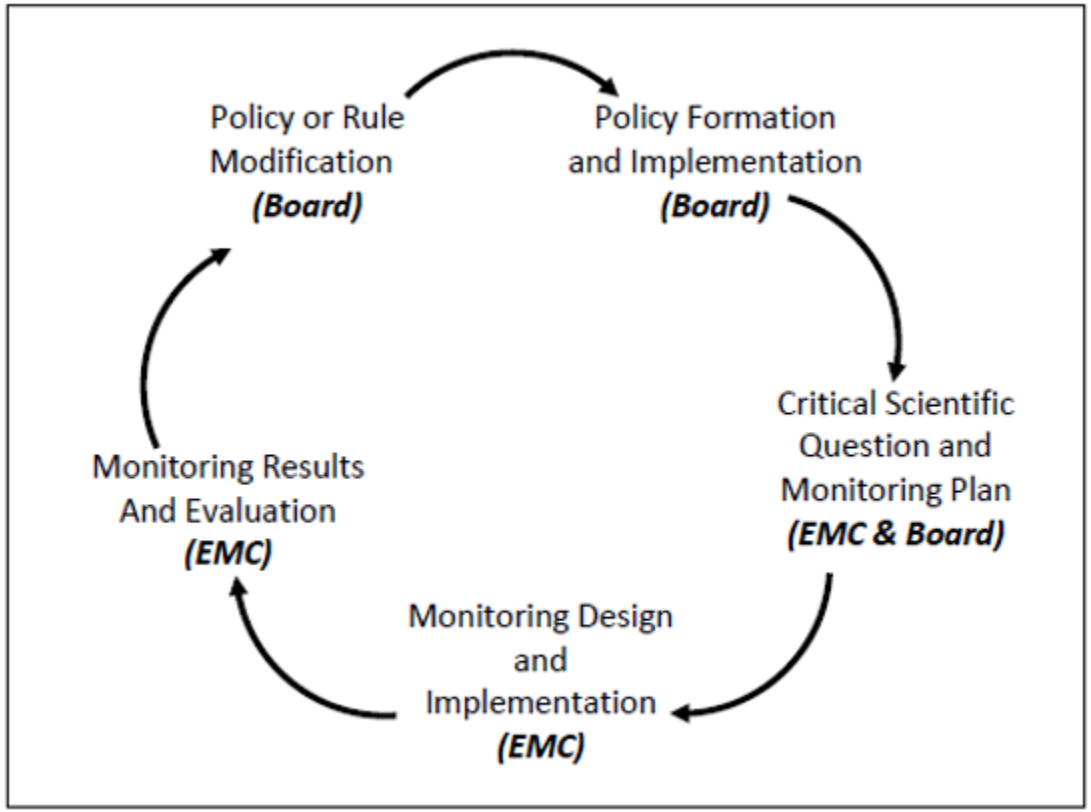
SCIENCE TO POLICY

ADAPTIVE MANAGEMENT BRAINSTORM

APRIL 2020

The Adaptive Management Loop



Adaptive Management Loop	Critical Question/ Plan	Study Design	Results and Evaluation	Policy/Rule Modification	Recommended Changes to Loop

Critical Scientific Question and Monitoring Plan

Are critical questions (per Strategic Plan) being strategically funded:

Are we funding projects is a coordinated manner to build confidence in research results?

> E.g., is there sufficient research (replication) in place to engender confidence in EMC funded study? If not how can EMC improve study design?

Critical Scientific Question and Monitoring Plan

Monitoring projects should focus on the smallest appropriate spatial and temporal scales necessary to achieve the study objectives.

Using an adaptive management framework, experience and refinements made from initial study phases can be used to adjust temporal and spatial scales so that study objectives are achieved.

*Emphasis on process-based understanding will provide a greater likelihood that results can be applied at a variety of scales.

Critical Scientific Question and Monitoring Plan

"To address more complex study objectives, a monitoring plan framework of nested and cross-referenced monitoring studies at a range of scales can be applied... Such a monitoring plan framework can be used to identify scale linkages and increase certainty in cause and effect relationships for complex studies, as well as save on costs and resources over the long-term ..."

Critical Scientific Question and Monitoring Plan

Decision Point

EMC prioritizes general/specific questions on an annual basis. This needs to be a much more explicit process than that detailed in the Strategic Plan.

a. Is study designed to see if rule/policy intent is being met, or if specific rules and/or management approaches are effective?

b. Done on consensus approach by EMC member; or

c. Based on direct consultation with BOF (e.g., mandated priorities).

Monitoring Design and Implementation

Minimum standards (scope, scale, sample size, etc.) to be addressed to translate study results to regional and/or statewide policy application

- Is scale (temporal/spatial) representative?
    - Monitoring studies in California need to be able to detect changes in the environment from both individual and cumulative activities that are both spatially and temporally distributed on the landscape.
    - If EMC study is found to lack representative sampling design, how shall researchers/EMC supplement findings? Is there related research from outside study region to pair with study?

Monitoring Design and Implementation

The necessity for purposeful and rigorous study design in EMC studies

Monitoring Design and Implementation

Decision Point

EMC creates a technical subgroup to:

a. Identify landowner or land base to perform study

b. Define scope of work
Methods and sample design

c. Do targeted outreach to members of the academic community to gauge interest in collaborative monitoring/research effort; and/or

d. Put out a request for proposal (RFP) to implement scope of work (optional if multiple interested PIs).

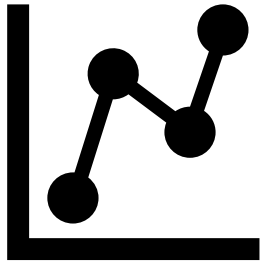
Monitoring Design and Implementation

Decision Point

Implement study

a. Frequent interaction with PI to ensure study objectives are being met

Results and Evaluation



Does study confer sufficient evidence to affect policy change?

- What is our previous scientific understanding and how have the results better informed our current scientific understanding?

  Complementary studies that can back up EMC funded work?

  - Study if not replicated by other EMC studies needs body of science elsewhere to supplement research to demonstrate consensus.
  - Assess feasibility of obtaining additional information to better inform policy

Results and Evaluation

Are study results scientifically relevant and significant?

Both statistical, physical, and/or biological **relevance of the monitoring** and the resulting **acceptable level of scientific uncertainty** should be clearly stated in each monitoring proposal and final report.

Results and Evaluation

- EMC member or technical support staff work with the PI to distill study results in a way that is appropriate and relevant for decision making.
    - Ensure projects “go extra mile” and provide recommendations to management issues (e.g. thresholds of significance)

Results and Evaluation

Decision Point

Analyze, prepare, and review findings. This can be done by:

a. Peer-reviewed literature; and/or
   - Will likely emphasize scientific relevance over applied learning
   - Science vetted through anonymous peer review

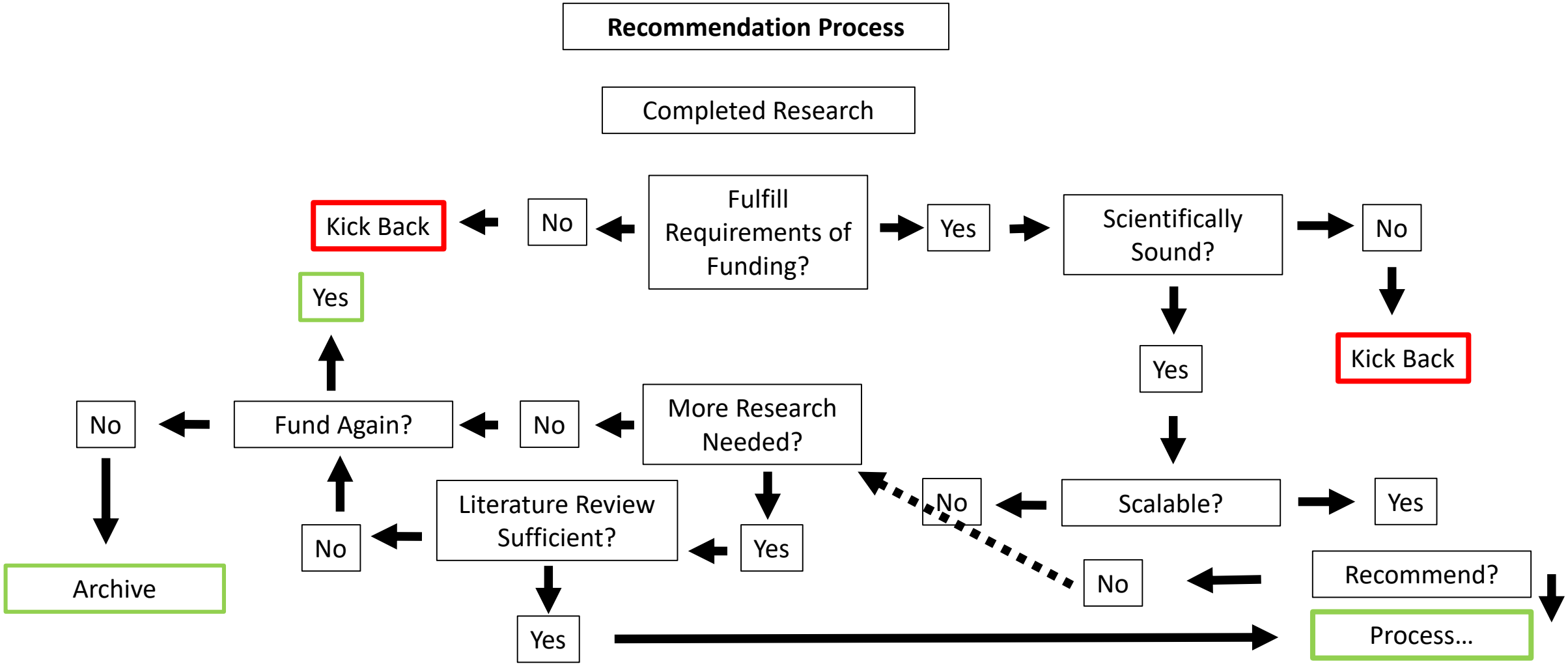
b. Technical report
   - Can emphasize science and rule/policy relevance
   - Not vetted through anonymous peer review
   - EMC can pay for independent peer review ($)

Policy/Rule Modification

To provide sufficient decision space for policy makers, what are the full and objective range of policy options as a result of the study and related science?

- Provide an objective, good faith assessment of uncertainty and tradeoffs associated with each policy option

Policy/Rule Modification



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Policy/Rule Modification

Decision Point

Communicate findings to BOF

Communicate findings to Forest Practice Committee.

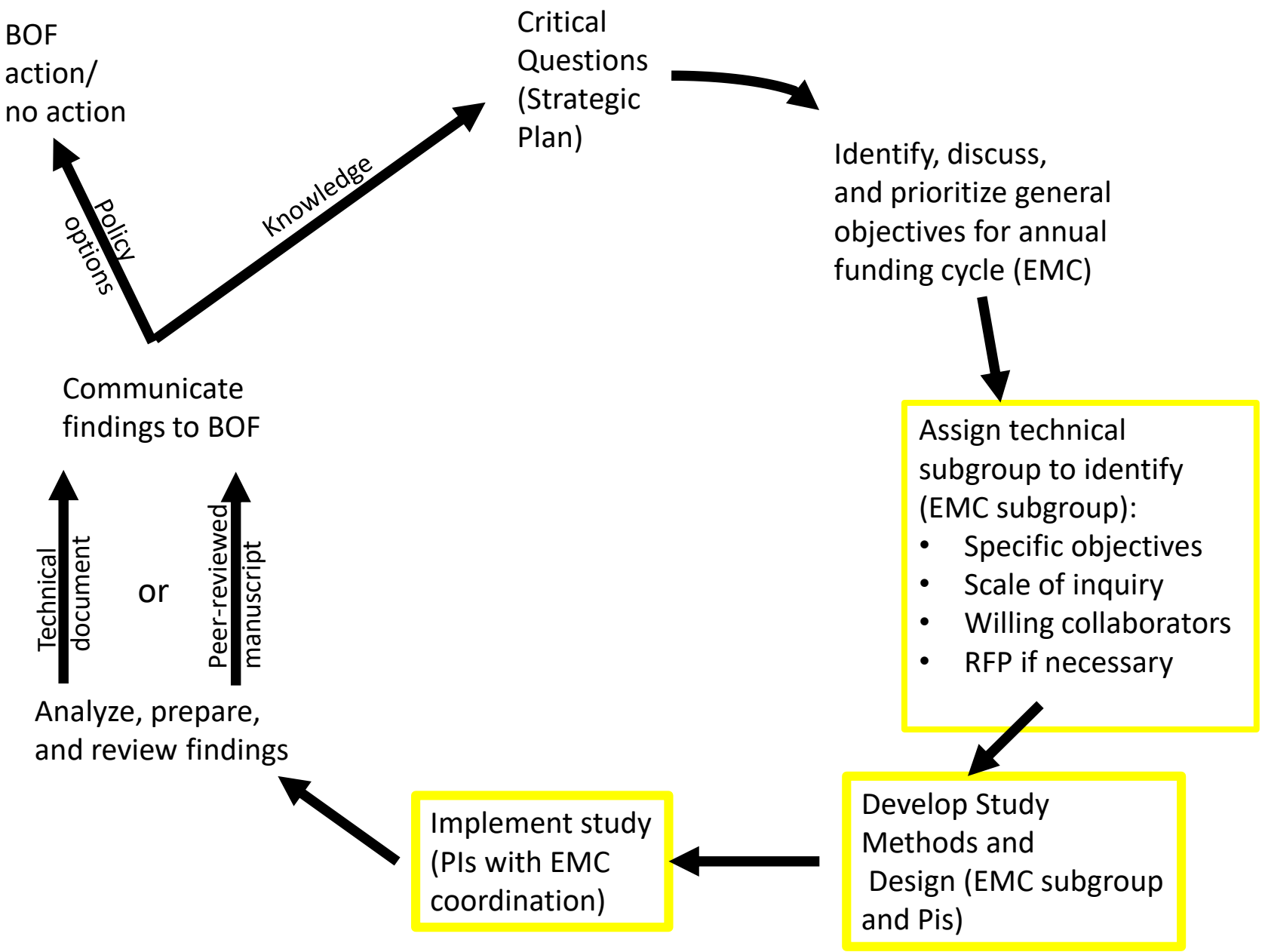
a. Done by technical subgroup and/or PI

i. Stick to scientific findings and policy implications only (maintain science-policy firewall). Be on hand to answer questions from Board Members

or

ii. Objectively outline the full array of policy options to the Forest Practice Committee.

Acknowledge uncertainties and tradeoffs for each option



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