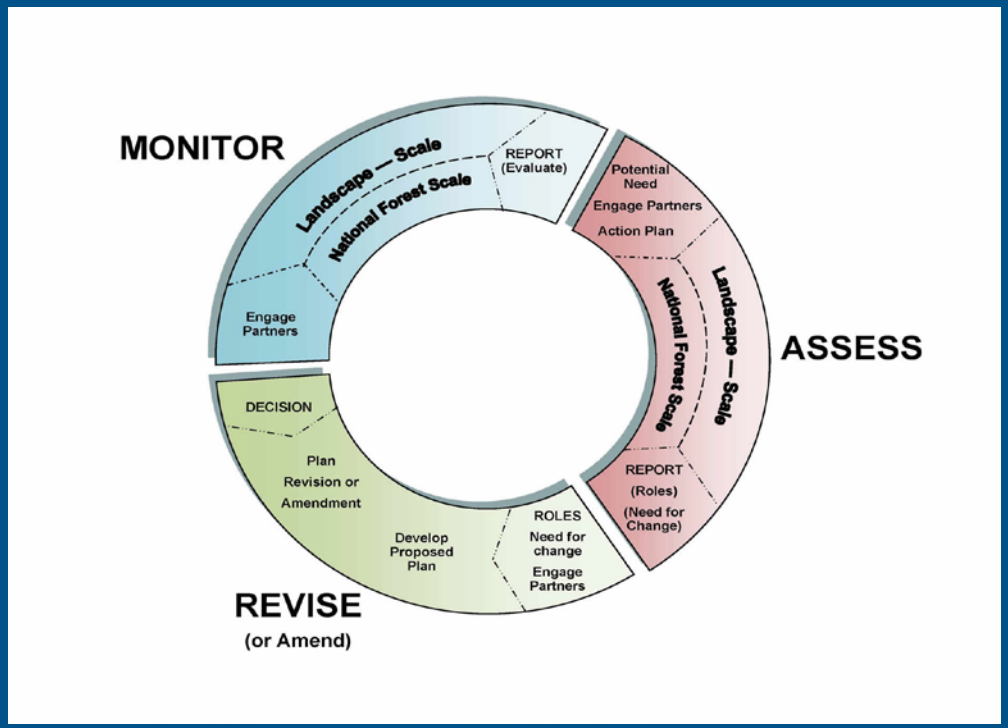
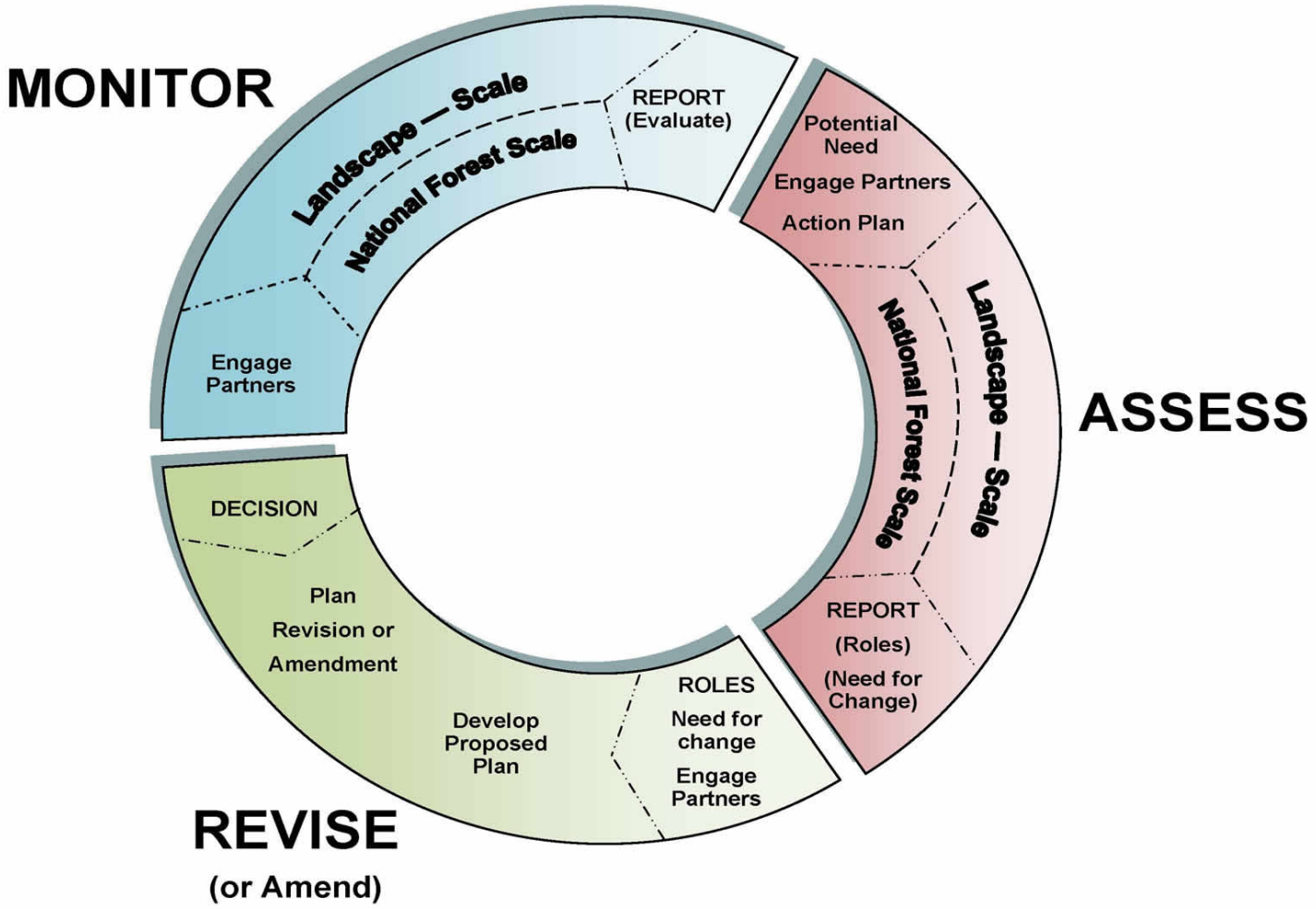
Climate Change Adaptation in Forest Planning

Aimee Delach



Overview of Forest Planning Regulations

- National Forest Management Act, 1976
- Planning rule: 1982 – basis for all existing plans
- Multiple iterations of planning rules and litigation through 1990s and 2000s
- Most recent rule was adopted in April 2012 (36 CFR 219)
  - Includes climate change
- Forest Service is currently seeking comments (through April 29) on directives to guide the development of individual forest plans


MONITOR
Landscape — Scale
National Forest Scale
REPORT
(Evaluate)
Engage
Partners
ASSESS
Potential
Need
Engage Partners
Action Plan
Landscape — Scale
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REPORT
(Roles)
(Need for
Change)
REVISE
(or Amend)
DECISION
Plan
Revision or
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Proposed
Plan
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Engage
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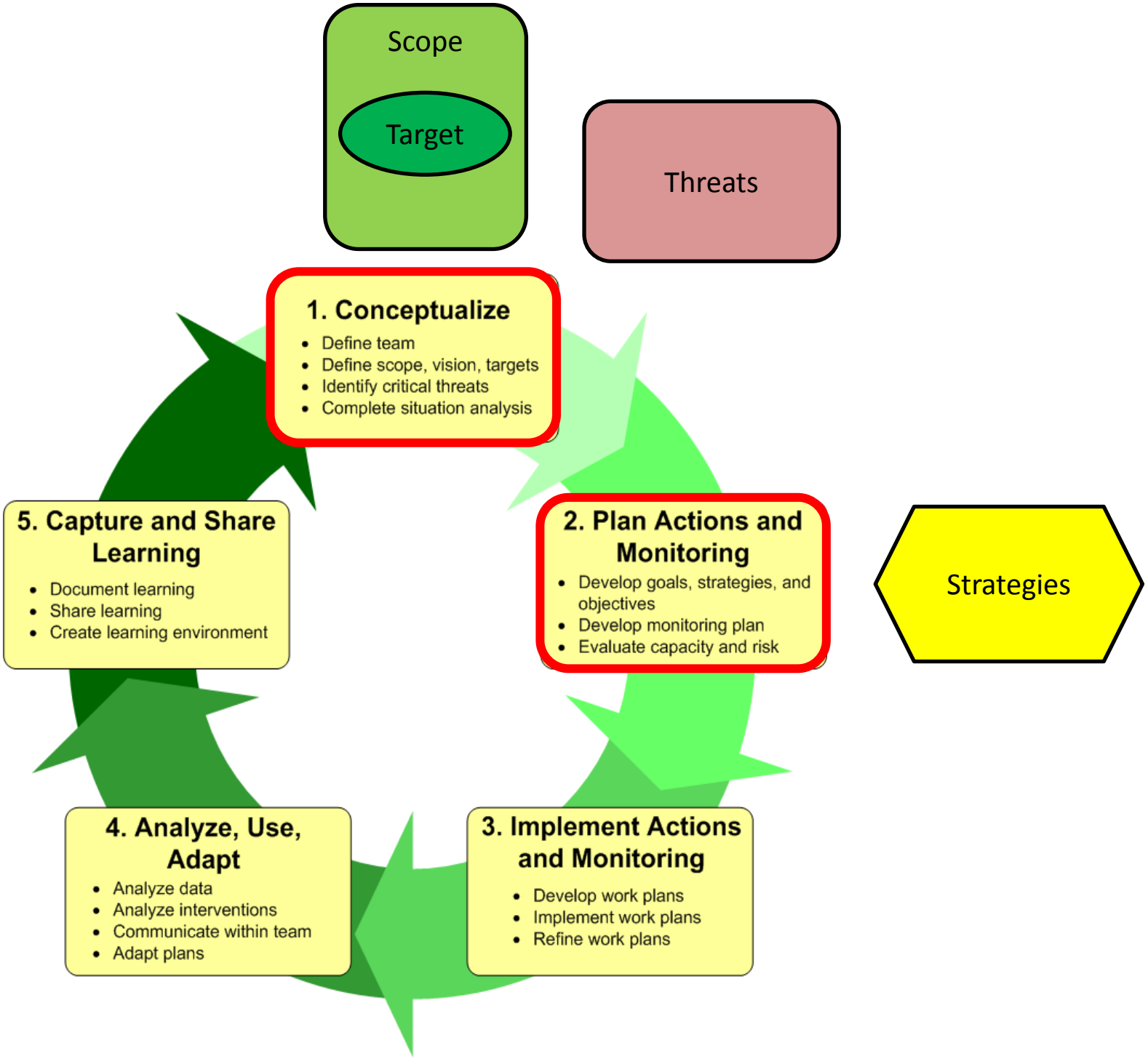
“Early Adopter” Forests

- Sierra, Sequoia, & Inyo (CA)
- Nez Perce & Clearwater (ID)
- Chugach (AK)
- Cibola (NM)
- El Yunque (PR)

Can we apply the “Rosetta Stone” framework to improve integration of climate change adaptation into the forest planning process?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Complete situation analysis
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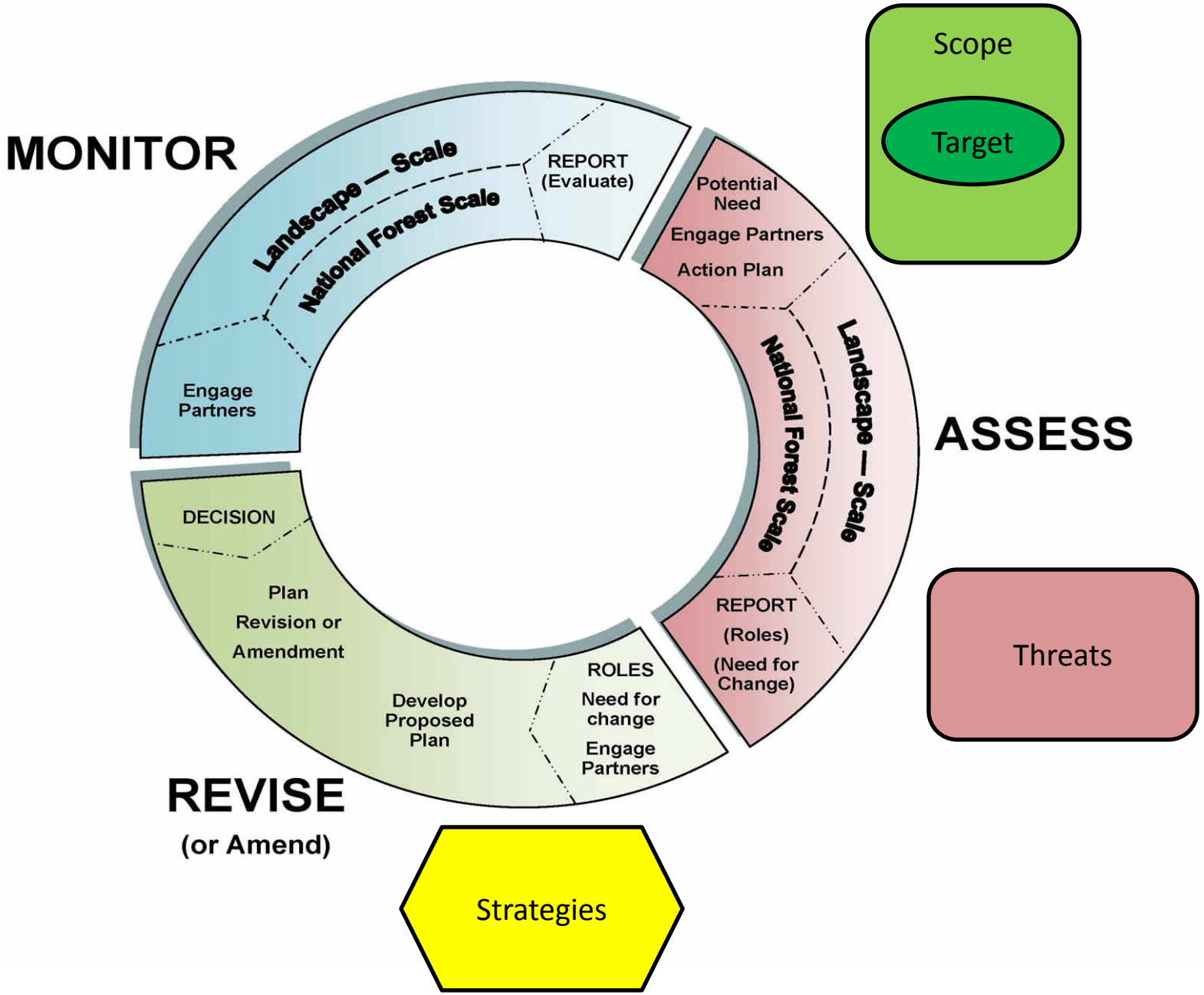
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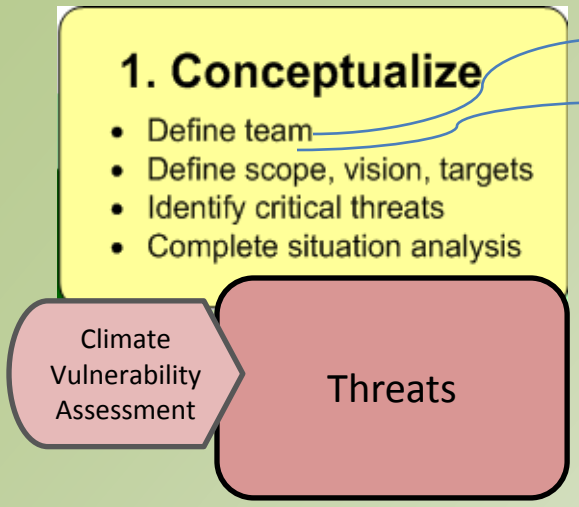
OPEN STANDARDS 2012 Planning Rule (36 CFR 219)



Role of Science (§219.3), Public participation (§219.4)

Plan area (§219.1, §219.2b)

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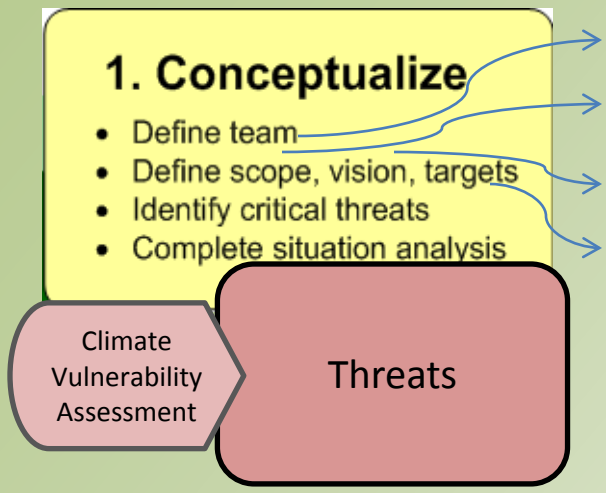

Role of Science (§219.3), Public participation (§219.4)

Plan area (§219.1, §219.2b)

Sustainability, Diversity, Multiple Use, Timber (§219.8-11)

ECOLOGICAL SUSTAINABILITY (219.8a)

- Ecosystem integrity
- Air, soil, and water
- Riparian areas
- Best Management Practices for water quality

SOCIAL AND ECONOMIC SUSTAINABILITY (219.8b)

DIVERSITY OF PLANT AND ANIMAL COMMUNITIES (219.9)

- Ecosystem integrity & diversity
- Species-specific elements (for listed, proposed, candidate and other species of concern)

MULTIPLE USE (219.10)

TIMBER (219.11)

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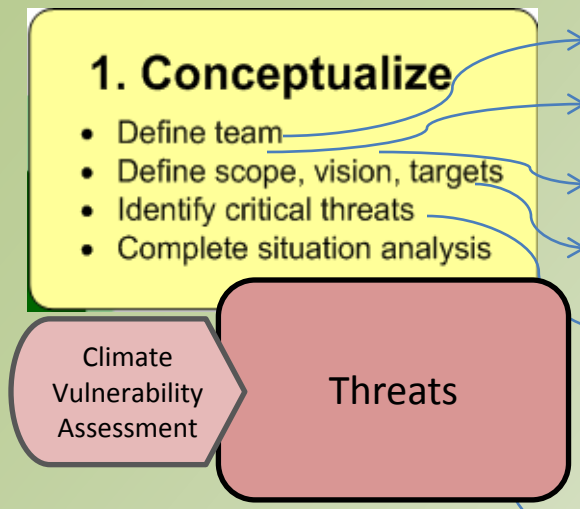


Role of Science (§219.3), Public participation (§219.4)

Plan area (§219.1, §219.2b)

Sustainability, Diversity, Multiple Use, Timber (§219.8-11)

Defined within each of the above sections

Drivers and stressors §219.6b3 §219.8a1iv, §219.9a8:

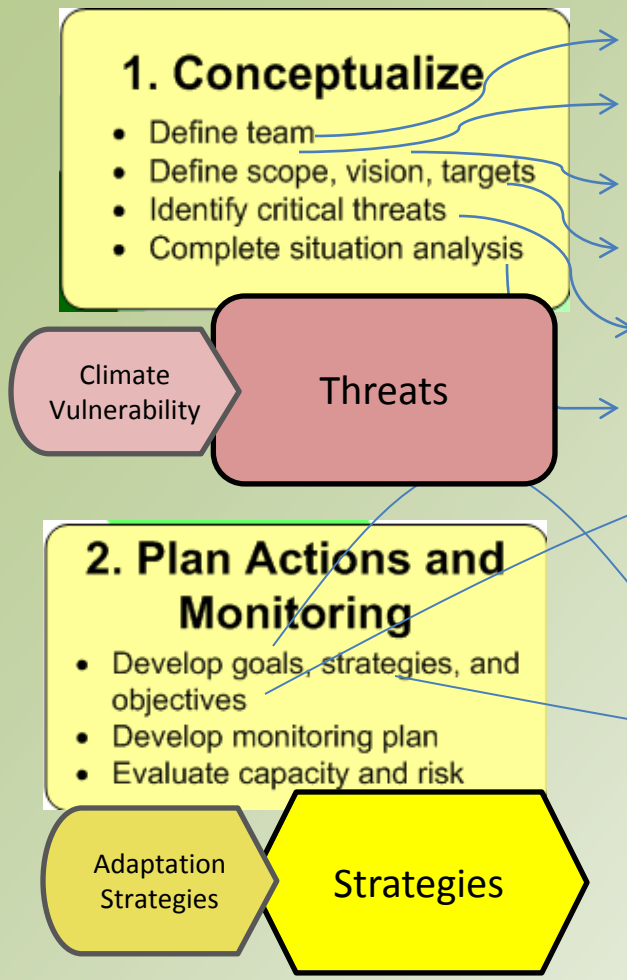
"System **drivers**, including dominant ecological processes, disturbance regimes, and **stressors**, such as natural succession, wildland fire, invasive species, and ***climate change***; and the ability of terrestrial and aquatic ecosystems on the plan area to adapt to change"

Assessment (§219.6)

Content (“Scope”) of the Assessment

1) Terrestrial ecosystems, aquatic ecosystems, and watersheds;
2) Air, soil, and water resources and quality;
3) System drivers, including dominant ecological processes, disturbance regimes, and stressors, such as natural succession, wildland fire, invasive species, and climate change; and the ability of terrestrial and aquatic ecosystems on the plan area to adapt to change;
4) Baseline assessment of carbon stocks;
5) Threatened, endangered, proposed and candidate species, and potential species of conservation concern present in the plan area;
6) Social, cultural, and economic conditions;
7) Benefits people obtain from the NFS planning area (ecosystem services);
8) Multiple uses and their contributions to local, regional, and national economies;
9) Recreation settings, opportunities and access, and scenic character;
10) Renewable and nonrenewable energy and mineral resources;
11) Infrastructure, such as recreational facilities and transportation and utility corridors;
12) Areas of tribal importance;
13) Cultural and historic resources and uses;
14) Land status and ownership, use, and access patterns;
15) Existing designated areas located in the plan area including wilderness and wild and scenic rivers and potential need and opportunity for additional designated areas.

OPEN STANDARDS 2012 Planning Rule (36 CFR 219)



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Drivers and stressors §219.6b3 §219.8a1iv, §219.9a8

Assessment (§219.6)

Required and optional plan components (§ 219.7e)

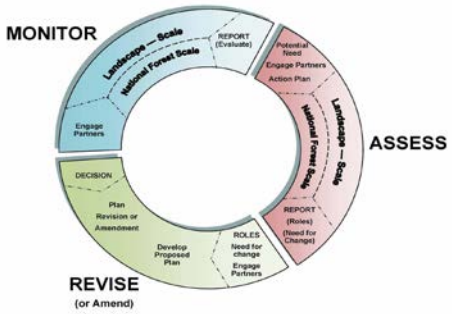
Desired Conditions, Objectives, Standards, Guidelines,

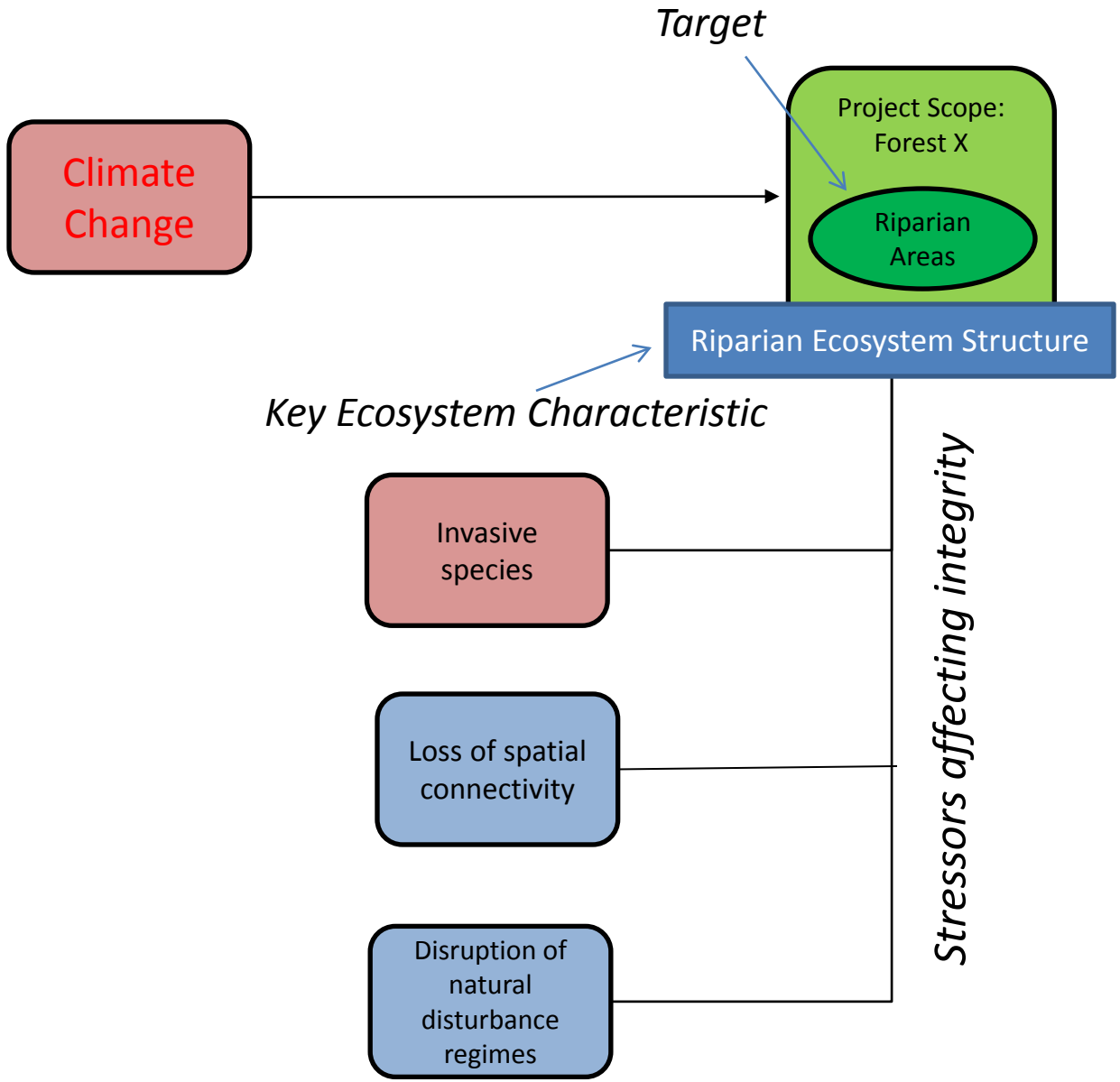
Suitability of Lands

Goals

Monitoring (§219.12)

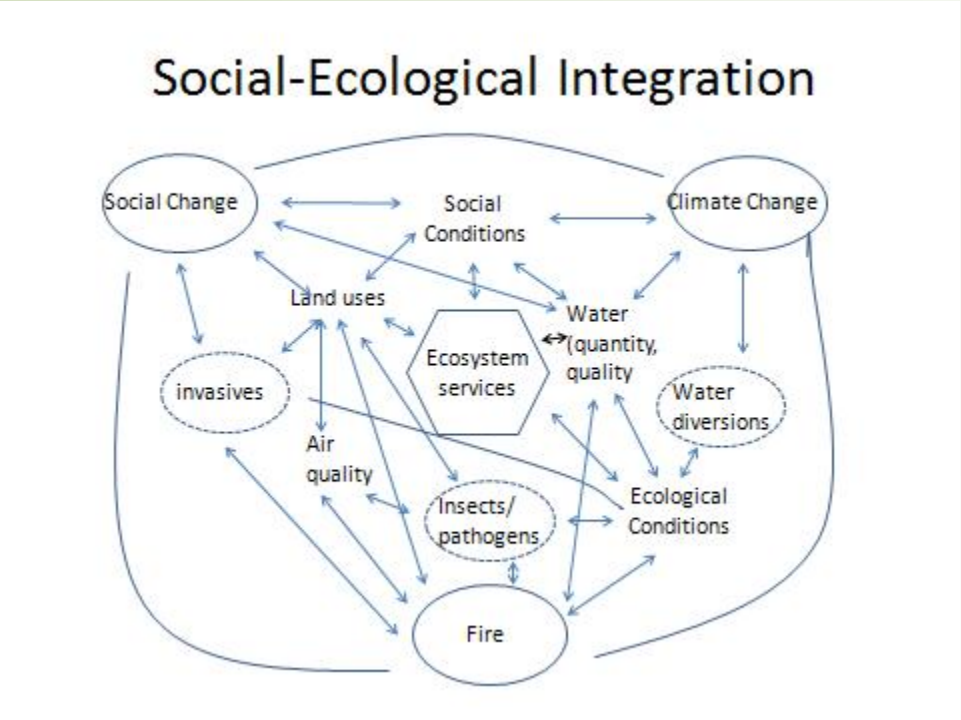
Assessment Phase MIGHT look like this:





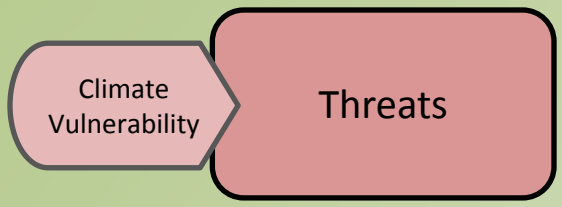
Sierra Nevada Bioregional Assessment: Stressors and Drivers

- Climate change
- Social change
  - Demographics
  - Demand services & Market influences
  - Water Development
  - Fire as an Ecosystem Process
  - Insects/pathogens
  - Invasive Plants
  - Vegetation Succession

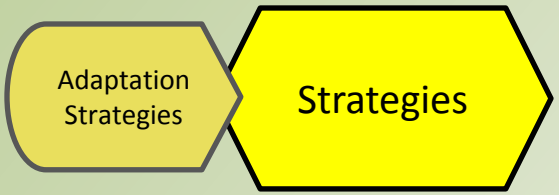


http://livingassessment.wikispaces.com/Chapter+3+Bio-region

Better Climate Change Integration

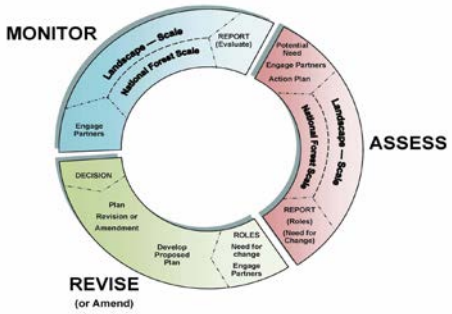


- Identify new potential impacts from climate exposure that are likely to be stressors to target
- Determine whether climate exposure(s) will compound current stressors to target
- Determine what human-driven activities may result from climate change and affect the target
- Rate stressors (including climate exposures) with respect to their impact on targets



- Identify actions that address climate-related impacts on species numbers, habitat or essential interactions
- Include actions that intervene on non-climate human activities that compound impacts from climate exposure

Using OS framework, it would look more like this:



Invasive species

Altered species composition

Project Scope: Forest X

Riparian Areas

Warmer water temperatures

Riparian Ecosystem Structure

Temperature Increase

Altered hydrology

Loss of upland cover from wildfire

Elements of forest plan

Past fire suppression & logging practices

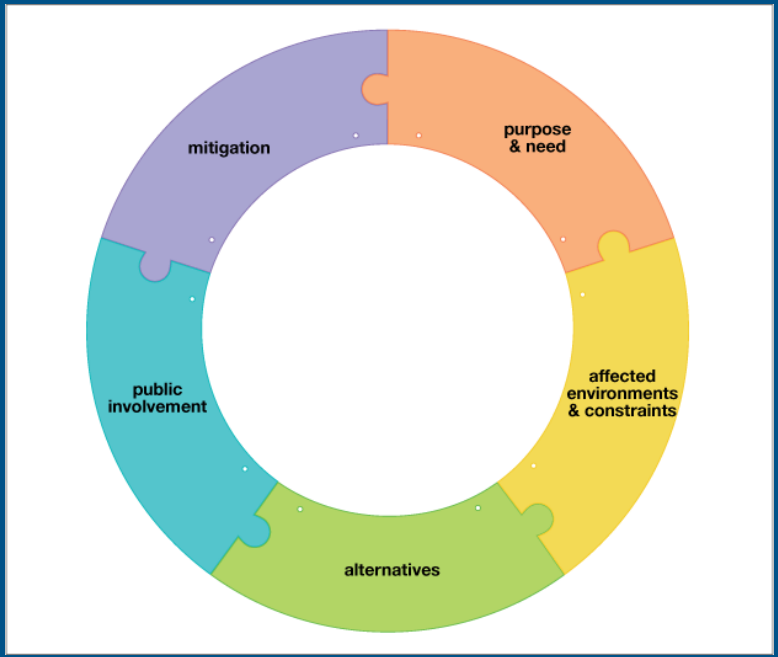
Decreased Snow Pack and Early Melting

Groundwater Withdrawals

Dams and Water Diversions

Climate Change Adaptation and NEPA

Aimee Delach



NEPA Background

- Purposes

"[t]o declare a national policy which will encourage productive and enjoyable harmony between man and his environment;

to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man;

[and] to enrich the understanding of the ecological systems and natural resources important to the Nation" (42 U.S.C. § 4321).

- Procedures

Decide if NEPA Applies;

Conduct a Preliminary Evaluation (Environmental Assessment);

Environmental Impact Statement

- Role in Decision-making

"Hard look" at consequences

Public involvement

Contribute to decisions, not post hoc rationalization

Contents of an EIS

- Purpose and need
- Alternatives
- Affected Environment
- Environmental Consequences
  - Cumulative effects
  - Mitigation

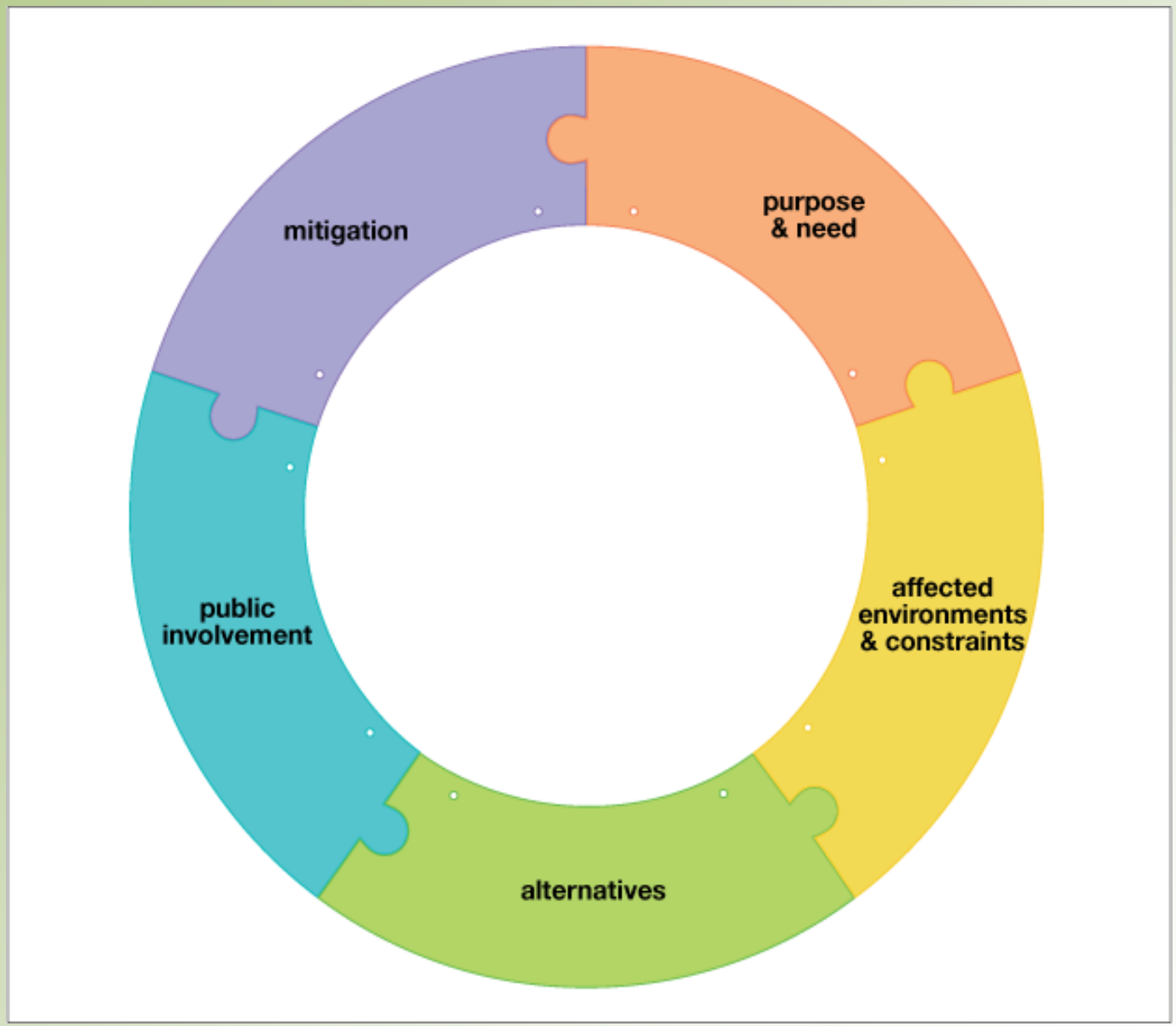


Image: www.coloradodot.info

Draft Guidance on Climate Change
February 18, 2010

"1) The GHG emissions effects of a proposed action and alternative actions; and (2) The relationship of climate change effects to a proposed action or alternatives, including the relationship to the proposal design, environmental impacts, mitigation and adaptation measures."

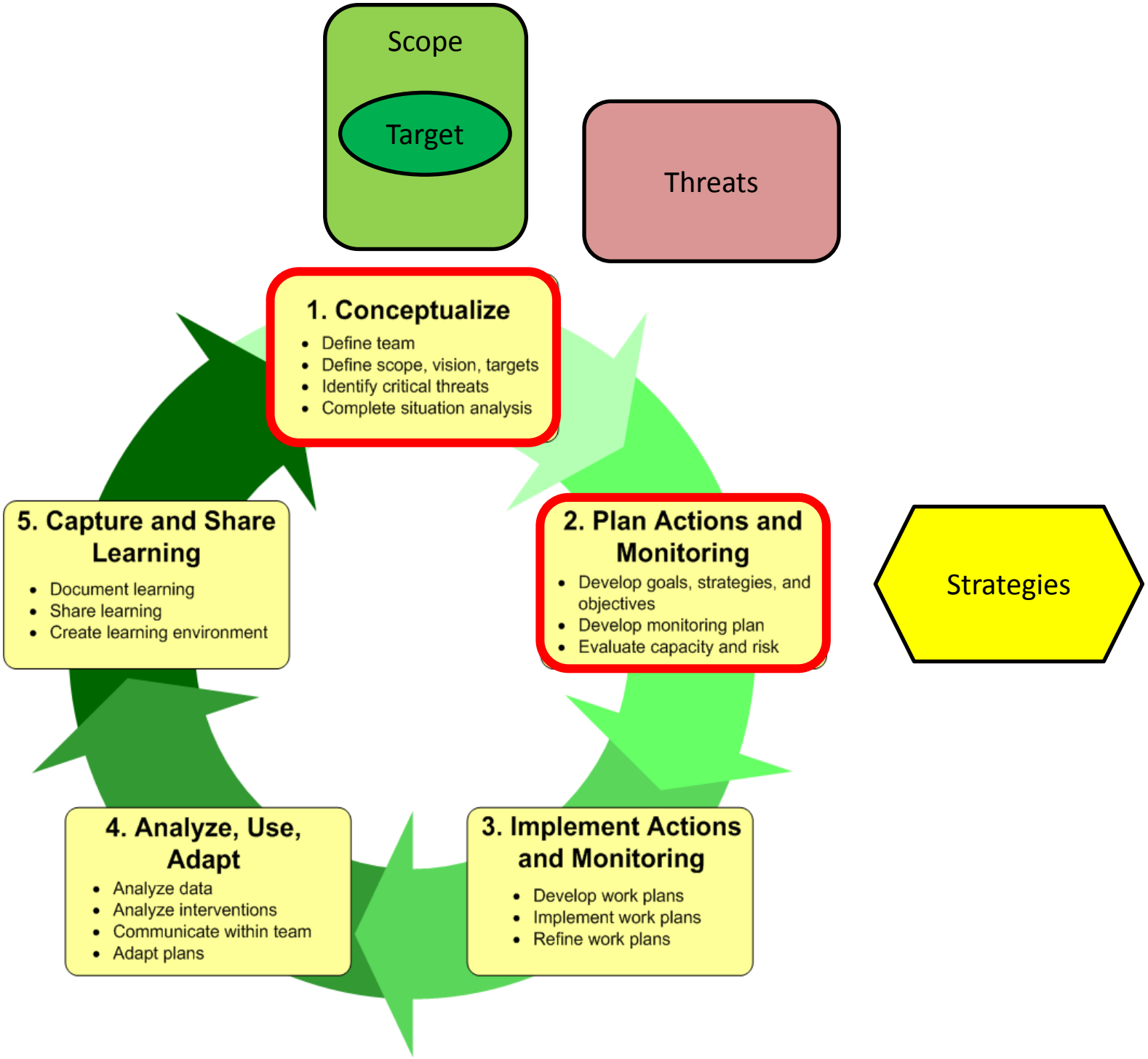
Question: How are Agencies Doing?

- Reviewed 154 Final EISs released between July 2011 and April 2012.
- Applied a set of 11 questions based on instructions within the guidance
  1) Does the final EIS cite 2010 Draft CEQ guidance?
  2) Does the EIS include relevant and recent information?
  3) Does the EIS include downscaled modeling?
  4) Are projections made using appropriate timescales?
  5) Climate change incorporated into NO ACTION
  6) Climate change incorporated into ALTERNATIVES?
  7) Climate change and outcome of proposed action?
  8) Uncertainty?
  9) Monitoring?
  10) Mitigation?
  11) Vulnerable human communities?

Answer: Not So Well

- Moderate to good incorporation of climate change into affected environment & alternatives comparison (15)
- Limited consideration of climate impacts to project and affected environment (26)
- Acknowledge potential impacts to project, but not to affected environment (8)
- Climate change discussion in EIS refers only to emissions, not to impacts (38)
- Mention climate change briefly but no emissions or impacts analysis (48)
- No mention of climate change in the EIS (19)

Can we apply the “Rosetta Stone” framework to improve integration of climate change adaptation into Environmental Impact Statements?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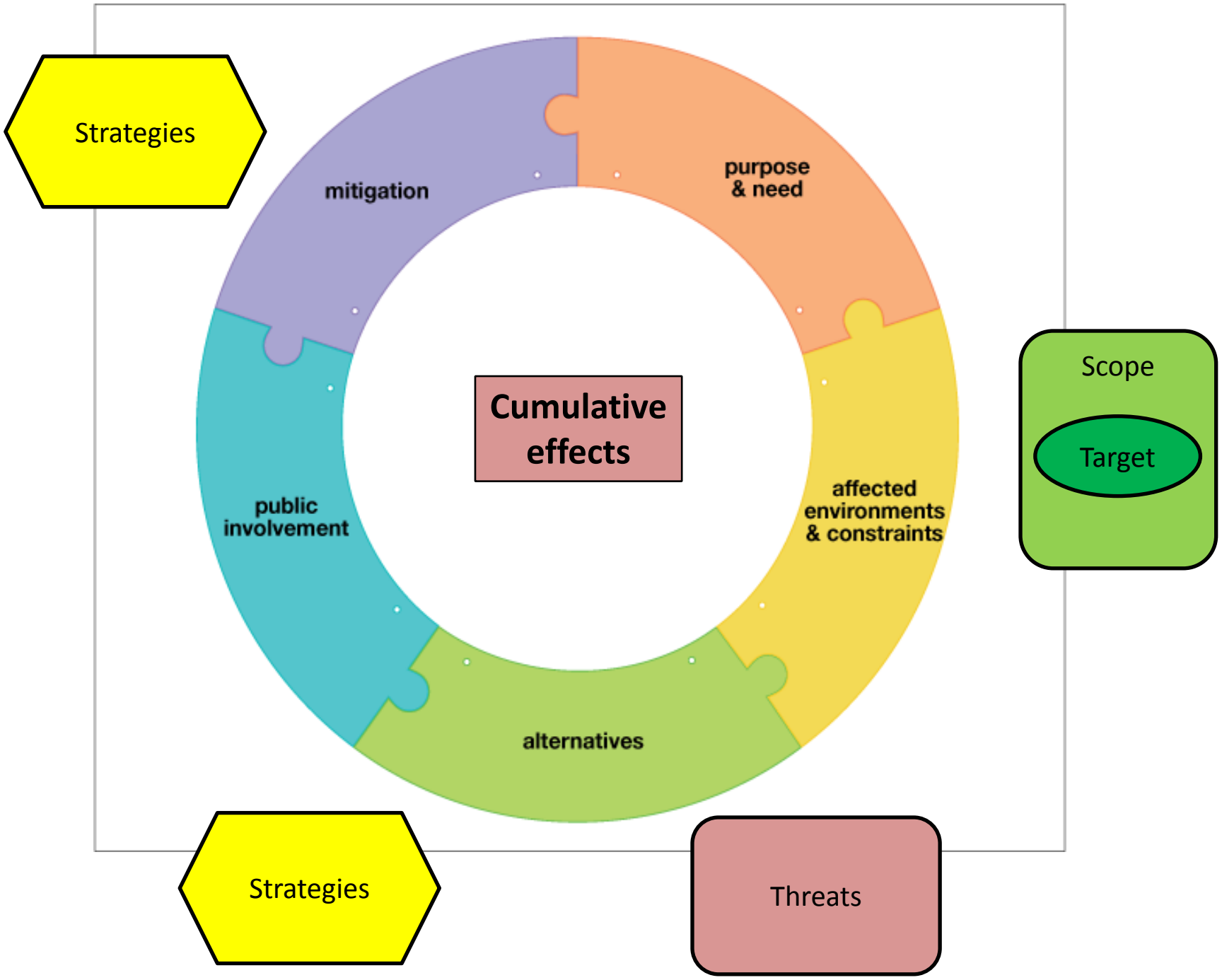
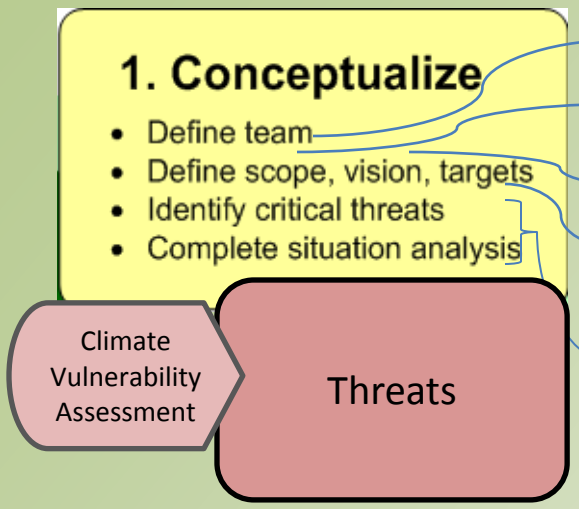

Strategies
mitigation
purpose & need
Cumulative effects
public involvement
affected environments & constraints
alternatives
Scope
Target
Strategies
Threats

OPEN STANDARDS NEPA (40 CFR Part 1500)



Lead Agencies (§1501.5), Preparers (§1502.17)

Scoping (§1501.7)

Purpose and Need (§1502.13), Alternatives (§1502.14)

Affected Environment (§1502.15)

Environmental Consequences (§1502.6)

Cumulative Effects (§1502.16)

Agency Decisionmaking (Part 1505), Mitigation and Monitoring (§1505.2c, §1508.20)

A Current NEPA Analysis MIGHT look like this:

Affected environment

Project Scope:
X Ecoregion

Riparian Habitat

Climate Change

?

Cumulative Effects

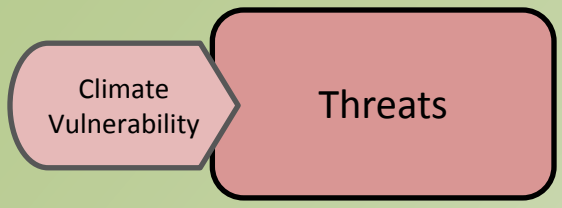
Groundwater withdrawals

Dams and water diversions

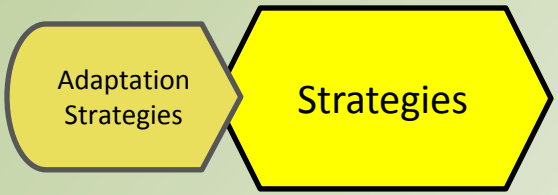
Proposed Action or Alternative

Environmental Consequences

Better Climate Change Integration



- Identify new potential impacts from climate exposure that are likely to be stressors to affected environment
- Determine whether the effects of climate change exposure will compound the impacts of each alternative on the affected environment
- Determine whether climate exposure(s) will compound current and reasonably impacts to affected reasonably foreseeable future impacts to the affected environment, including human-driven activities that may result from climate change
- Do the various alternatives differ in their aggregate impacts once climate change is factored in?



- Prioritize selection of alternatives that minimize these threats
- Include mitigation actions that reduce the identified threats

A Better NEPA Analysis would look more like this:

Affected environment

Project Scope:
X Ecoregion

Riparian Habitat

Temperature Increase

Warmer water temperatures

Altered hydrology

Groundwater Withdrawals

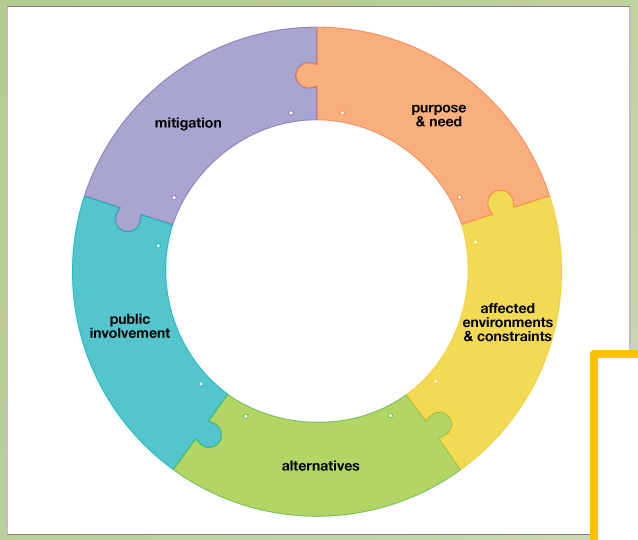
Decreased Snow Pack and Early Melting

Dams and Water Diversions

Alternative selection & Mitigation

Proposed Action or Alternative

Questions?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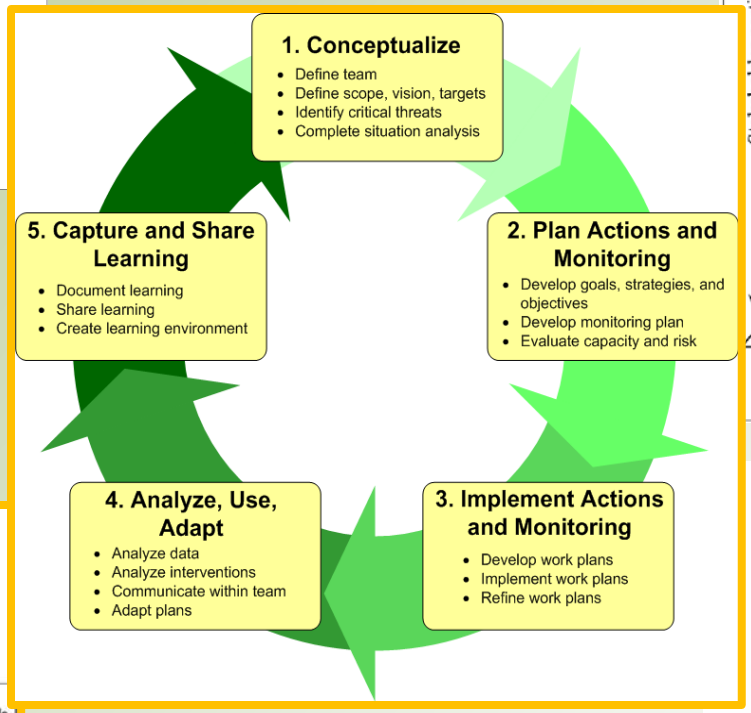
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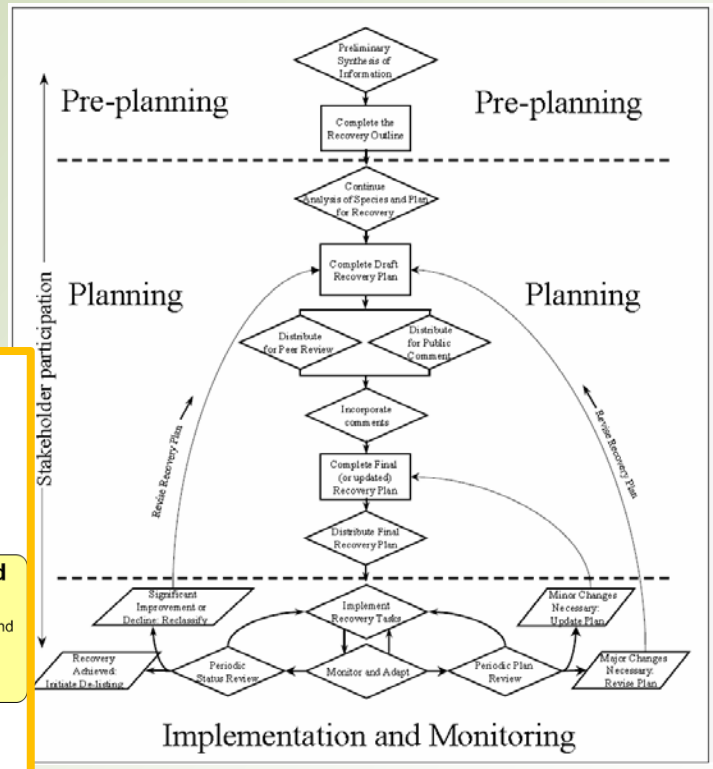
Pre-planning
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Planning
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Stakeholder participation
Preliminary Synthesis of Information
Complete the Recovery Outline
Continue Analysis of Species and Plan for Recovery
Complete Draft Recovery Plan
Distribute for Peer Review
Distribute for Public Comment
Incorporate comments
Complete Final (or updated) Recovery Plan
Distribute Final Recovery Plan
Revise Recovery Plan
Service Recovery Plan
Significant Improvement or Decline: Reclassify
Implement Recovery Tasks
Minor Changes Necessary: Update Plan
Recovery Achieved: Initiate De-listing
Periodic Status Review
Monitor and Adapt
Periodic Plan Review
Major Changes Necessary: Revise Plan
Implementation and Monitoring


1. Preplanning
Plan the plan.
2. Initiate Public Involvement and Scoping
Involve the public.
3. Draft Vision Statement and Goals
Determine Substantive Issues
4. Develop and Analyze Alternatives
Create a range of alternatives including a no-action alternative.
5. Prepare Draft Plan and Environmental Document
Public comment and review.
6. Prepare and Adopt Final Plan
Respond to public comments, and select preferred alternative.
7. Implement Plan
Monitor and Evaluate
Public involvement when applicable.
8. Review and Revise Plan
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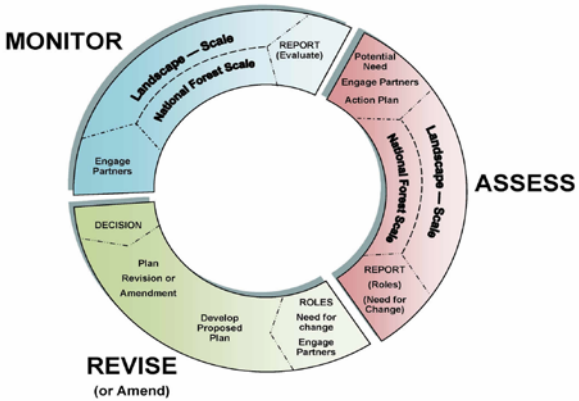
Comprehensive Conservation Planning Process
and
Compliance with the National Environmental Policy Act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