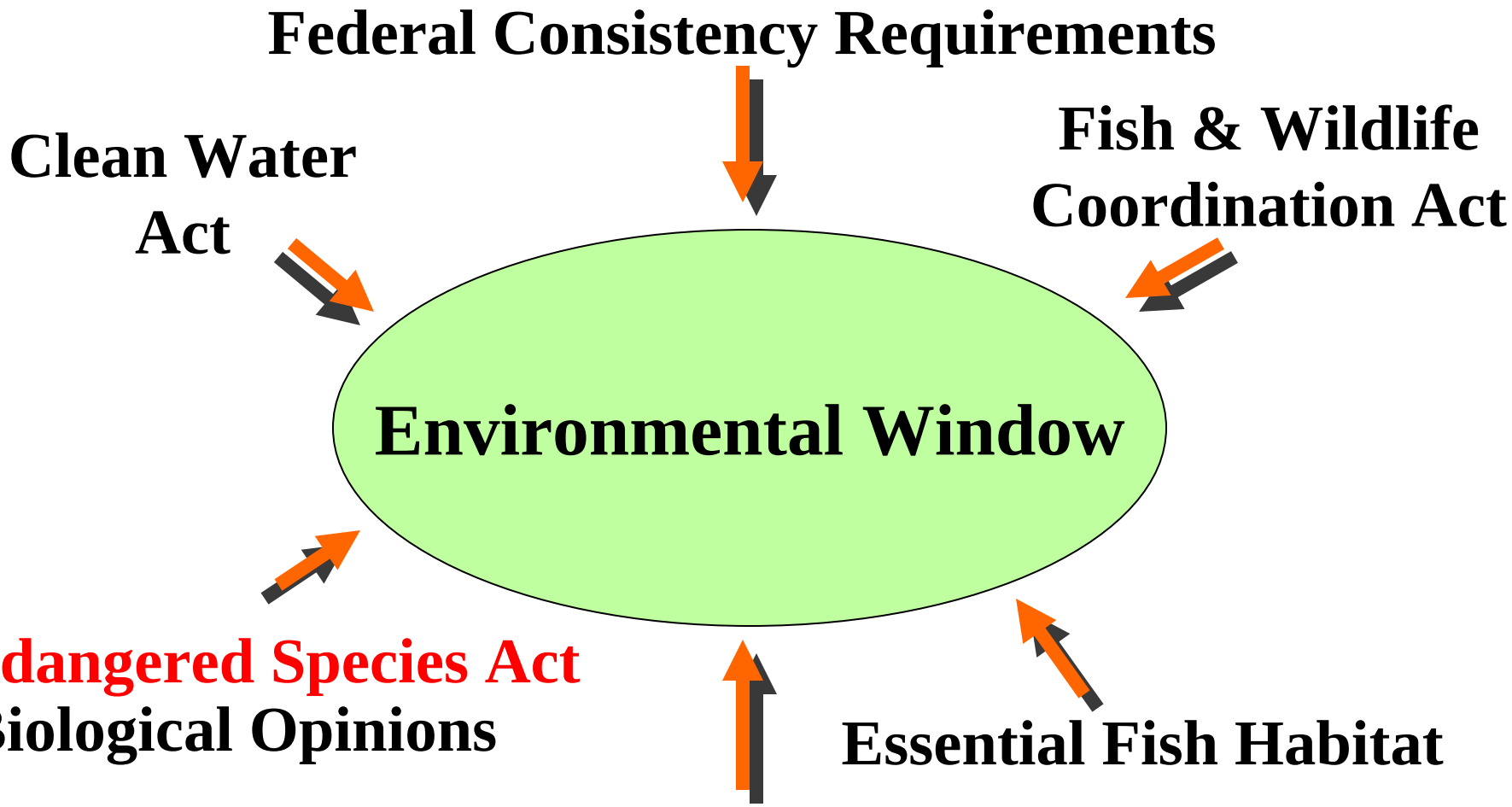
Environmental Window **- a period during which dredging may occur**

Seasonal Restriction **- a period during which dredging is not allowed**

LAKE MICHIGAN WINDOWS



AUTHORITIES



Issues That Lead to Windows

- Contaminated Sediments
- Sediment re-suspension effects
  - Turbidity
  - Total Suspended Solids
- Hydraulic entrainment
- Sedimentation effects
- Noise
- T&E species protection

Consequences of Environmental Windows

- Protracted project schedules and delays
- Rising costs per cubic yard of sediment dredged
- Contentious coordination pitting the need to dredge against the *Precautionary Principle*

The Precautionary Principle

- ***When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause-and-effect relationships are not fully established scientifically.***

(from the 1998 Wingspread Statement)

The Precautionary Principle in Practice

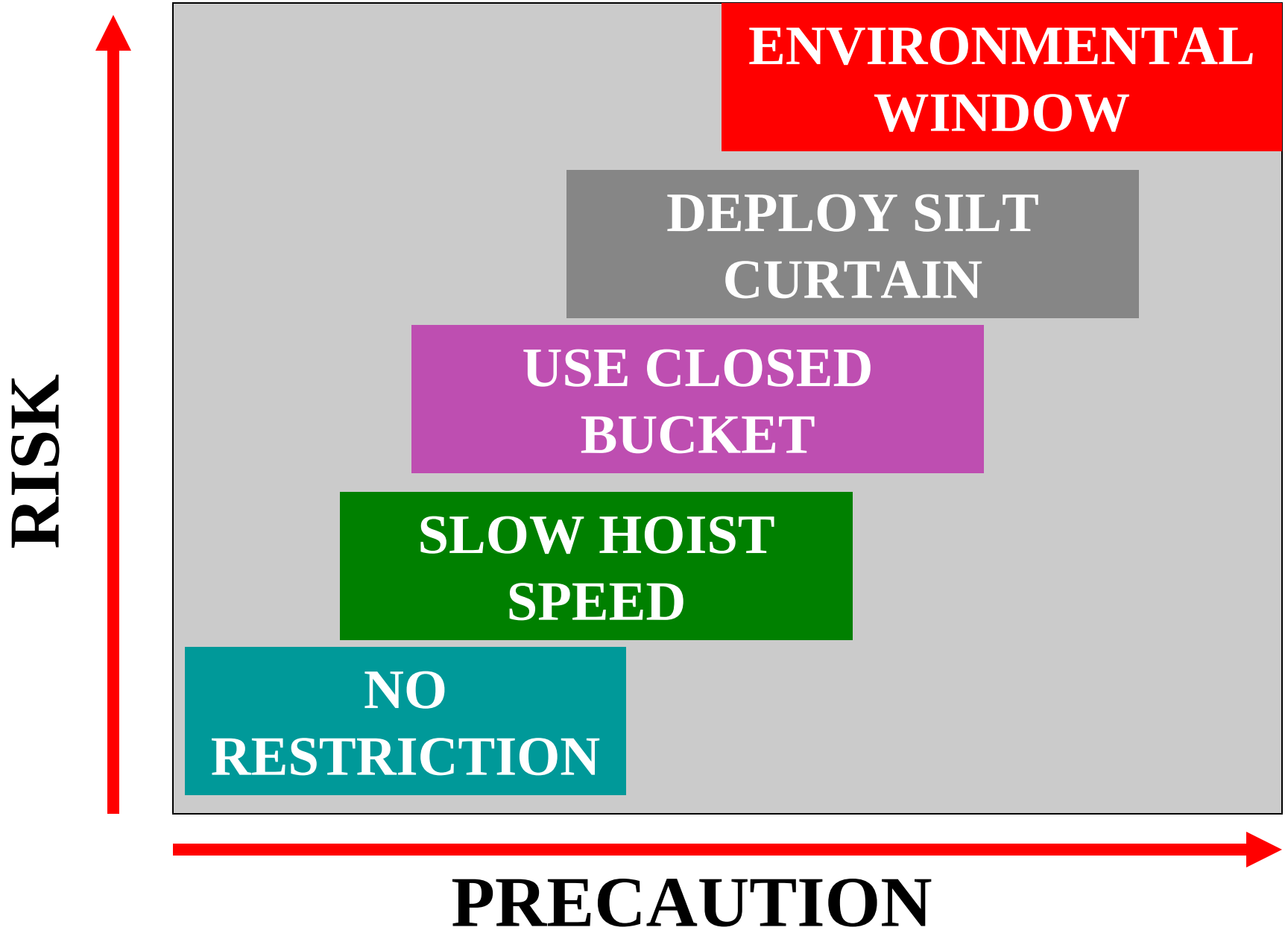
- The PP is intended to be a *risk-adverse* and endorses *adaptive* management practices
- Under the PP precautions are intended to be *preliminary* measures pending completion of risk assessment
- Precautions are *not an endpoint*, but a *starting point* in a search for alternatives
- "The litmus test for knowing when to apply the PP is the combination of *threat of harm and scientific uncertainty*" (Tickner, 1999)

THE PROPORTIONALITY RULE

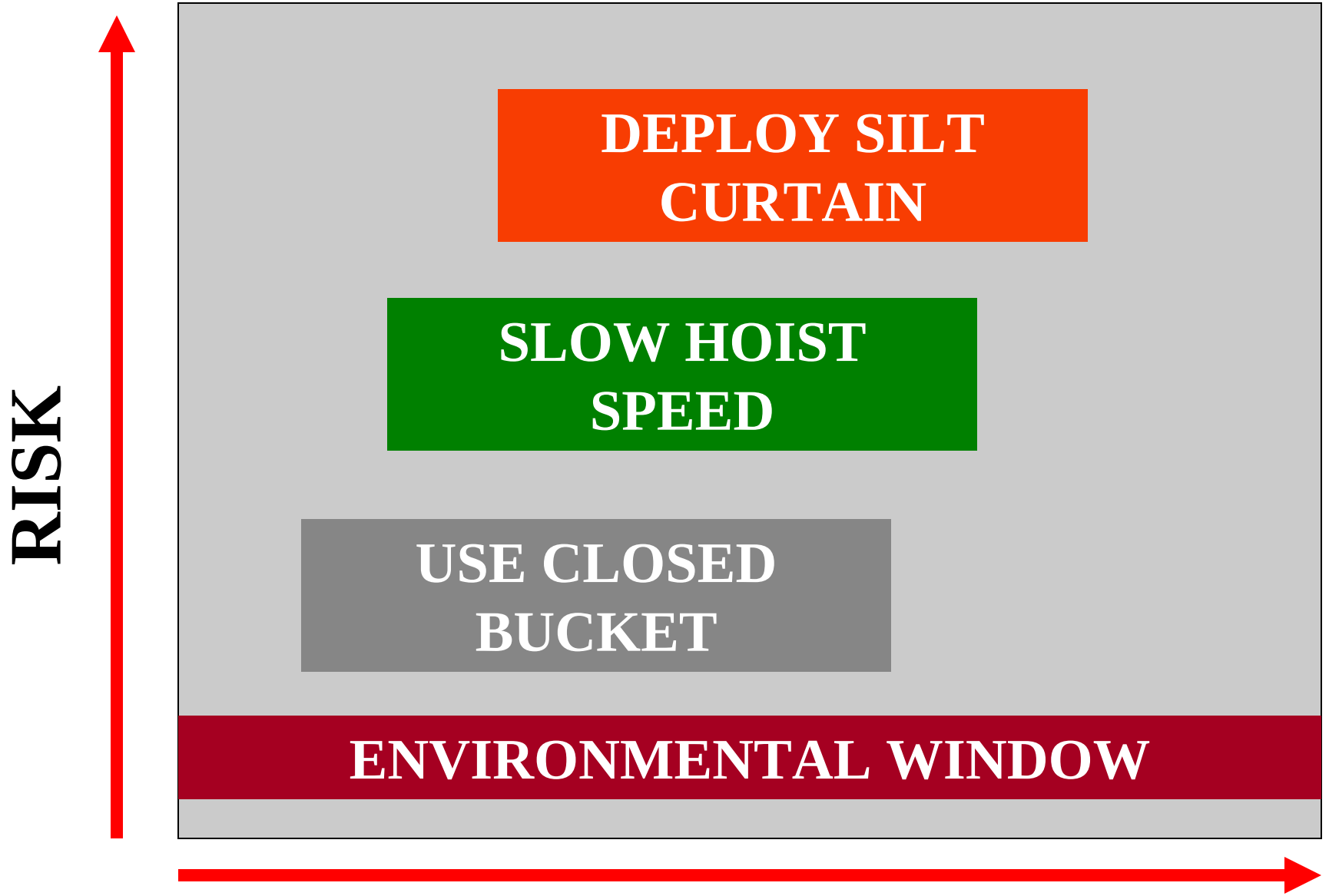
- **The applied precaution should be proportional to the degree of risk**

- **To apply a risk management approach acceptance of this rule is a prerequisite**

An environmental window is an off switch, not a dimmer switch. By default applying a window infers that no risk is acceptable.



FOR CONCERNS RELATED TO TURBIDITY/TSS



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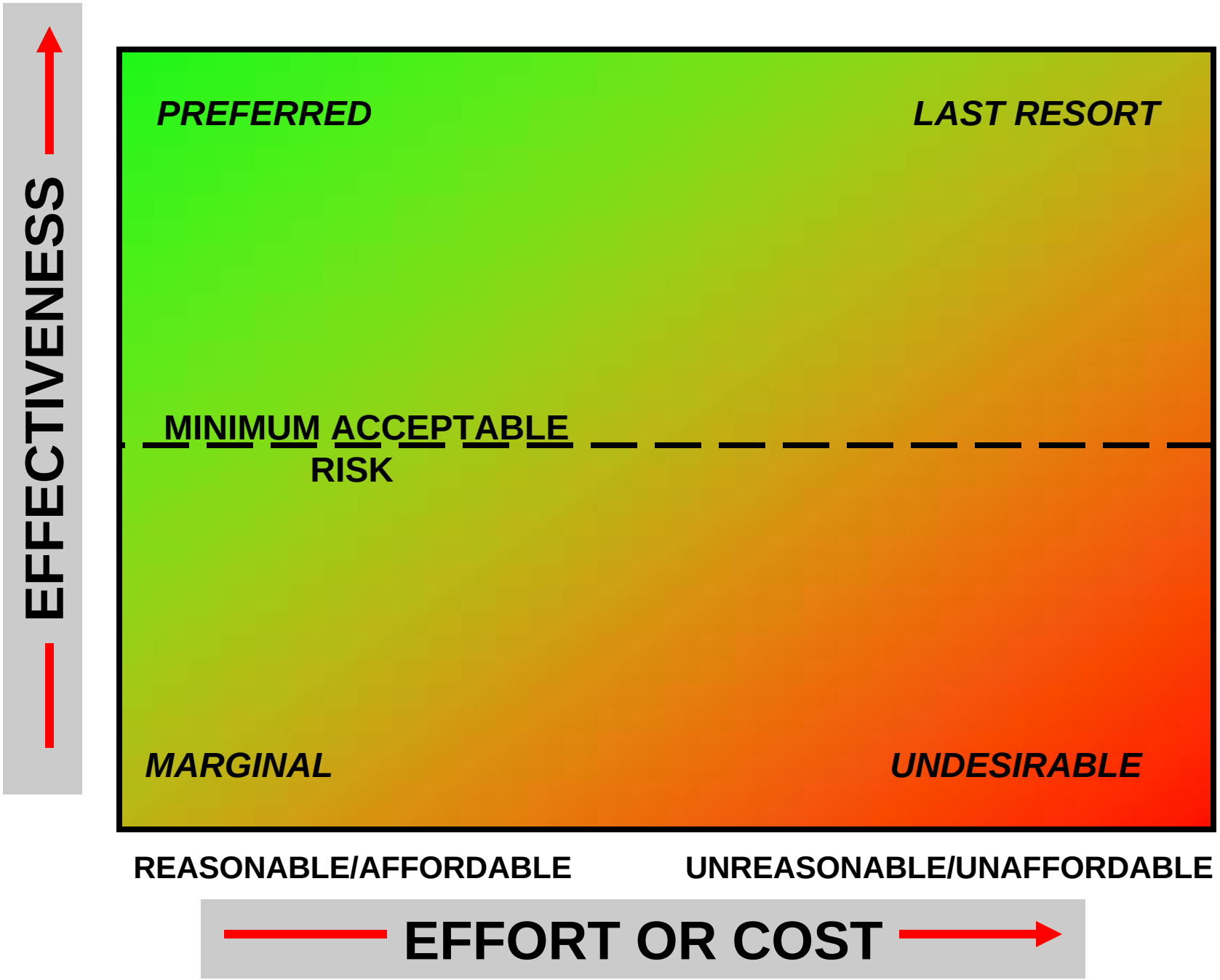
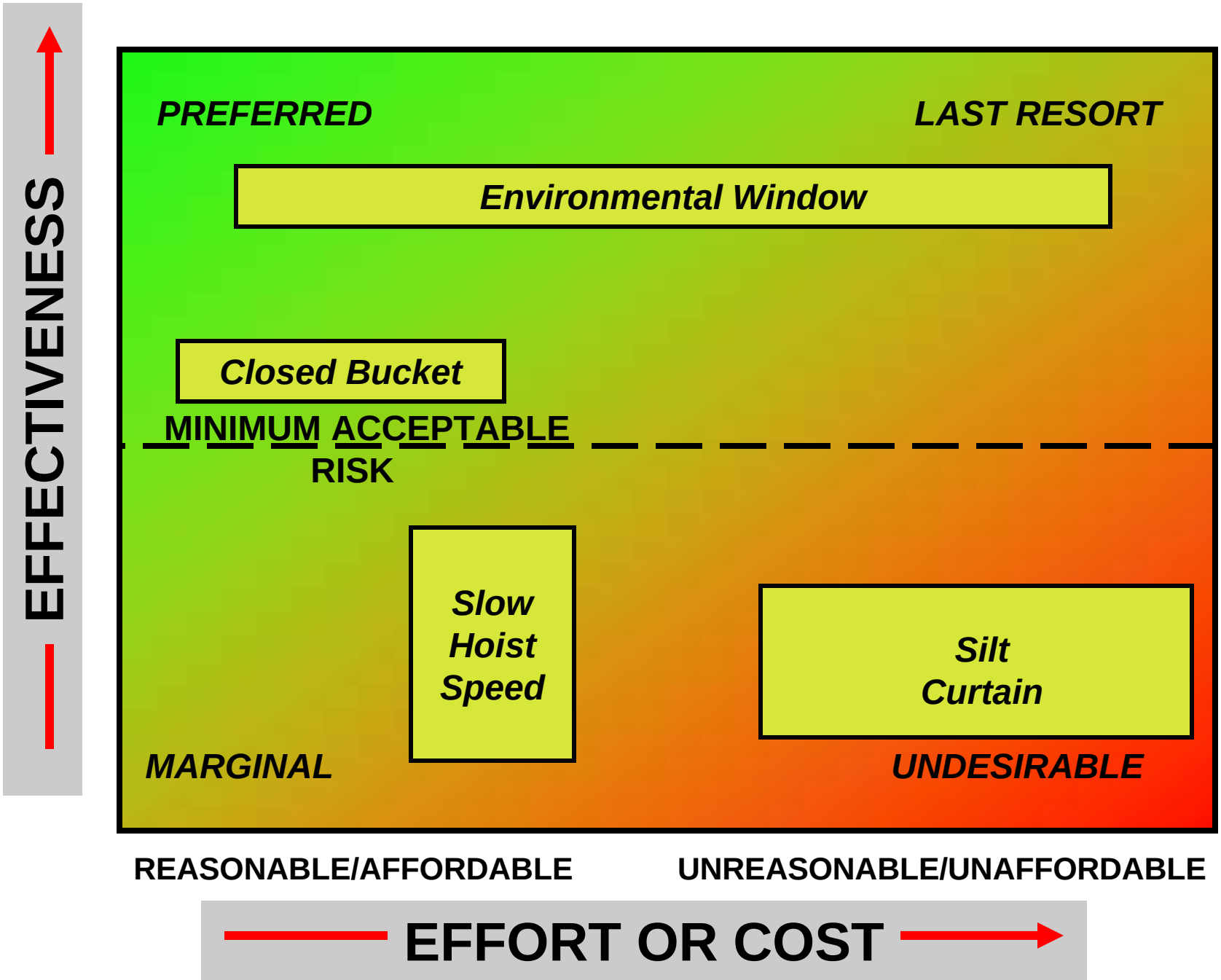

EFFECTIVENESS
PREFERRED
LAST RESORT
MINIMUM ACCEPTABLE RISK
MARGINAL
UNDESIRABLE
REASONABLE/AFFORDABLE
UNREASONABLE/UNAFFORDABLE
EFFORT OR COST


EFFECTIVENESS
PREFERRED
LAST RESORT
Environmental Window
Closed Bucket
MINIMUM ACCEPTABLE RISK
Slow Hoist Speed
Silt Curtain
MARGINAL
UNDESIRABLE
REASONABLE/AFFORDABLE
UNREASONABLE/UNAFFORDABLE
EFFORT OR COST

RISK-INFORMED DECISIONS

- *Biology*
- Life history stage
- Habitat
- Seasonality
- Vulnerability

- *Dredging*
- Type
- Performance
- Waterway
- Temporal/Spatial Scales

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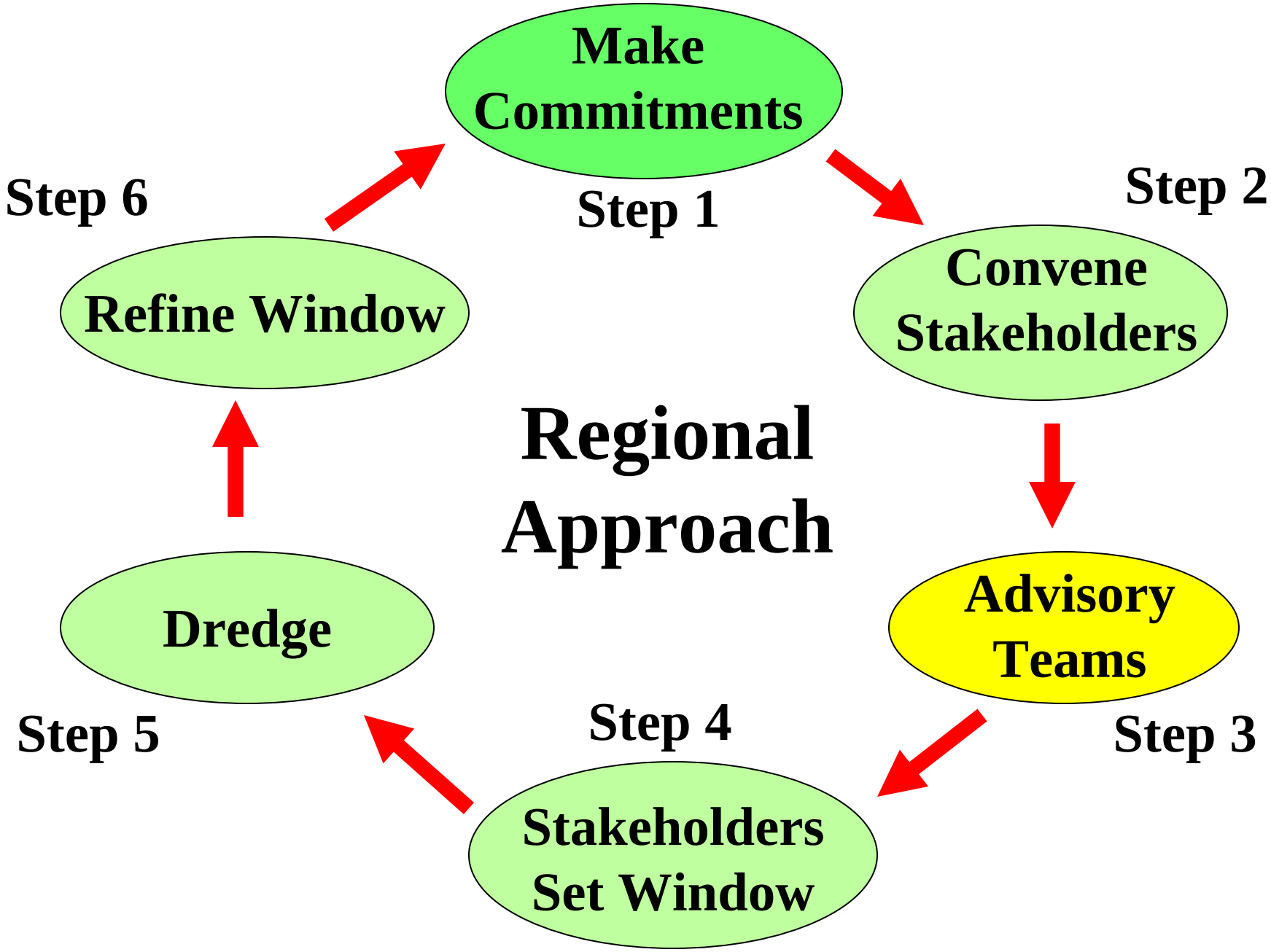
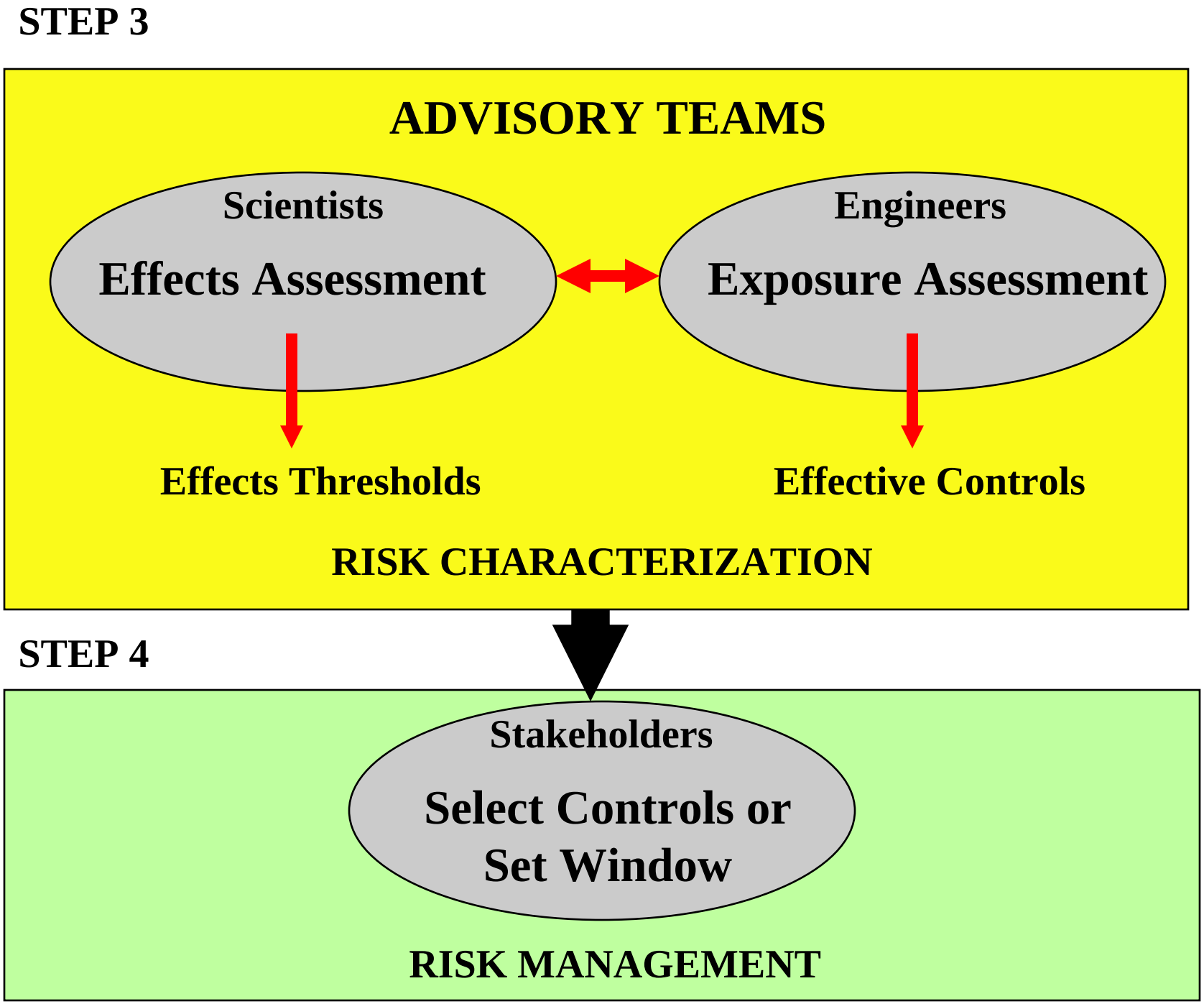
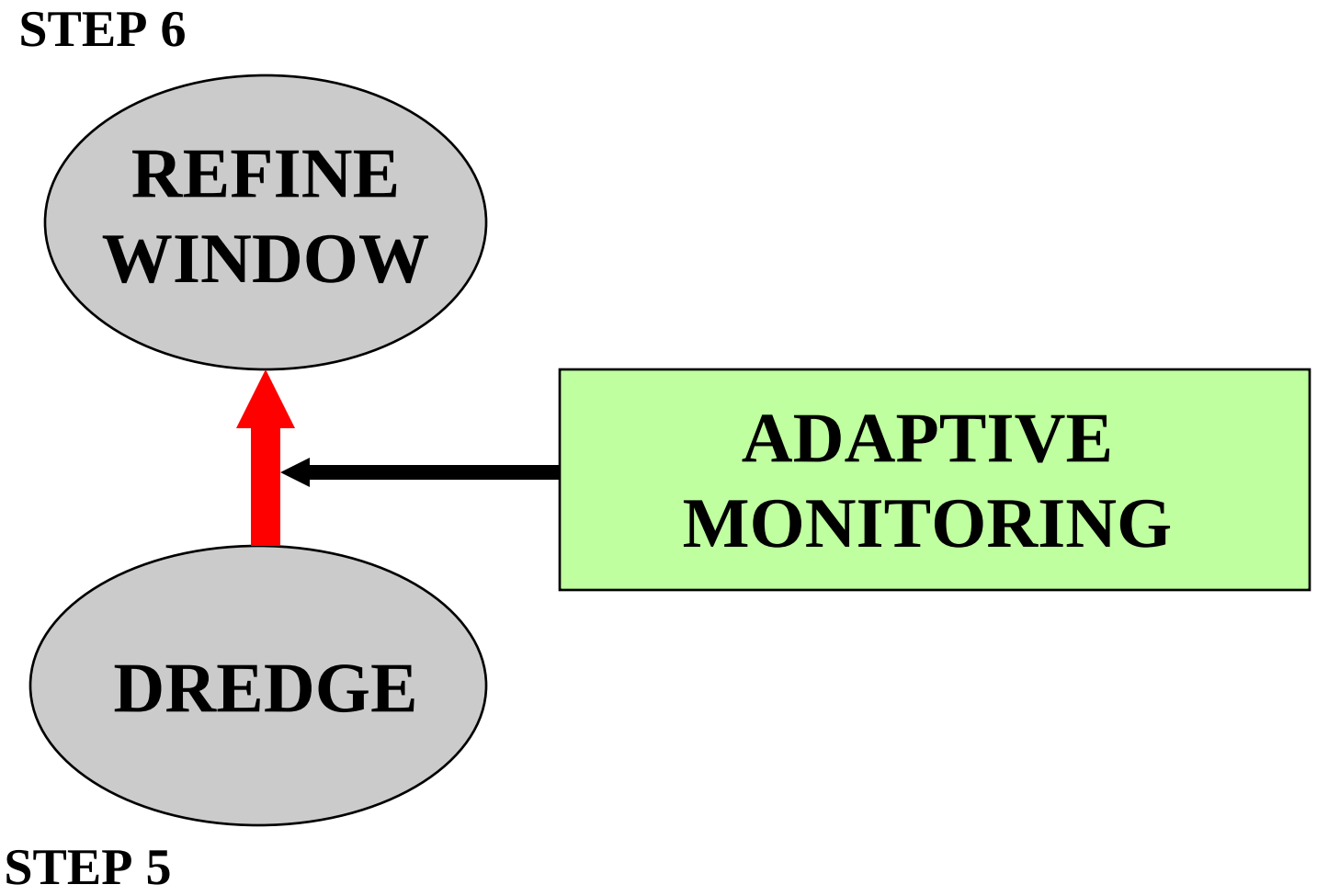

Make Commitments
Step 1
Step 2
Convene Stakeholders
Advisory Teams
Step 3
Step 4
Stakeholders Set Window
Step 5
Dredge
Step 6
Refine Window
Regional Approach


STEP 3
ADVISORY TEAMS
Scientists
Effects Assessment
Engineers
Exposure Assessment
Effects Thresholds
Effective Controls
RISK CHARACTERIZATION
STEP 4
Stakeholders
Select Controls or
Set Window
RISK MANAGEMENT

REQUIRED!!!



Pitfalls in the Present System

- Burden of proof of acceptable risk lies on the dredging community, but targets are fuzzy
- Often weak documentation of effects
- A majority of resource agencies do not have staff dedicated to the dredging process
- Resource agencies have insufficient funds for dredging research or training
- Little incentive exists to change the status quo

Recommendations

- Consider all management practices on an equal basis with windows (e.g., silt curtains, closed buckets, buffer zones, etc.)
- Accept windows as a potentially useful tool based on the merits of a given project and specific sources of risk
- Do not institutionalize windows, but invest in development of alternatives

Recommendations

- Seek science-based, adaptive alternatives
- Obtain commitments to resolve major concerns
- Explore ecological risk-based methods to setting windows
- Train regulators in the dredging process
- Increase awareness of conservation needs among dredgers

Conclusion

- Environmental windows as commonly implemented are a non-adaptive management practice and represent an imperfect application of the precautionary principle
- Progress beyond a perfunctory acceptance of windows as the management practice of first resort requires commitment from all stakeholders