Forest Adaptation Planning and Practices

~ Online Course ~

Session 3 Discussion: Challenges and Opportunities
Session 4 Lecture: adaptation strategies and approaches

Tuesday, February 12, 2019

Discussion session: Please free to join the discussion on webcam or by phone – we want to hear from you!

Check into Chat Box!

Type your name(s), organization, and...
dream vacation destination!

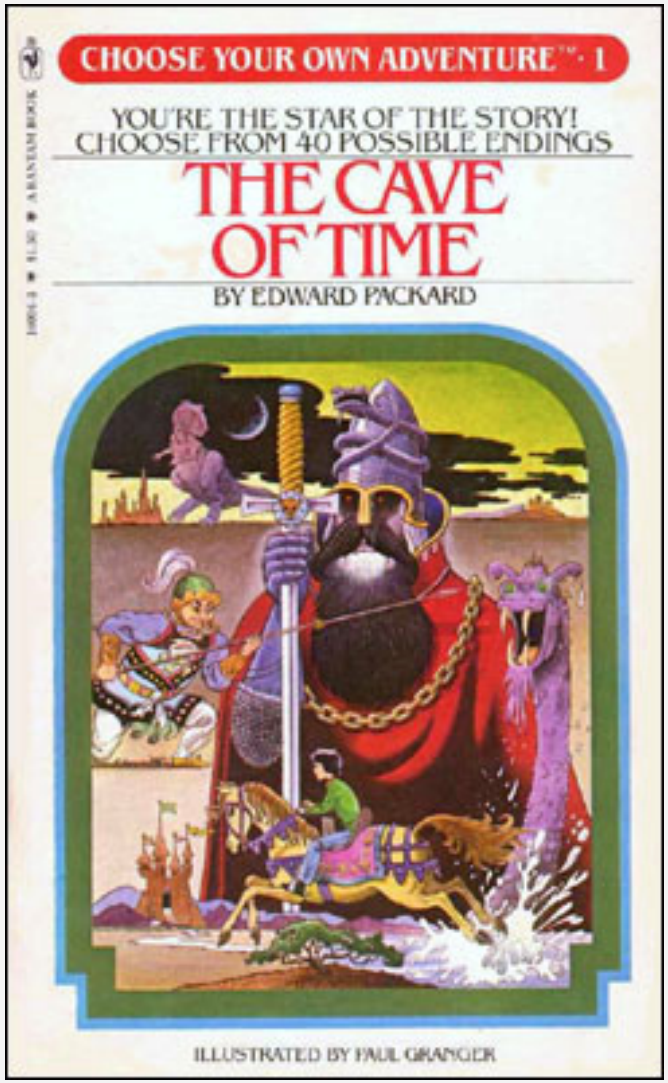
Welcome back!

Discussion: 10:00-10:45

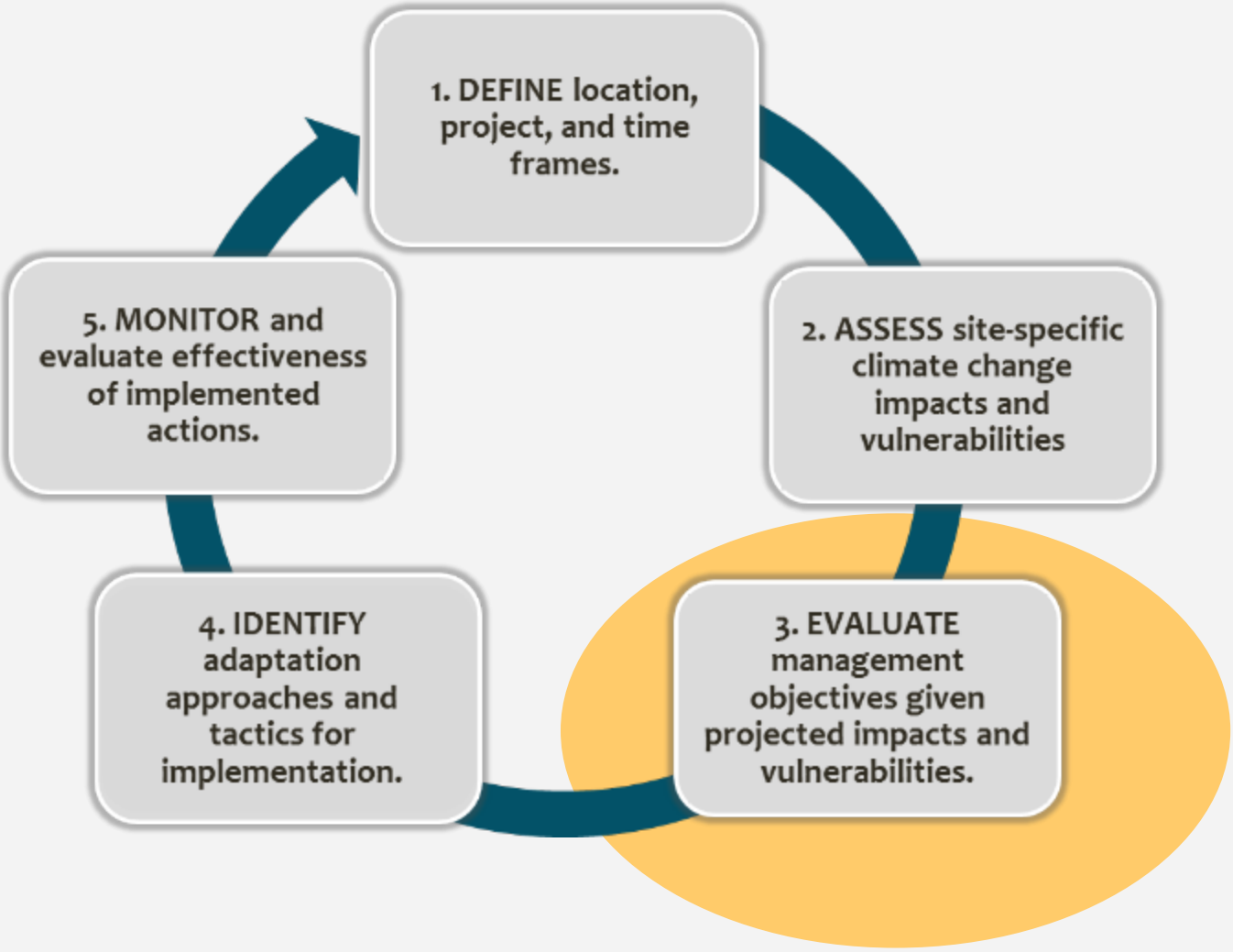
- Discuss climate change challenges and opportunities

Lecture: 10:50-11:30

- Step 4 introduction
- Assignment for Monday, Feb 18



Step 3 Review



Step 3: EVALUATE management objectives given projected impacts and vulnerabilities.

Key Question:

- What management challenges or opportunities might occur?
- Can current management meet management goals?
- Do goals need to change?

Step 3: EVALUATE management objectives given projected impacts and vulnerabilities.

Challenges to Meeting Management Objective with Climate Change – Things that will make it harder to achieve the management objective due to climate change.

Opportunities to Meeting Management Objective with Climate Change – Things that will make it easier to achieve the management objective due to climate change.

Step 3: EVALUATE management objectives given projected impacts and vulnerabilities.

Feasibility – Can you meet your management objectives using current (business-as-usual) management actions?

- **High:** We can do it!

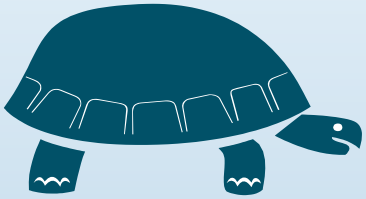
  Opportunities > Challenges

- **Low:** We'll need more resources or effort.

  Challenges > Opportunities

Other Considerations – Social, financial, or other factors that also affect your ability to meet objectives.

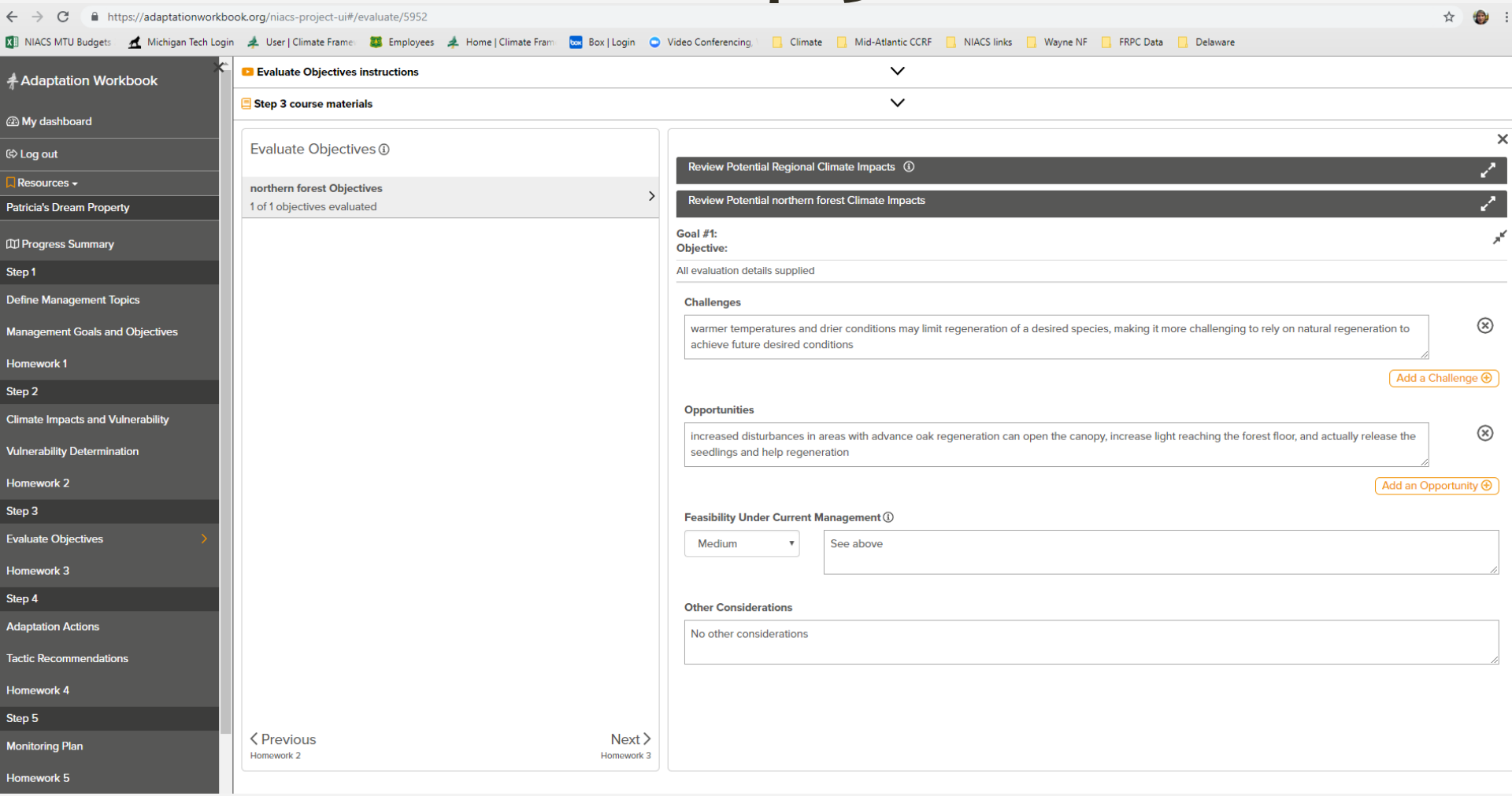
Step 3: EVALUATE management objectives given projected impacts and vulnerabilities.



Slow down!

Are you going to continue with these management objectives?

Step 3


https://adaptationworkbook.org/niacs-project-ui#/evaluate/5952
NIACS MTU Budgets
Michigan Tech Login
User | Climate Frame
Employees
Home | Climate Fram
Box | Login
Video Conferencing
Climate
Mid-Atlantic CCRF
NIACS links
Wayne NF
FRPC Data
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Patricia's Dream Property
Progress Summary
Step 1
Define Management Topics
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Step 4
Adaptation Actions
Tactic Recommendations
Homework 4
Step 5
Monitoring Plan
Homework 5
Evaluate Objectives instructions
Step 3 course materials
Evaluate Objectives
northern forest Objectives
1 of 1 objectives evaluated
Previous
Homework 2
Next
Homework 3
Review Potential Regional Climate Impacts
Review Potential northern forest Climate Impacts
Goal #1:
Objective:
All evaluation details supplied
Challenges
warmer temperatures and drier conditions may limit regeneration of a desired species, making it more challenging to rely on natural regeneration to achieve future desired conditions
Add a Challenge
Opportunities
increased disturbances in areas with advance oak regeneration can open the canopy, increase light reaching the forest floor, and actually release the seedlings and help regeneration
Add an Opportunity
Feasibility Under Current Management
Medium
See above
Other Considerations
No other considerations

Challenges

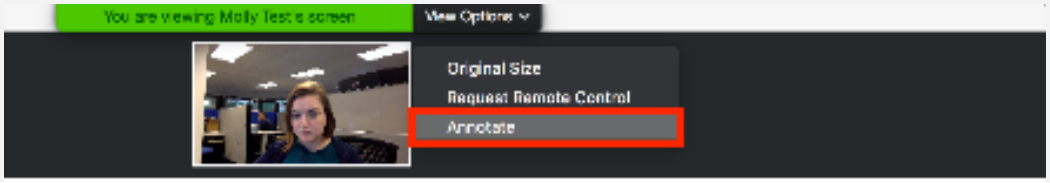
- Reduced regeneration due to
  - Invasive species control (x2)
  - Other factors (i.e., heat stress, disease, soil moisture variability)
  - Interrupted flowering and decreased seed production resulting from premature warming, then frost
  - Continued herbivory
- Stressed trees are more prone to pest attacks and disease.
- More resources needed for tree establishment/maintenance between rain events.
- Soil erosion and nutrient loss from heavy precip.
- Events, may lower water table and increase drought along stream valleys.
- Increased disturbance from extreme weather events (storms)
- Uncertainty in species shifts

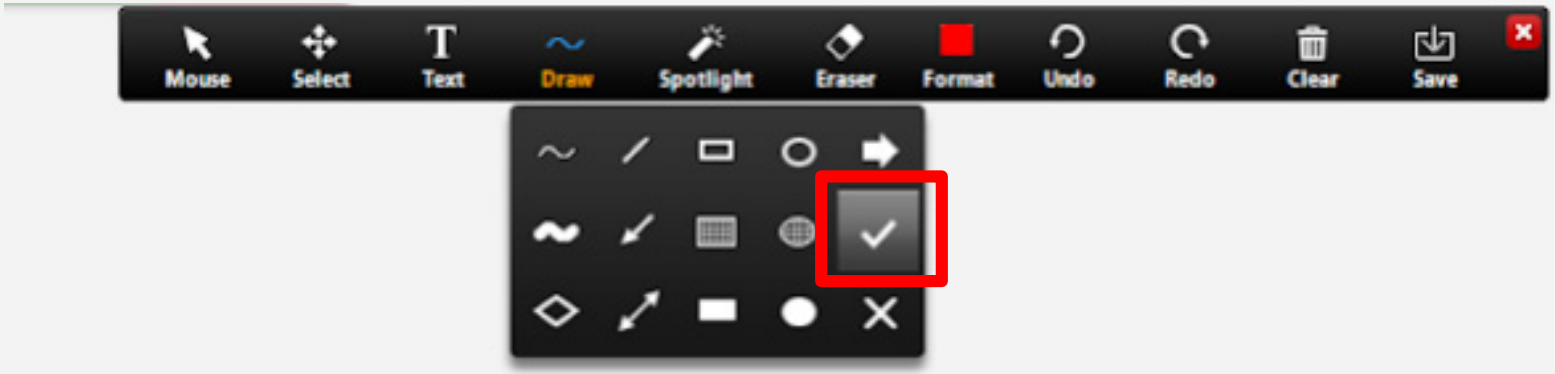
Opportunities

- Declining mesophytic spp. may require intense oak/ hickory management to establish a healthy forest in the understory.
- Decreased threat from gypsy moth, reduced gm population.
- Increase in southern tree species to offset decline of less adaptable northern species.
- Increased public desire for shade trees to help mitigate heat island effects.
- Some native species may benefit from climate change like: red cedar, sweet gum, and pawpaw.
- Increased drought may lower competition from hardwoods to favor oak/hickory/pine.
- Drier wetlands may become suitable for hardwood species

Feasibility Activity

- Pick one of your objectives– preferably the one with the **lowest** feasibility
- Use **"annotate"** feature to add a **check mark** describing the feasibility of that objective on the scale on the next slide.





Feasibility: Short Term (<10 yrs)

Low → High

Bean Ridge	
The Glades Red Spruce Release	
conifer restoration in western MD	
Fairfax County	
Chickory Lane Farm	
Edge of Appalachia Preserve	
Potomac Fish and Game	
Drda Woods	
CJO Property Trust	

Feasibility: Long Term (>50 yrs)

Use the X to mark the spot

Low → High

Bean Ridge	
The Glades Red Spruce Release	
conifer restoration in western MD	
Fairfax County	
Chickory Lane Farm	
Edge of Appalachia Preserve	
Potomac Fish and Game	
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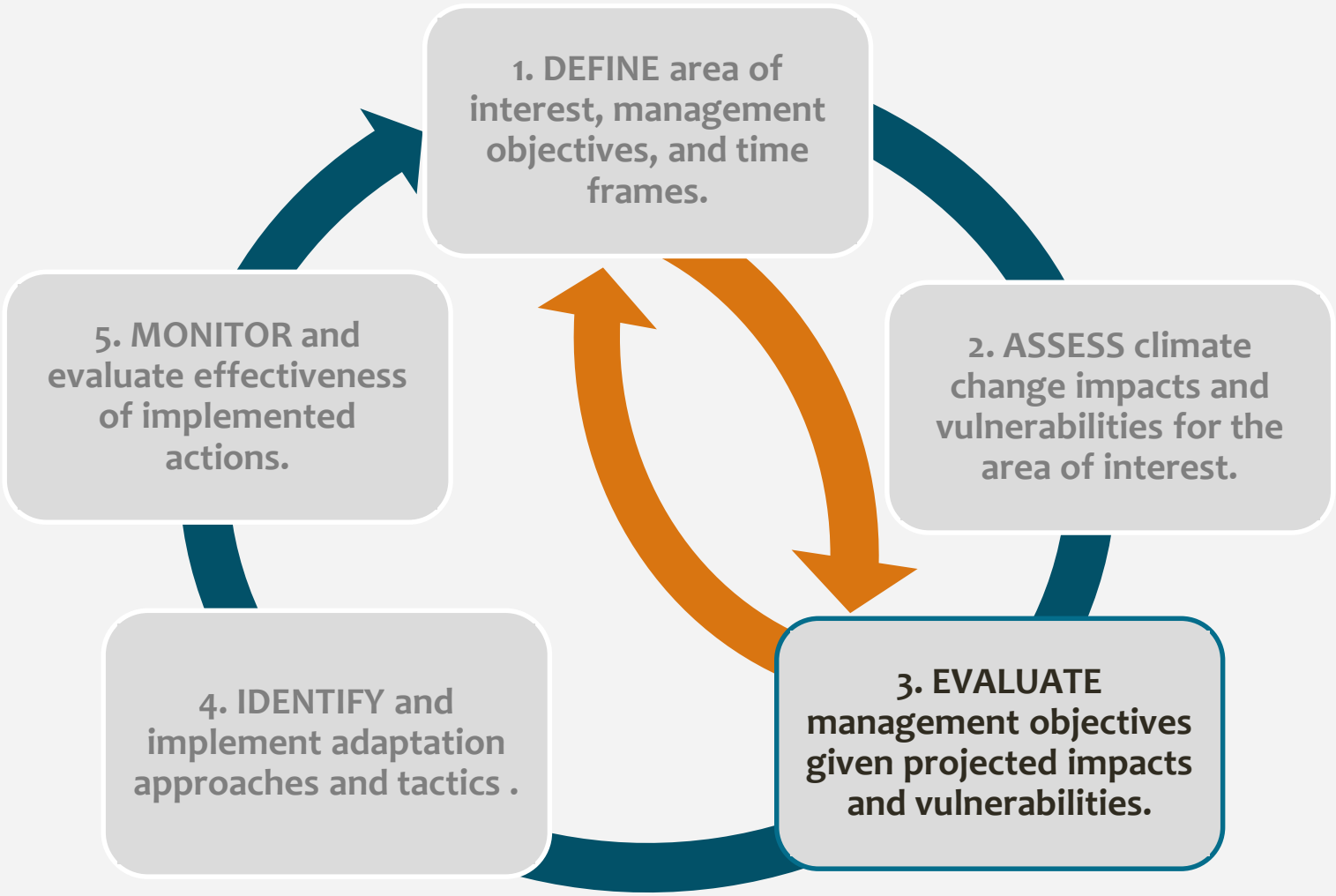
CJO Property Trust	

Did anyone adjust their objectives?

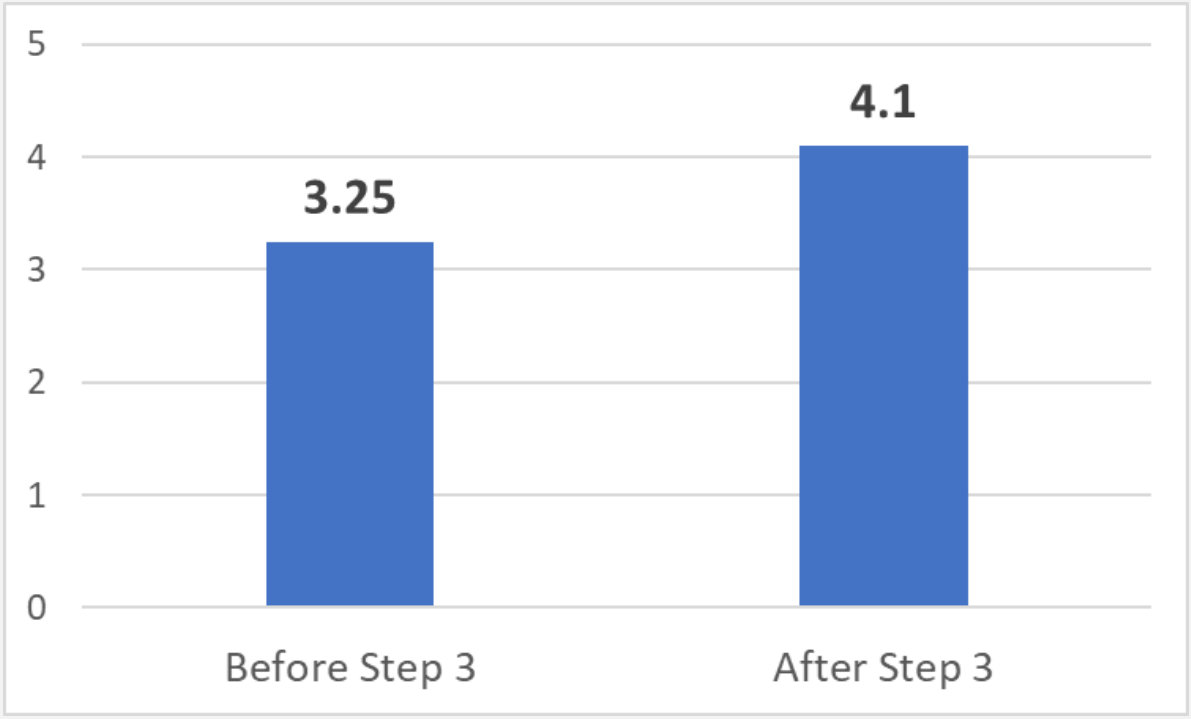
Workbook Cycle: Step 3



… or, RE-EVALUATE

Other comments on step 3?

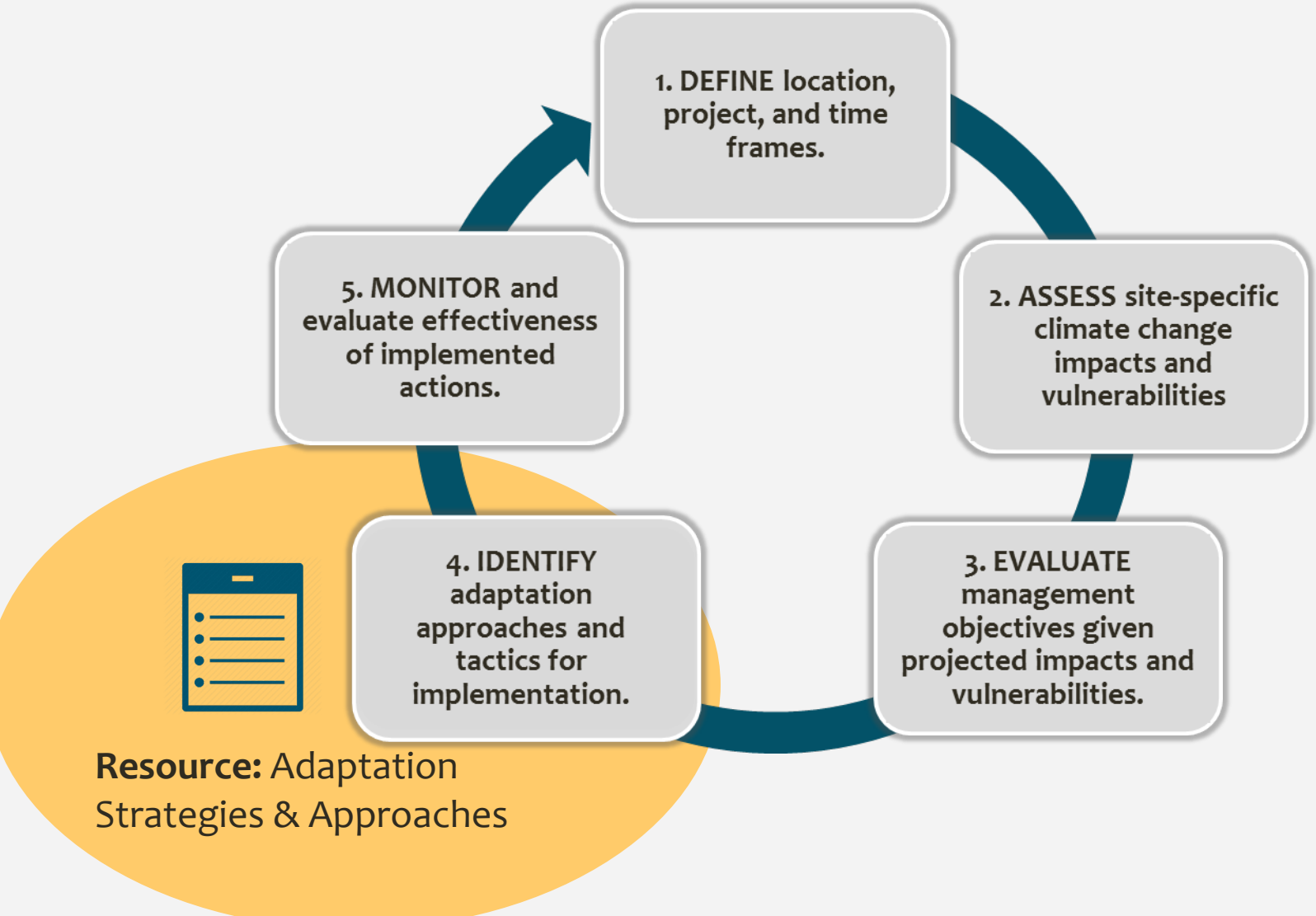
I can explain how climate change may affect my ability to meet management goals and objectives.




break


Time's up

Adaptation Workbook Process



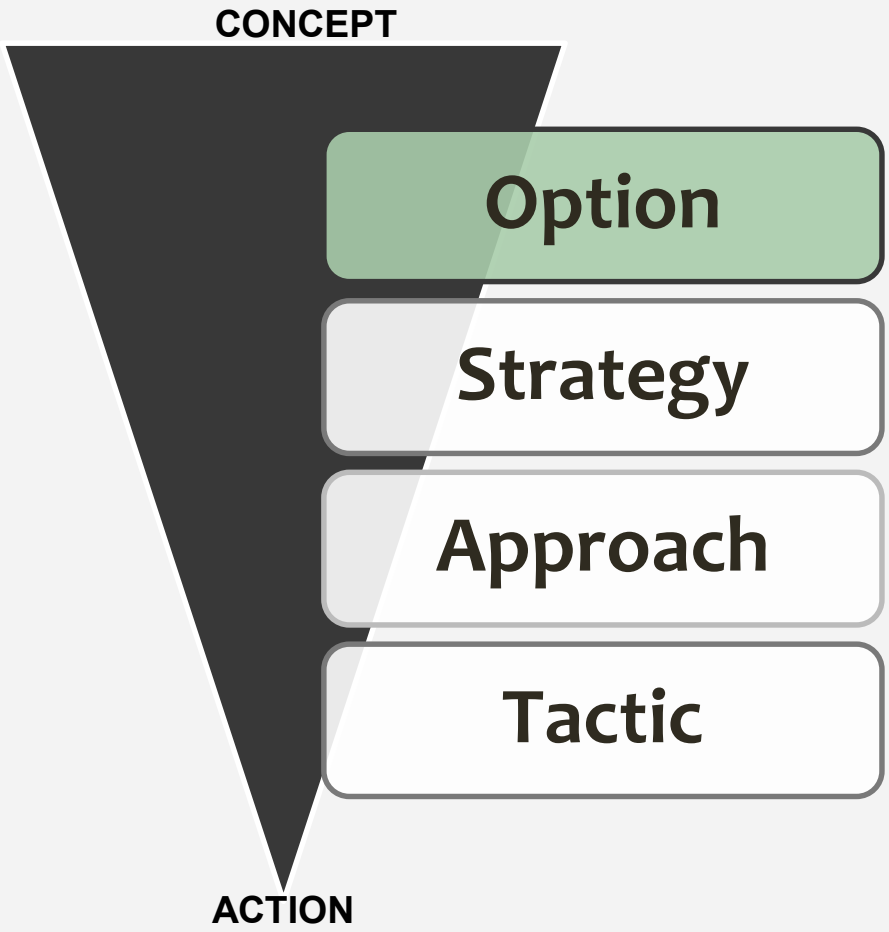
Resource: Adaptation Strategies & Approaches

Adaptation Strategies & Approaches

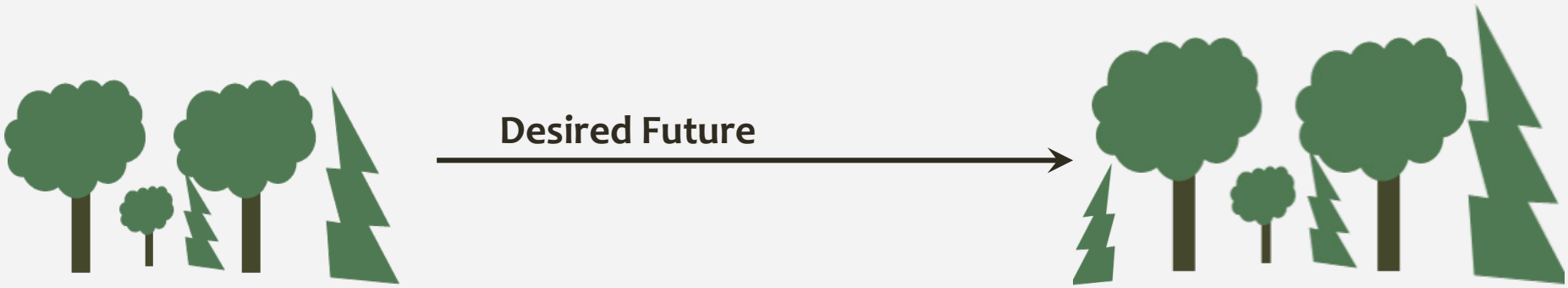
A “menu” of possible actions that allows you to decide what is most relevant for a particular location and set of conditions.

Find in: Step 4 of online workbook, Chapter 3-4 of FAR , or
www.adaptationworkbook.org/niacs-strategies
www.adaptationworkbook.org/niacs-strategies/urban

Adaptation Strategies & Approaches

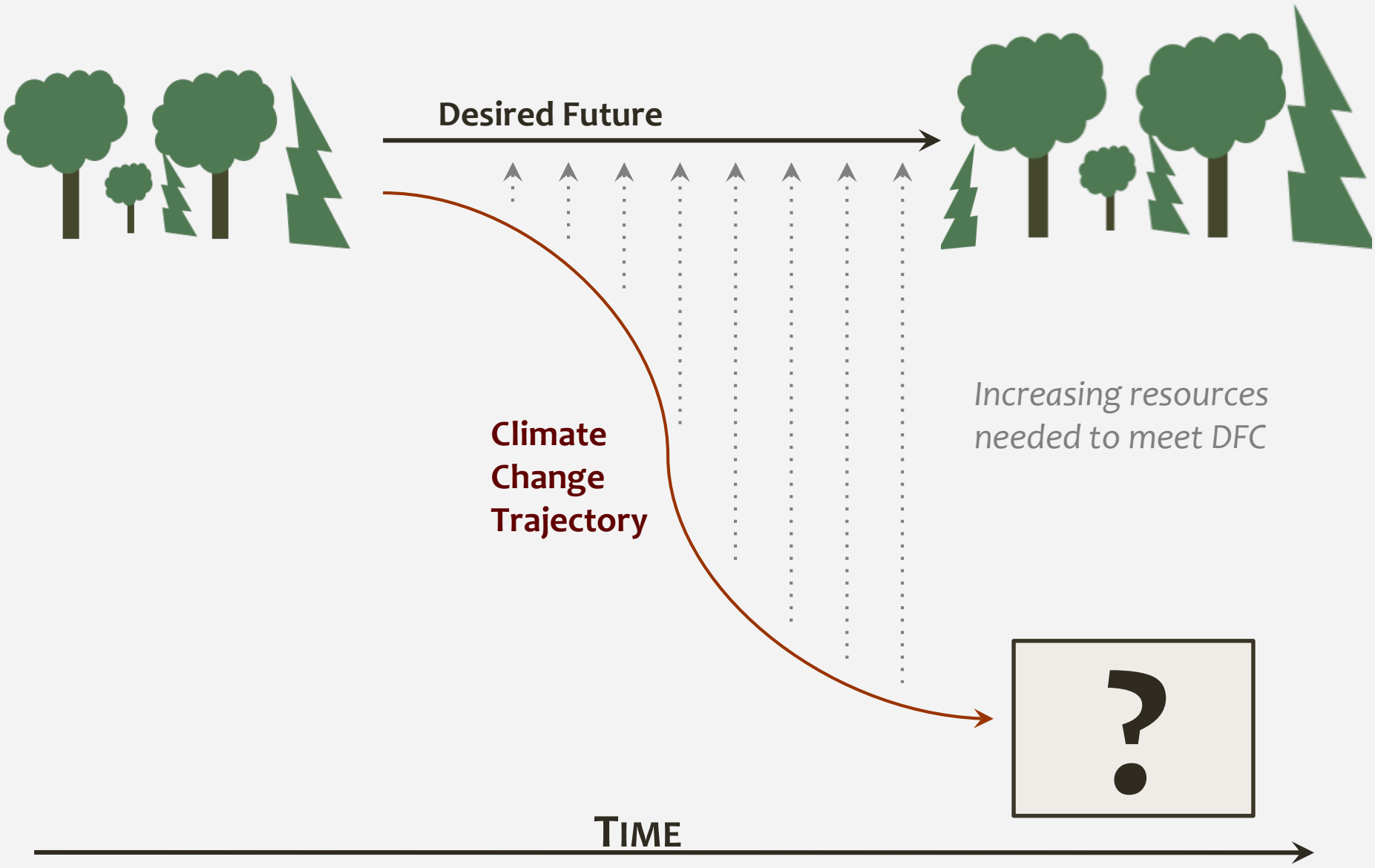


Climate-Driven Changes



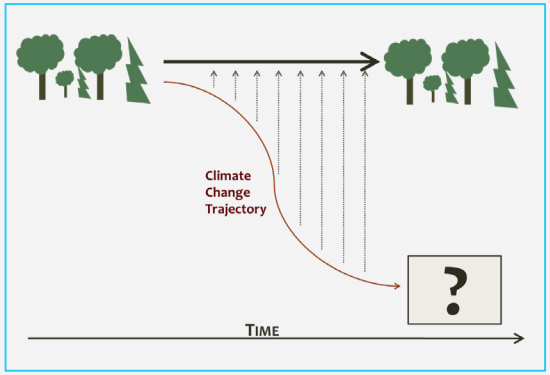
TIME

Climate-Driven Changes



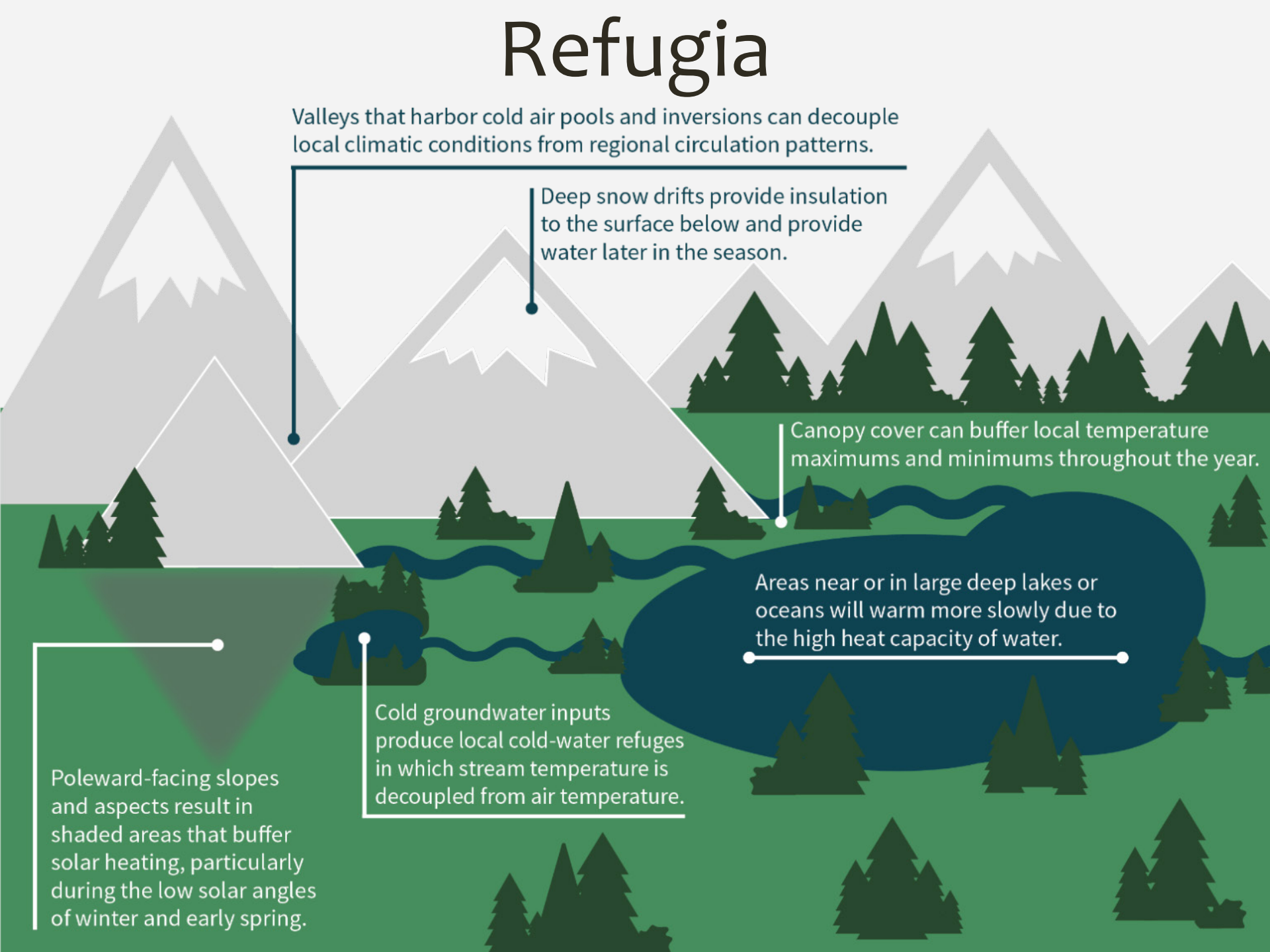
Adaptation Options

RESISTANCE



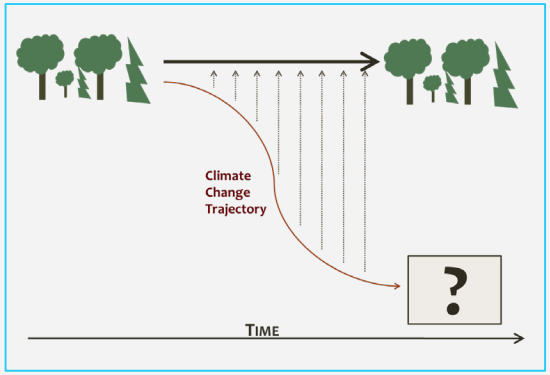
- Improve defenses of forest against change
- Maintain relatively unchanged conditions

Refugia


Valleys that harbor cold air pools and inversions can decouple local climatic conditions from regional circulation patterns.
Deep snow drifts provide insulation to the surface below and provide water later in the season.
Canopy cover can buffer local temperature maximums and minimums throughout the year.
Areas near or in large deep lakes or oceans will warm more slowly due to the high heat capacity of water.
Cold groundwater inputs produce local cold-water refuges in which stream temperature is decoupled from air temperature.
Poleward-facing slopes and aspects result in shaded areas that buffer solar heating, particularly during the low solar angles of winter and early spring.

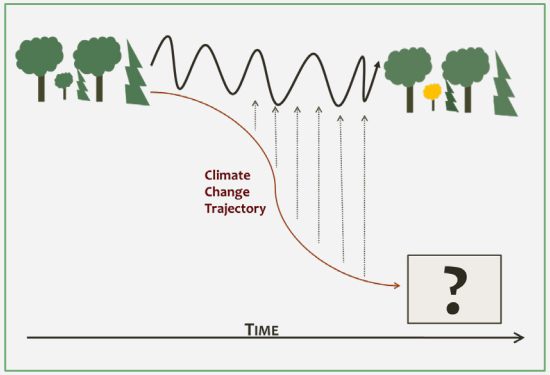
Adaptation Options

RESISTANCE



- Improve defenses of forest against change
- Maintain relatively unchanged conditions

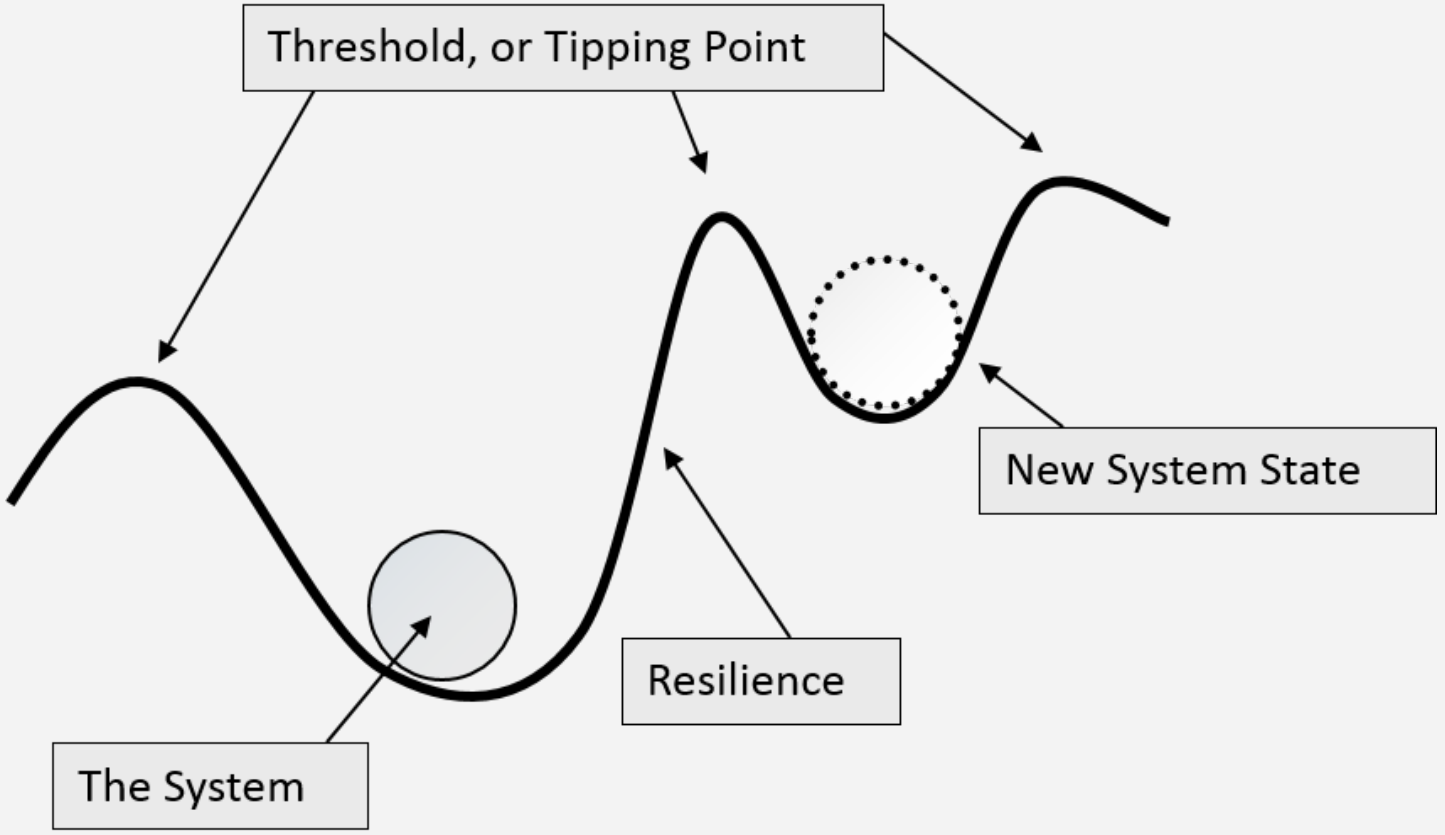
RESILIENCE



- Accommodate some degree of change
- Return to prior condition after disturbance

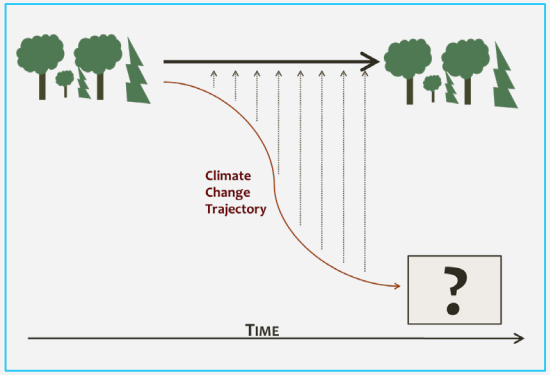
Resilience

ability of a system to maintain or return to a particular ecological state following a disturbance (e.g., Holling 1973, Griffith et al. 2009)



Adaptation Options

RESISTANCE



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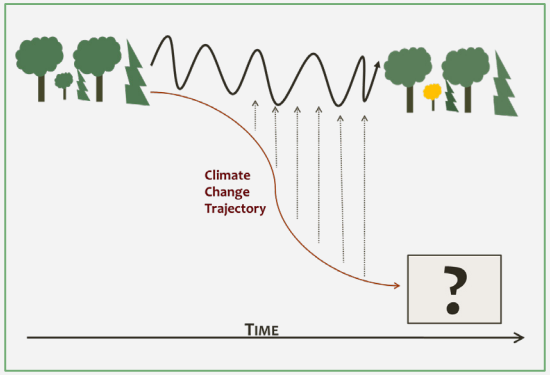
RESILIENCE



- Accommodate some degree of change
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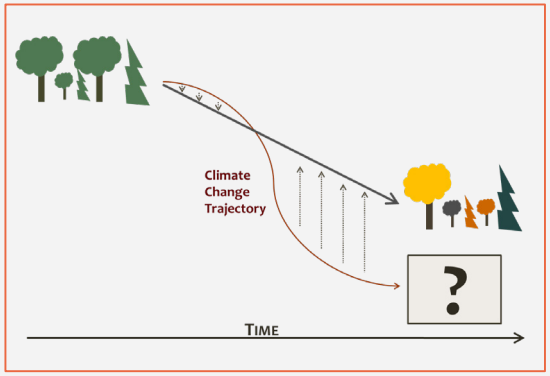
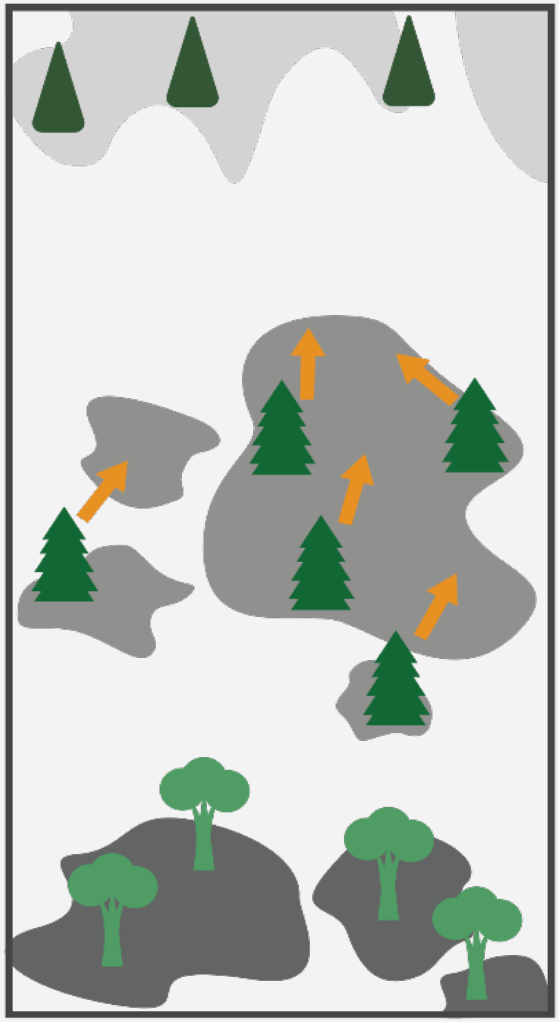
TRANSITION

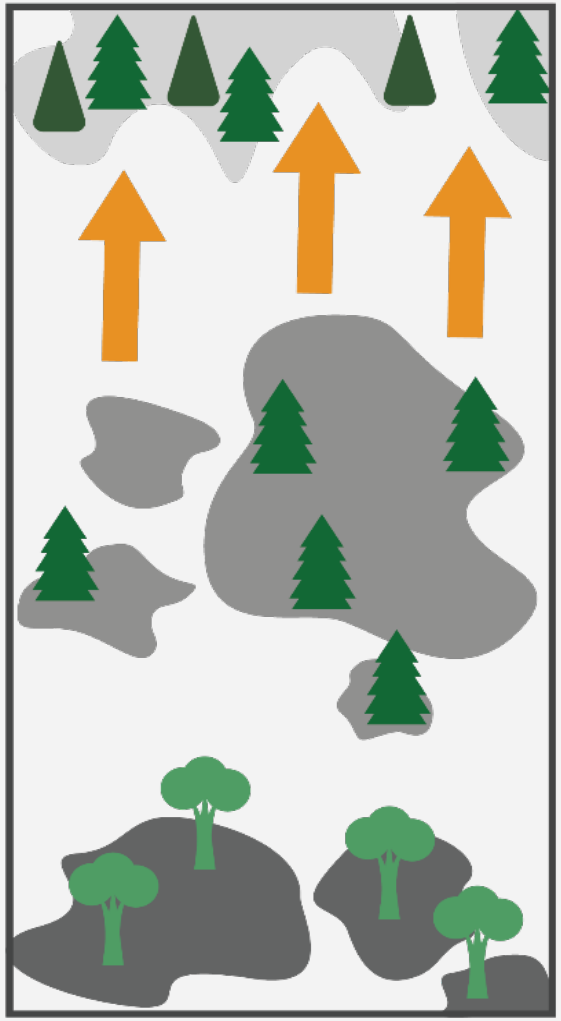


- Facilitate change
- Enable ecosystem to respond to new and changing conditions

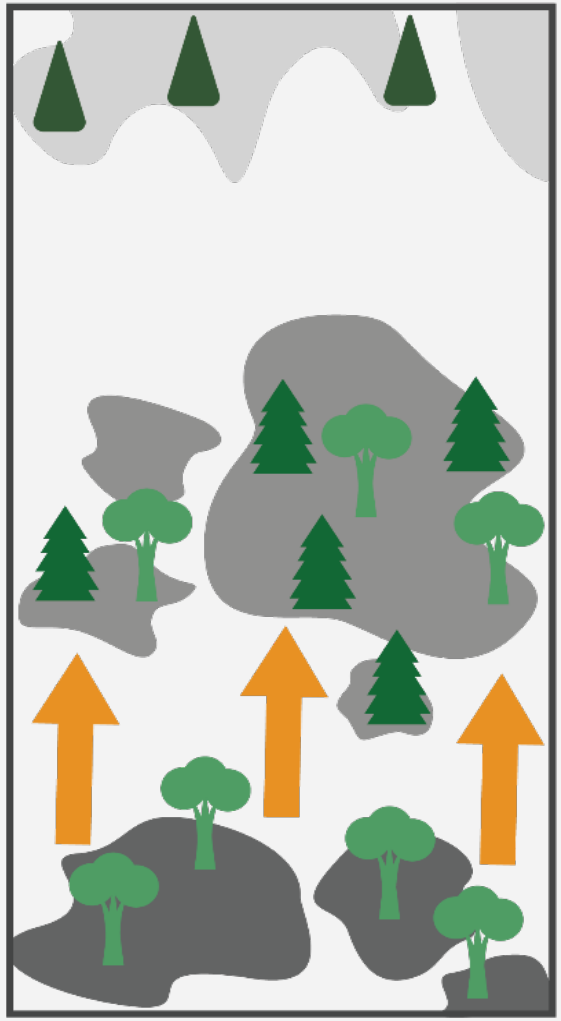
Assisted Migration



Assisted Population Migration

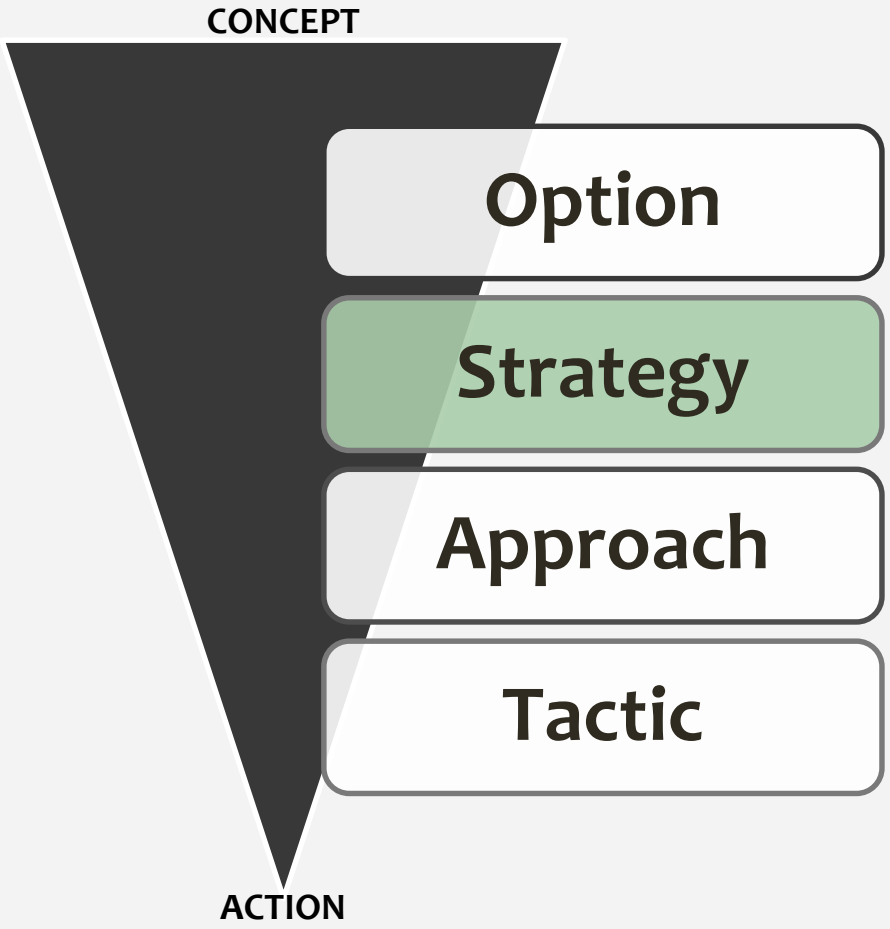


Assisted Range Expansion



Assisted Species Migration

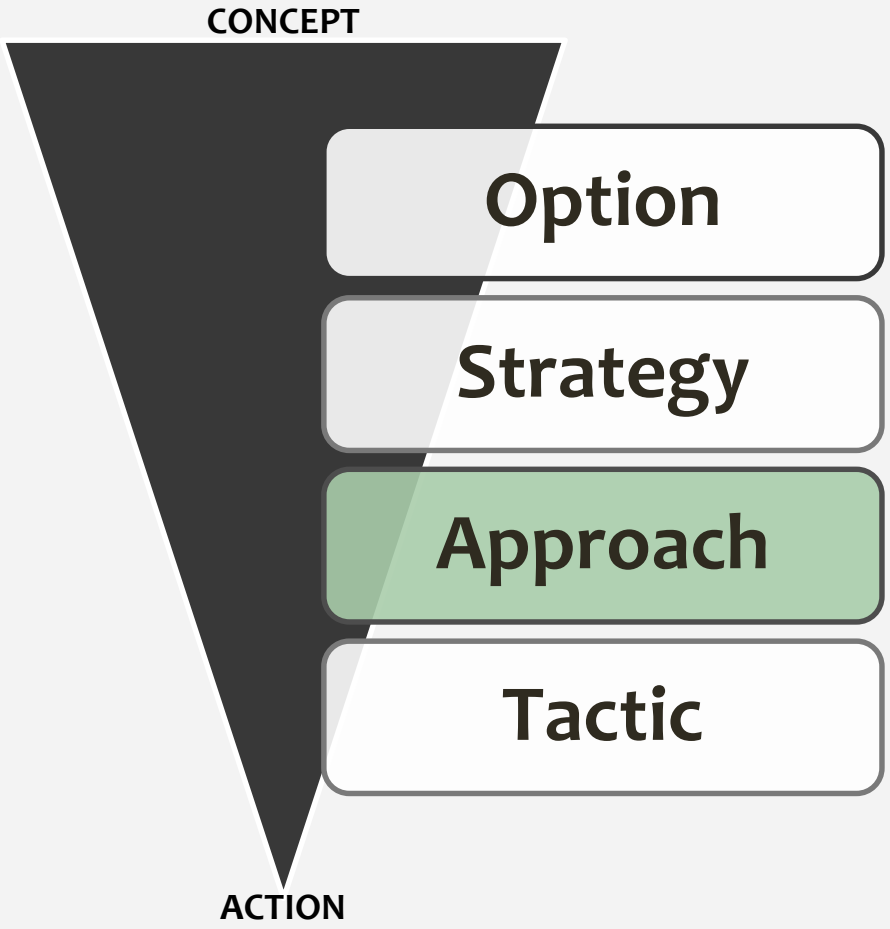
Adaptation Strategies & Approaches



Broad adaptation responses

- Sustain fundamental ecological functions
- Reduce the impact of existing biological stressors
- Maintain and enhance species and structural diversity
- Facilitate community adjustments through species transitions

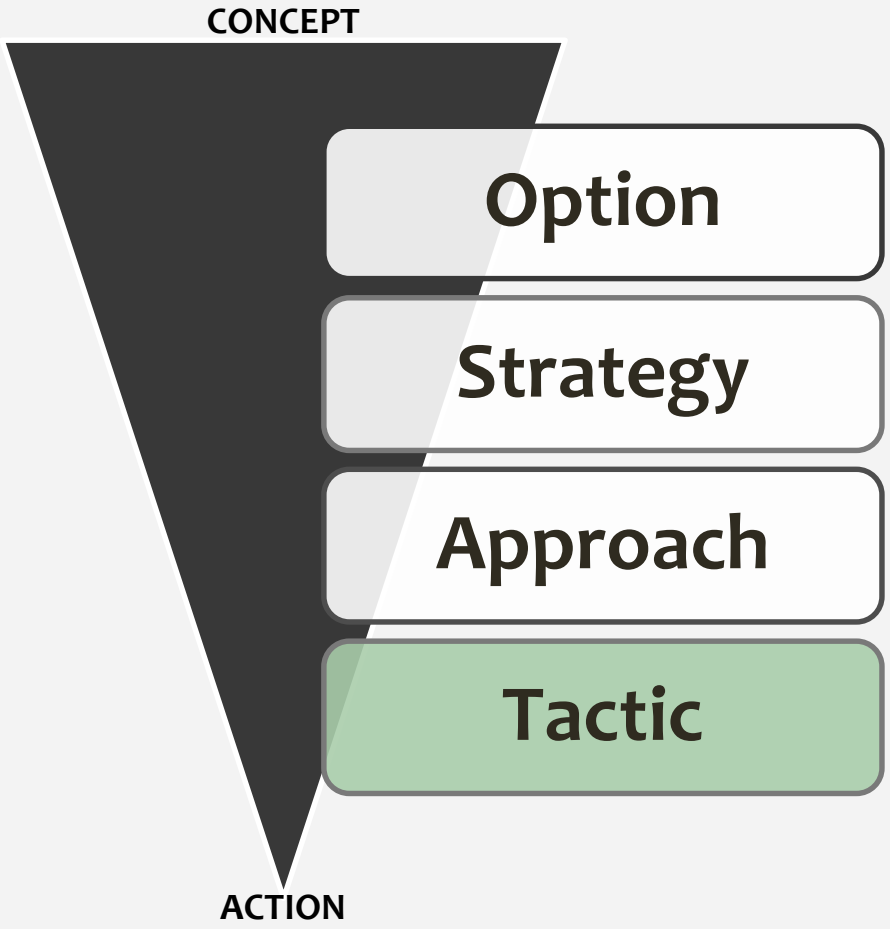
Adaptation Strategies & Approaches



More specific actions

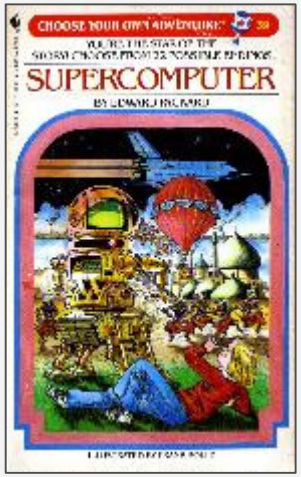
- Promote diverse age classes
- Maintain and restore diversity of native tree species
- Identify and move species to sites that are likely to provide future habitat

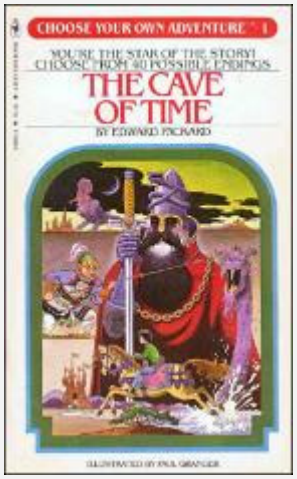
Adaptation Strategies & Approaches



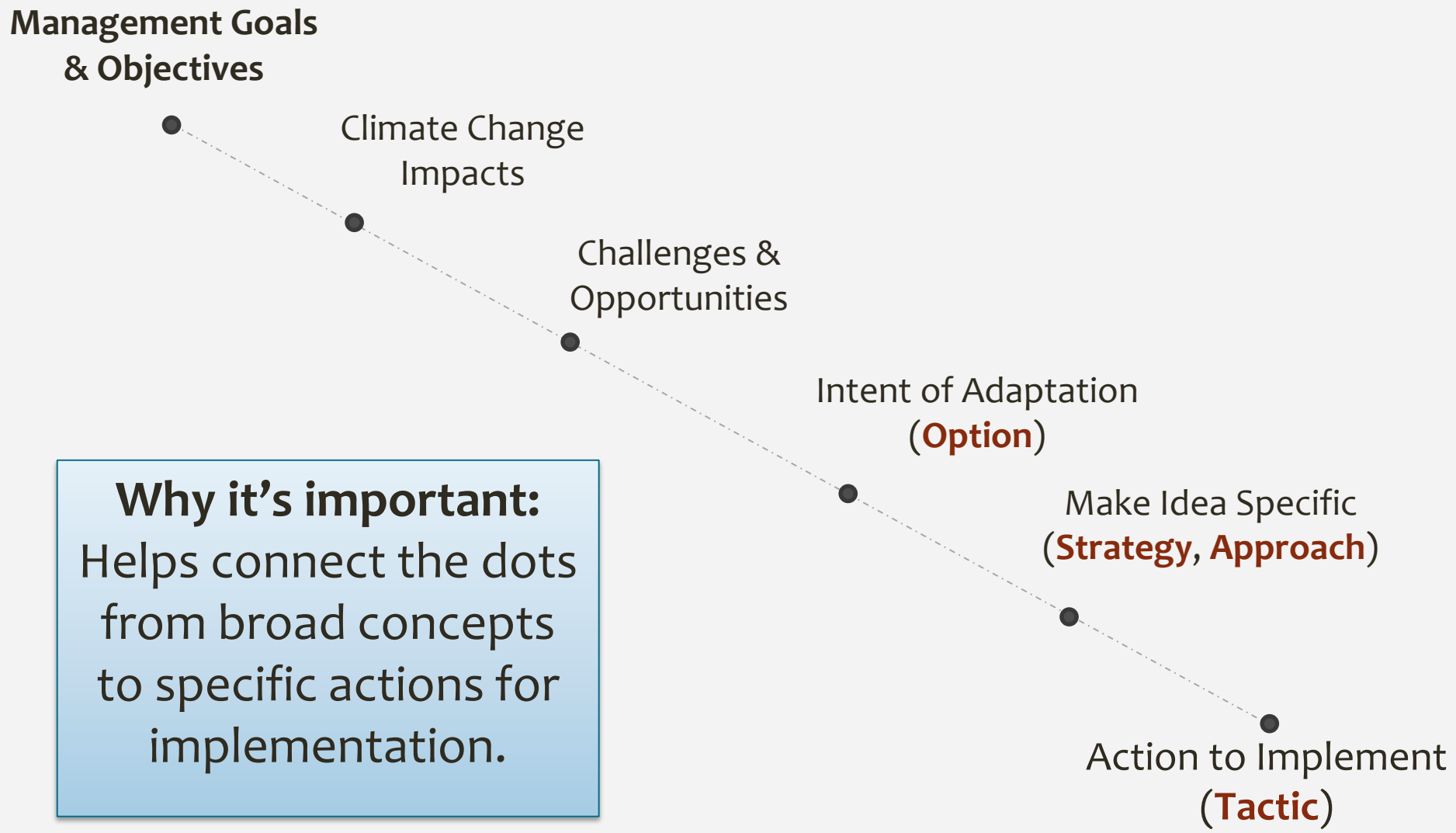
Prescriptive actions selected by producer that are designed for individual site conditions and management objectives

→ **YOU DECIDE!**





Adaptation Strategies & Approaches

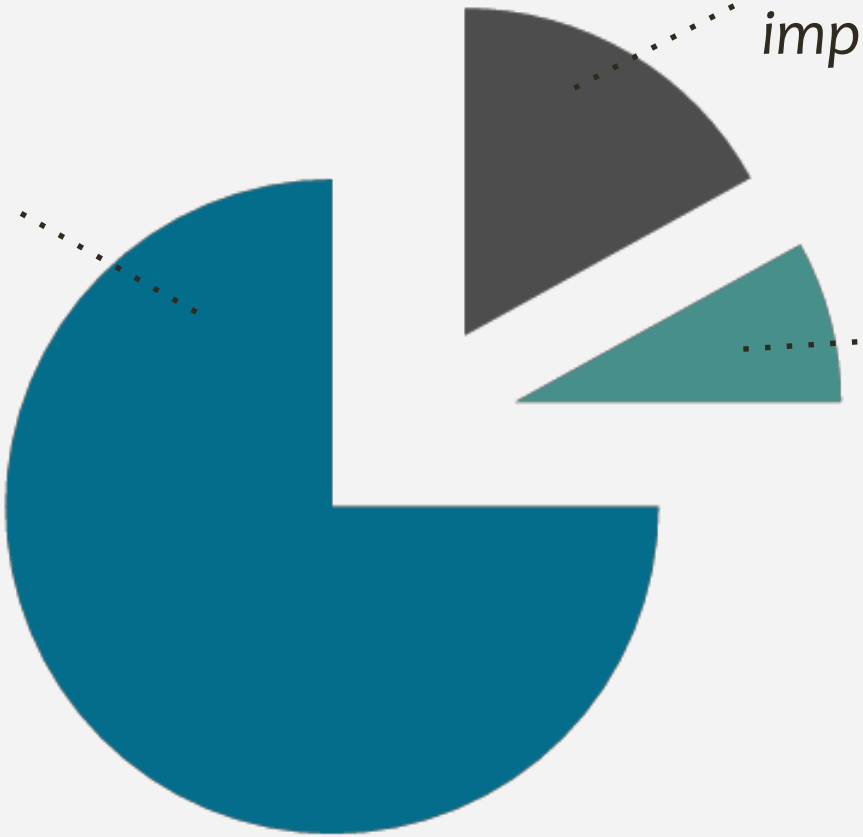


Why it's important:
Helps connect the dots from broad concepts to specific actions for implementation.

Adaptation actions may not look that different from current management actions, especially in the near term.

Small "tweaks" *that improve effectiveness*

Same actions– *climate change just makes them that much more important*



New & different *actions to consider, even some that may seem* ***wild & crazy***

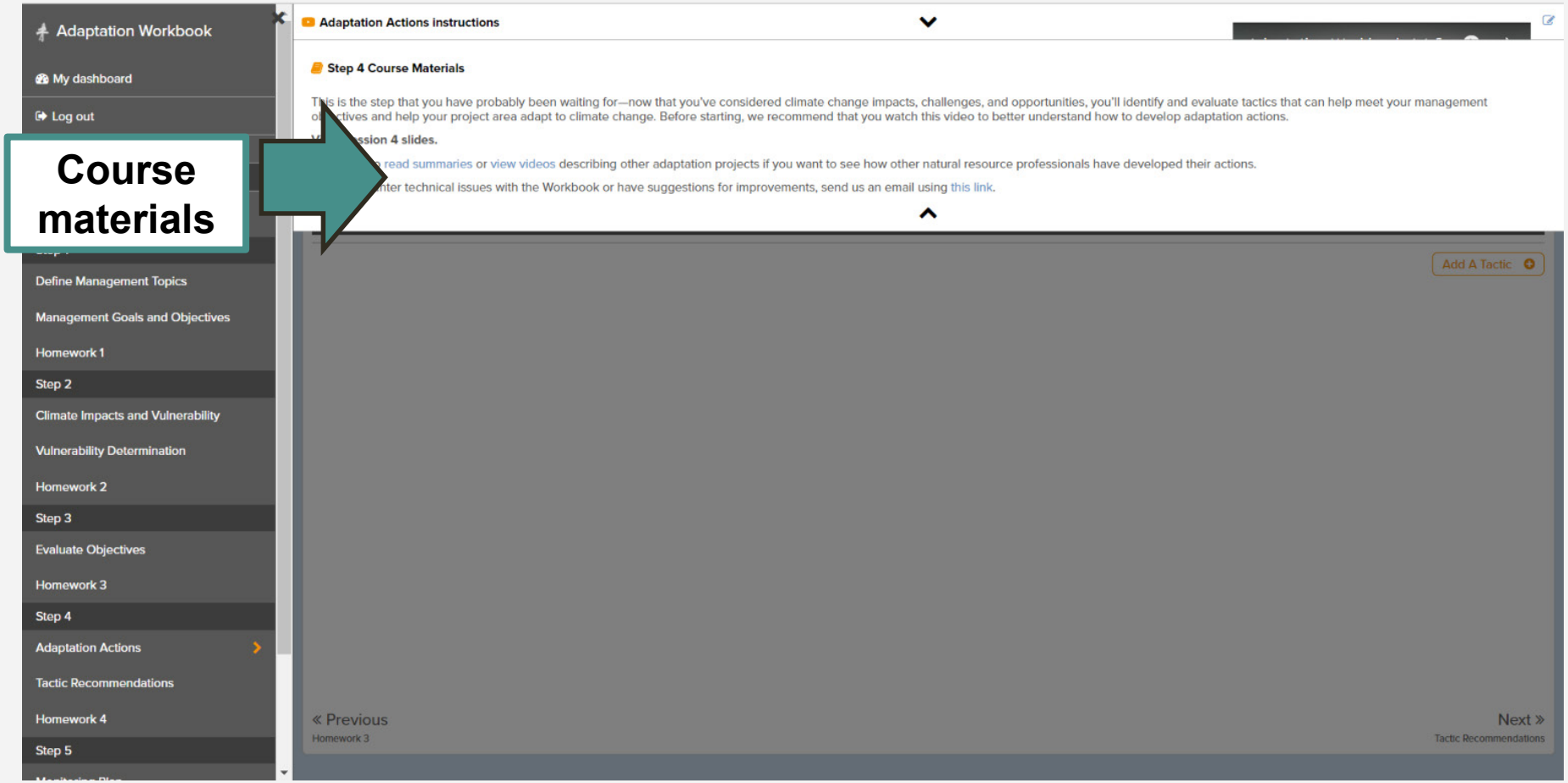
**individual results will vary*

Step 4: IDENTIFY adaptation approaches and tactics for implementation.

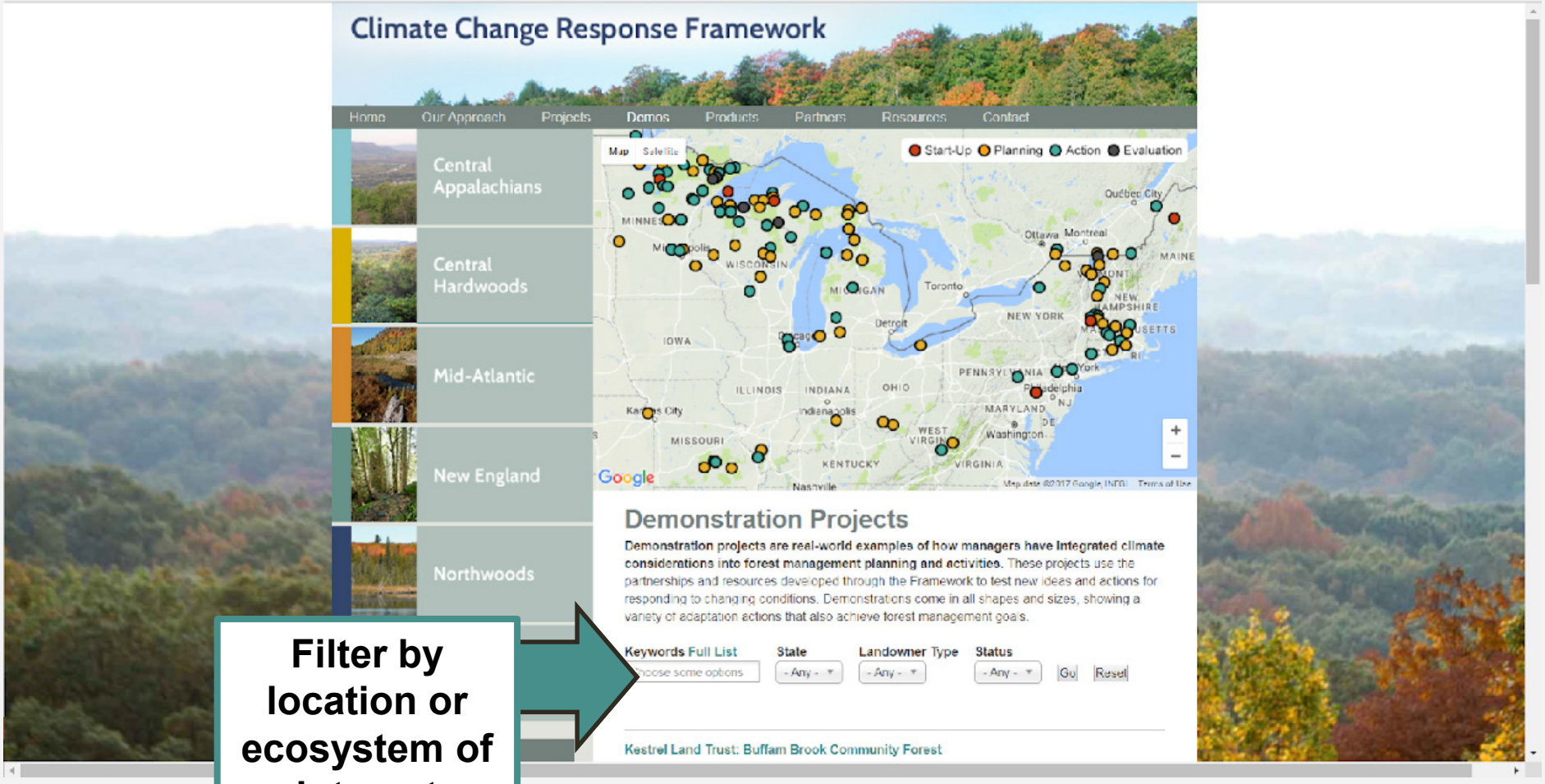
Key Question:

- What actions can enhance the ability of the project area to adapt to anticipated changes and meet management goals?

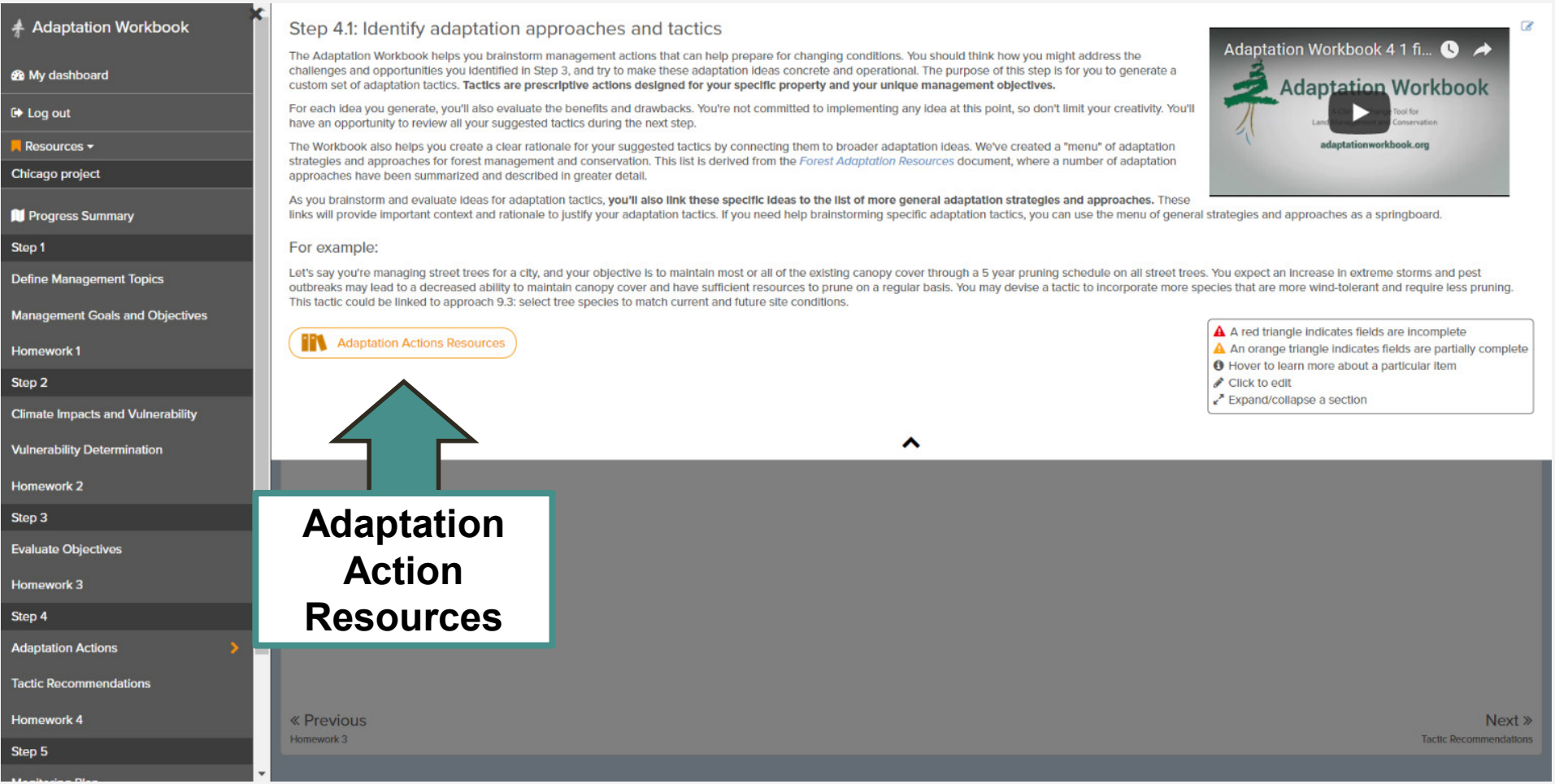
Adaptation Workbook: Step 4



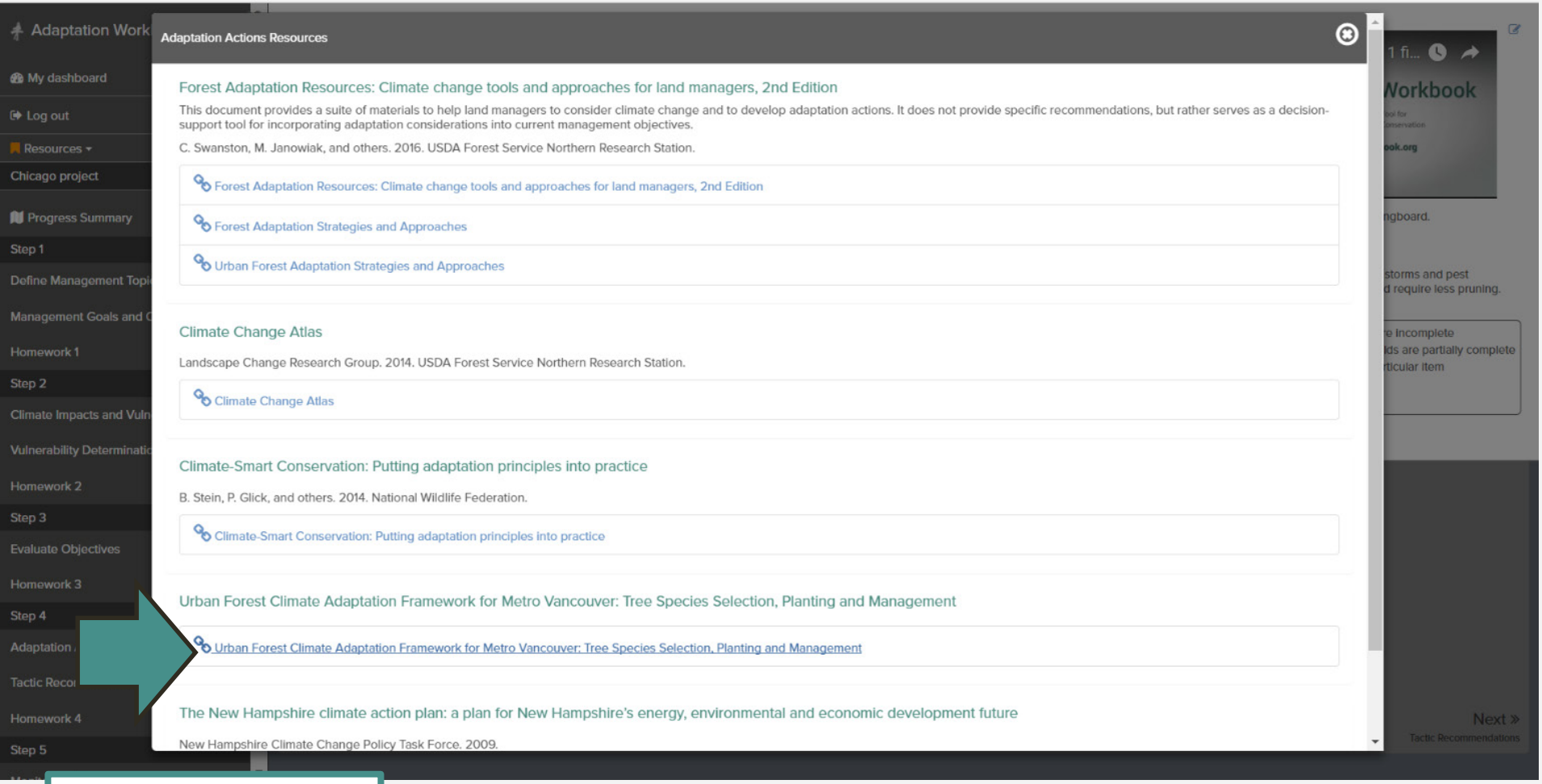
Forestadaptation.org/demos



Adaptation Workbook: Step 4

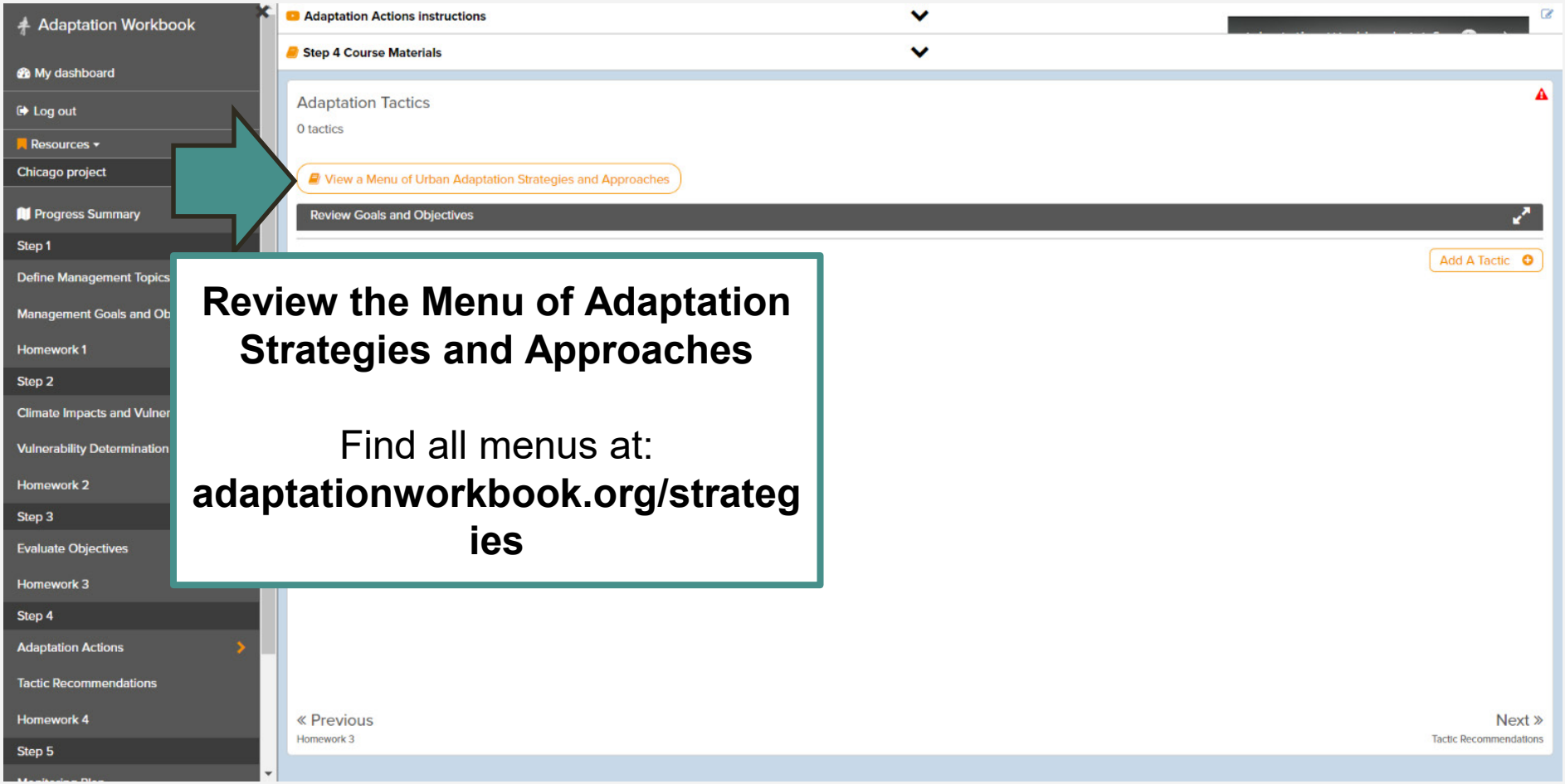


Adaptation Actions Resources



Links to tools and publications

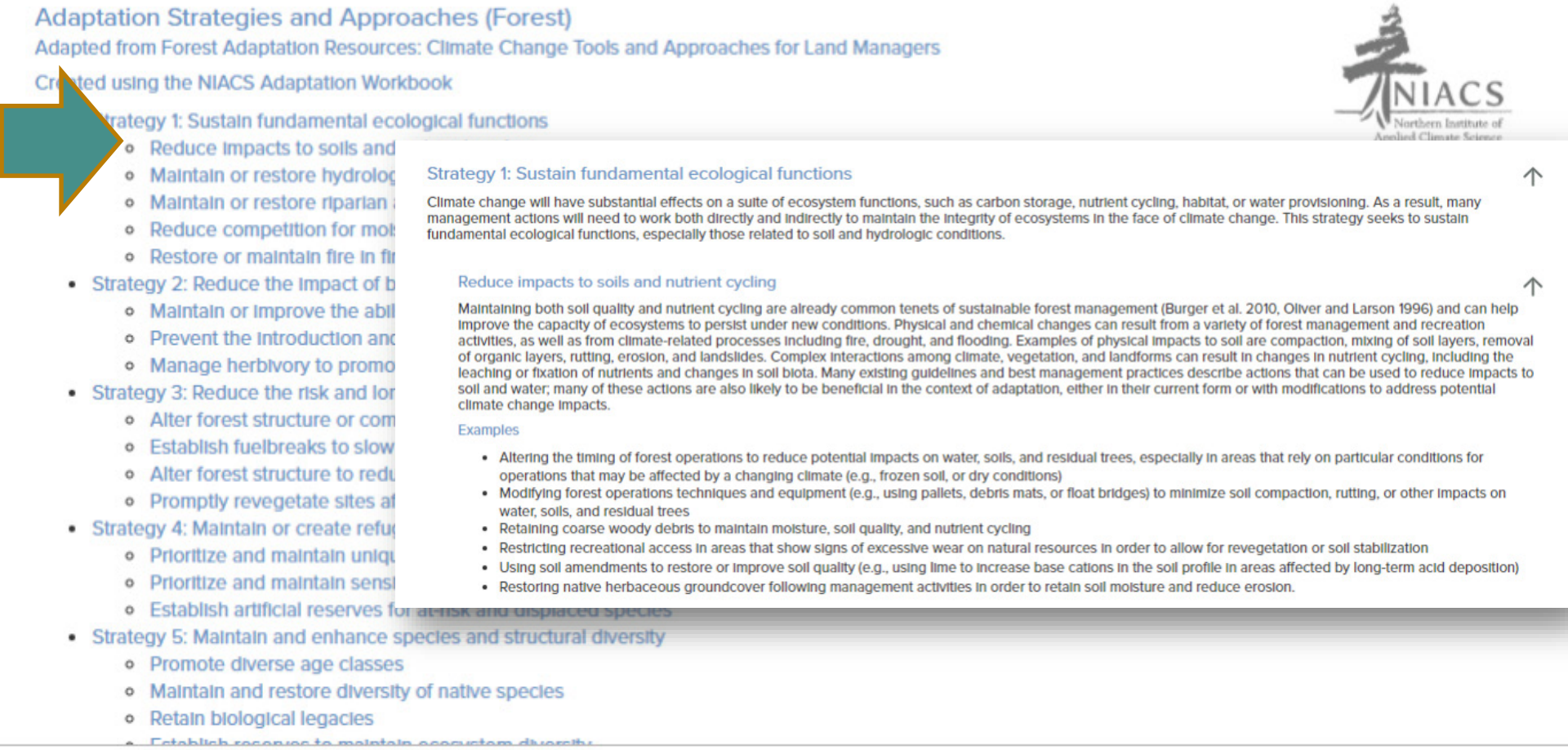
Adaptation Workbook: Step 4



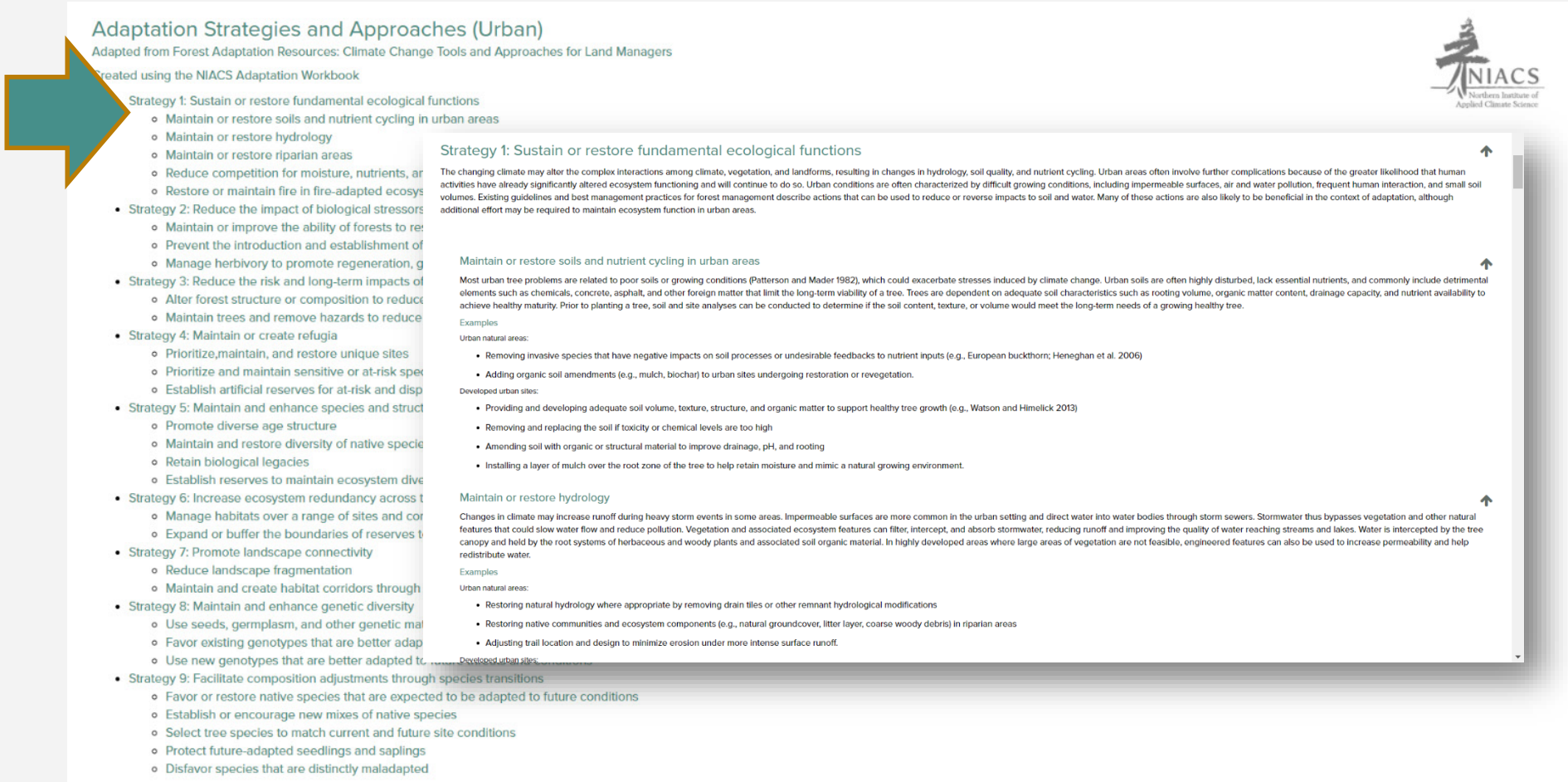
Review the Menu of Adaptation Strategies and Approaches

Find all menus at:
adaptationworkbook.org/strategies

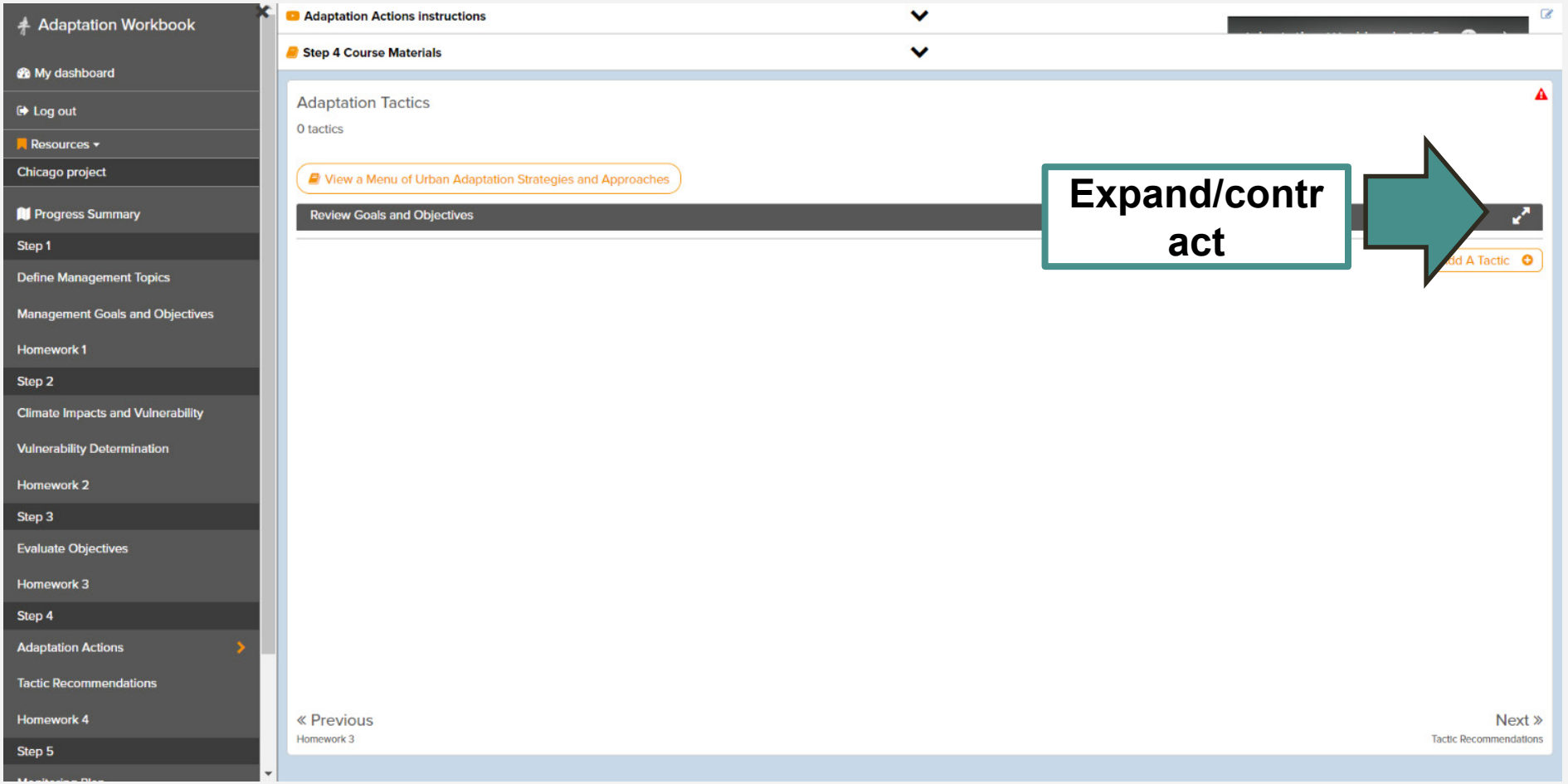
Adaptation Strategies and Approaches Forest Menu



Adaptation Strategies and Approaches Urban Menu



Review Goals and Objectives



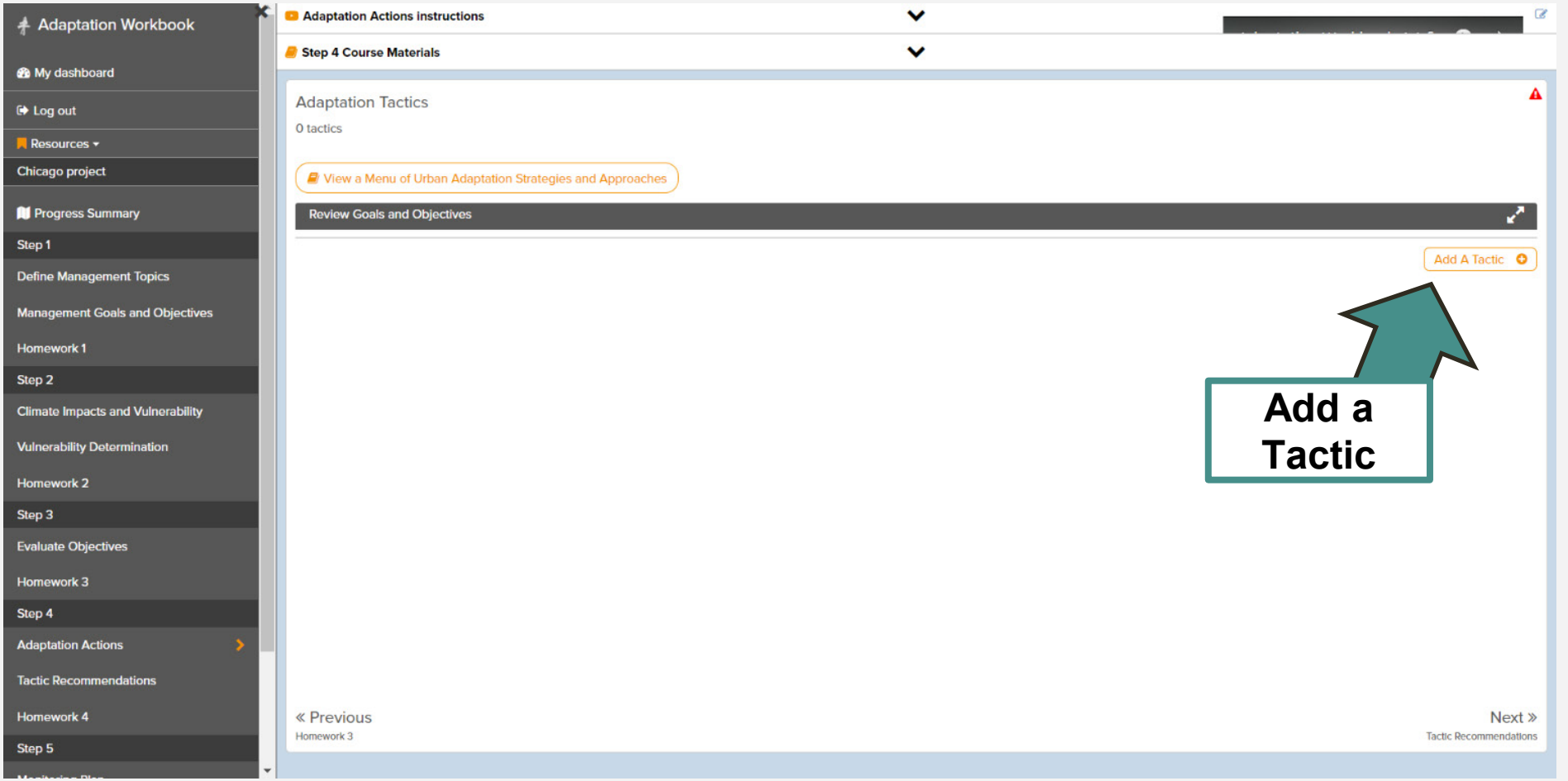
Step 4: IDENTIFY adaptation approaches and tactics for implementation.

Approach – Select from the menu. Pick any that seem to make sense and help address the challenges.

Tactic – Describe a specific action you can take.

These details should ideally answer what, where, and how you will implement the actions.

Add a Tactic


Adaptation Workbook
My dashboard
Log out
Resources
Chicago project
Progress Summary
Step 1
Define Management Topics
Management Goals and Objectives
Homework 1
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Climate Impacts and Vulnerability
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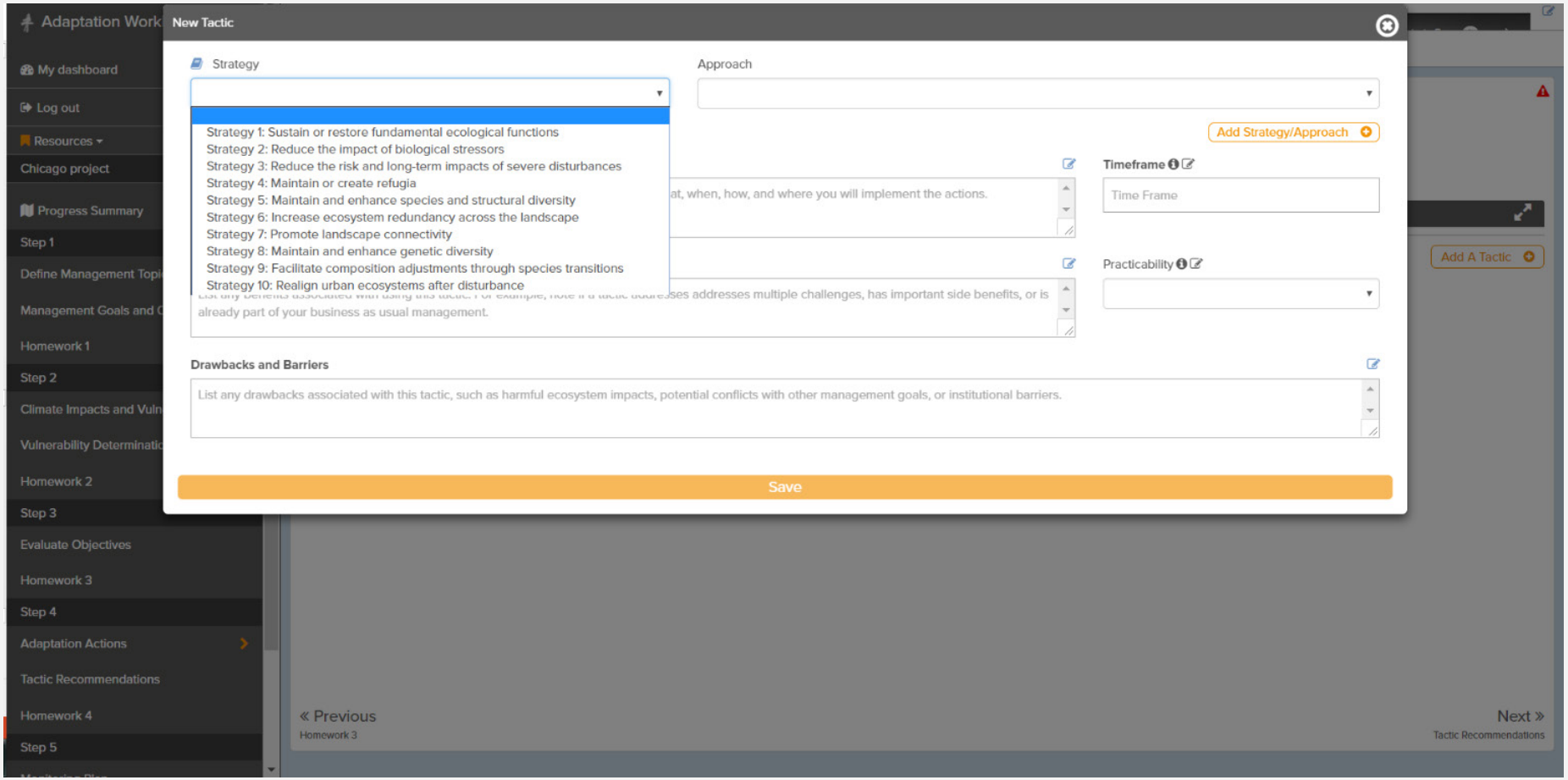
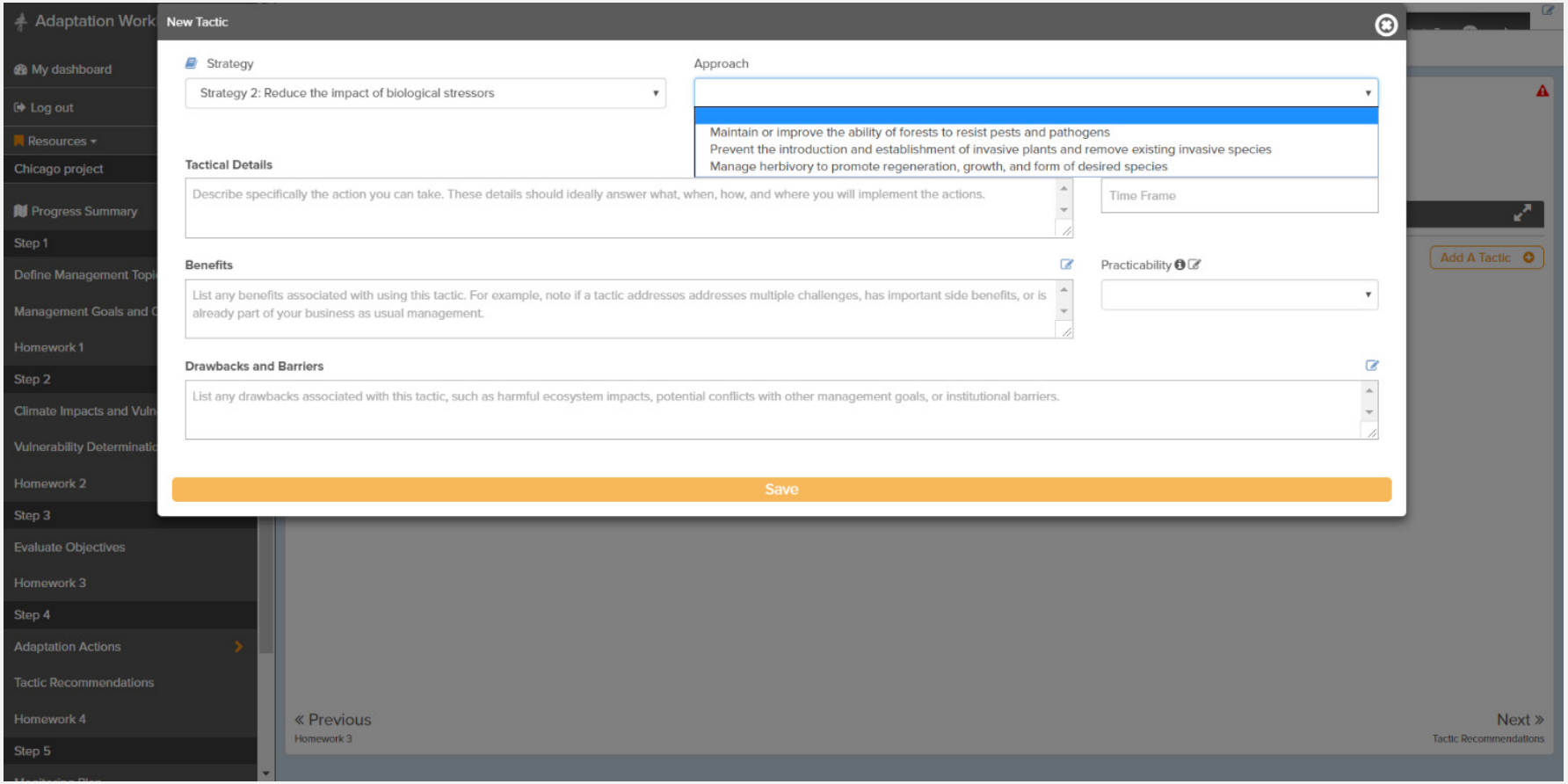
Adaptation Actions
Tactic Recommendations
Homework 4
Step 5
Adaptation Actions Instructions
Step 4 Course Materials
Adaptation Tactics
0 tactics
View a Menu of Urban Adaptation Strategies and Approaches
Review Goals and Objectives
Add A Tactic
Add a Tactic
« Previous
Homework 3
Next »
Tactic Recommendations

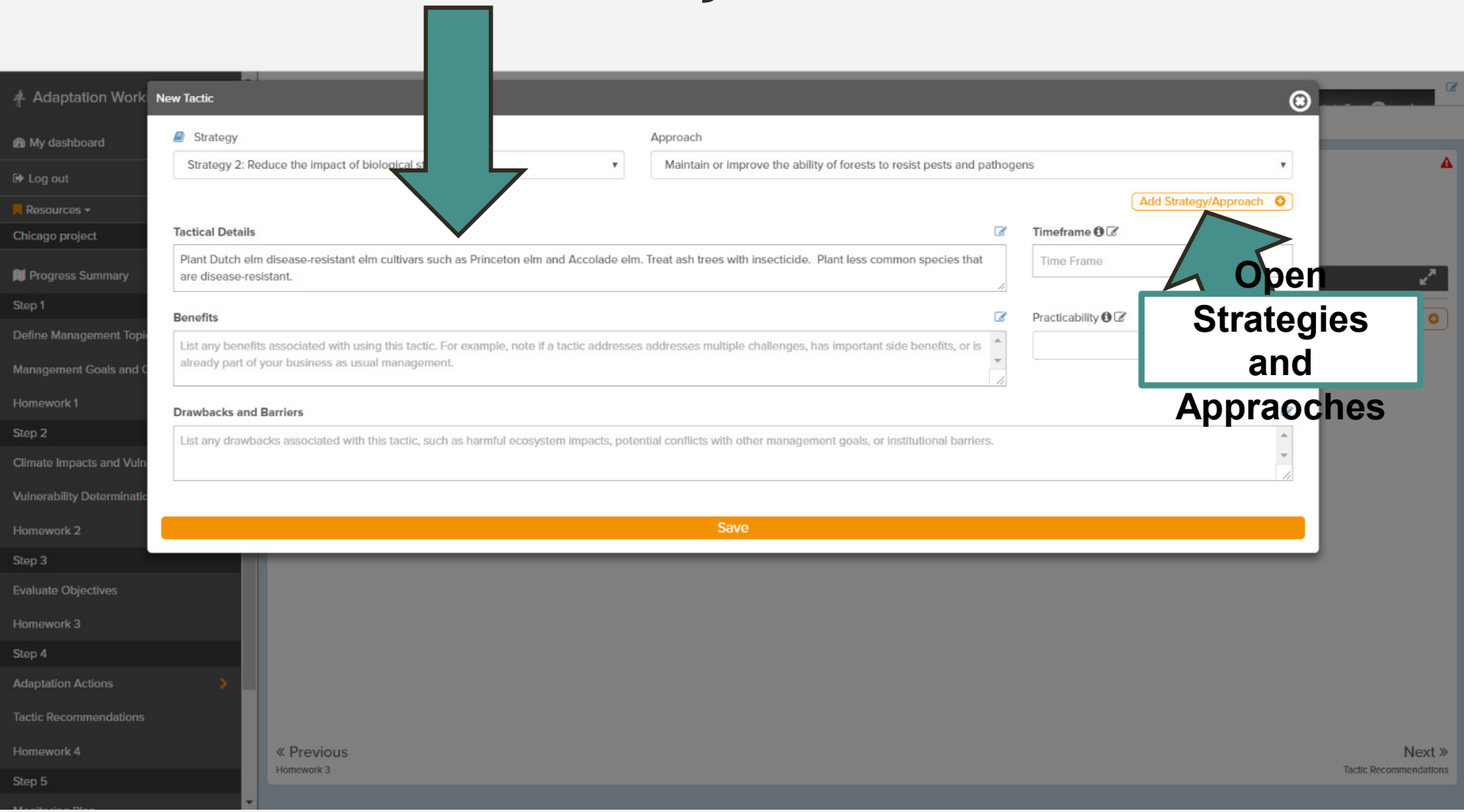
Select a Strategy



Select an Approach



Describe your Tactic



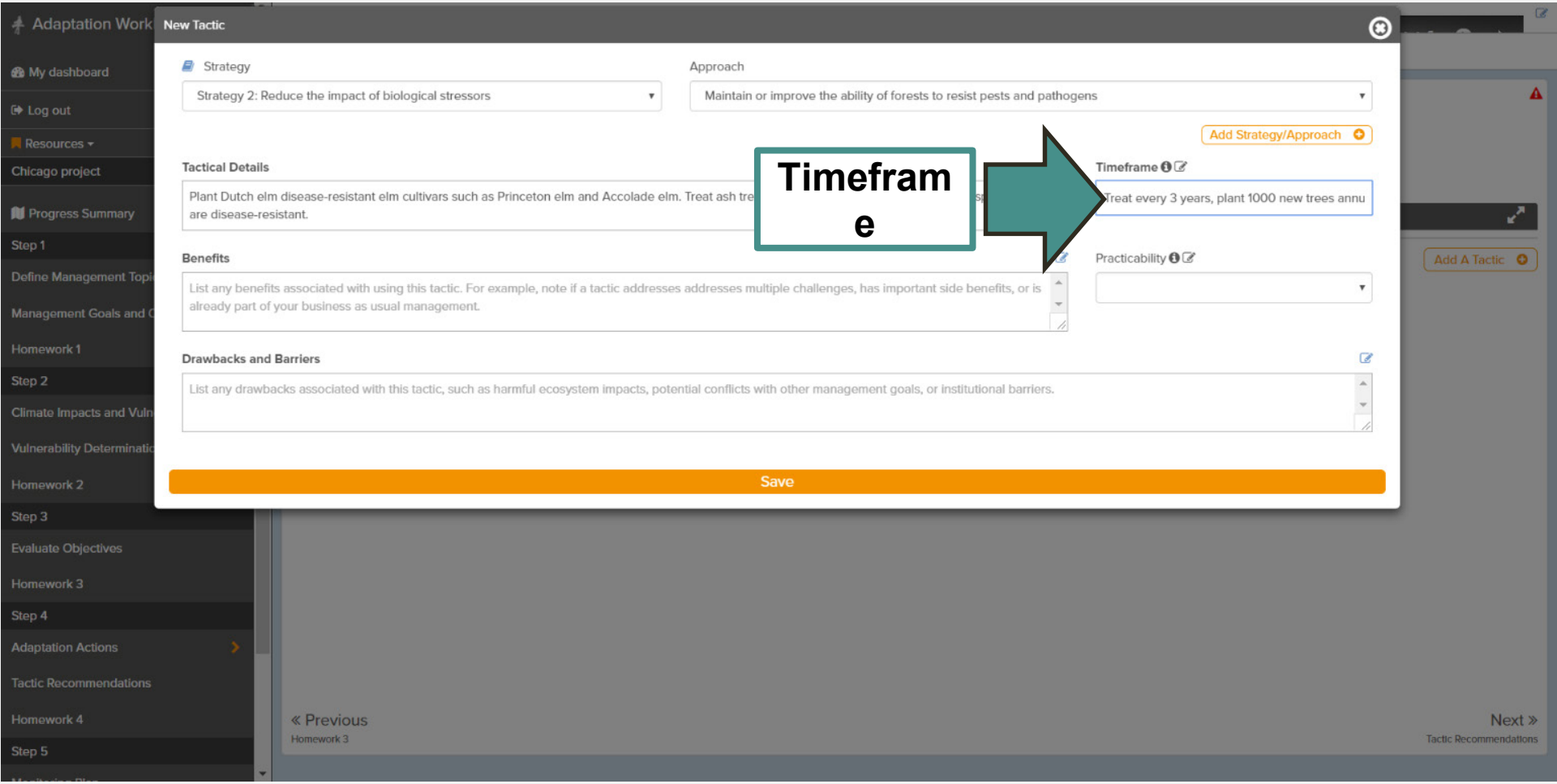
Step 4: IDENTIFY adaptation approaches and tactics for implementation.

Timeframe – Specify when you will implement the tactic.

For example:

- Summer 2019
- Winter 2019-2020
- Within 3 years of…
- After…
- If… then…

Describe your Timeframe



Step 4: IDENTIFY adaptation approaches and tactics for implementation.

Benefits – Describe why the tactic is good.

For example:

- addresses biggest or multiple challenges
- is cheap and easy
- has co-benefits
- is likely to succeed

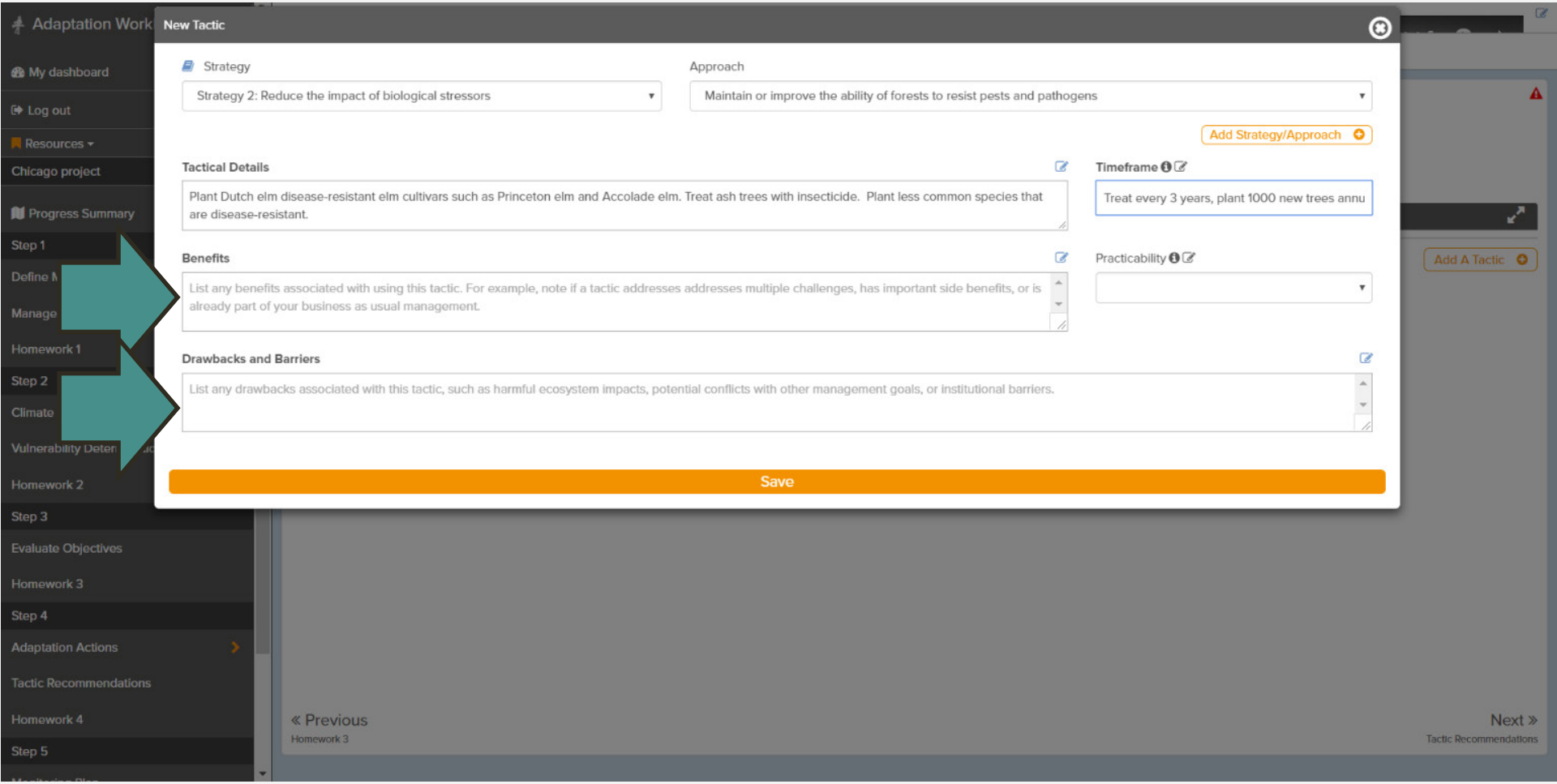
Step 4: IDENTIFY adaptation approaches and tactics for implementation.

Drawbacks and Barriers – Describe why it's not so good.

For example:

- it may have negative side effects,
- Requires high cost or effort
- may not be successful
- has social, financial, or other barriers

Describe your Benefits and Drawbacks/Barriers

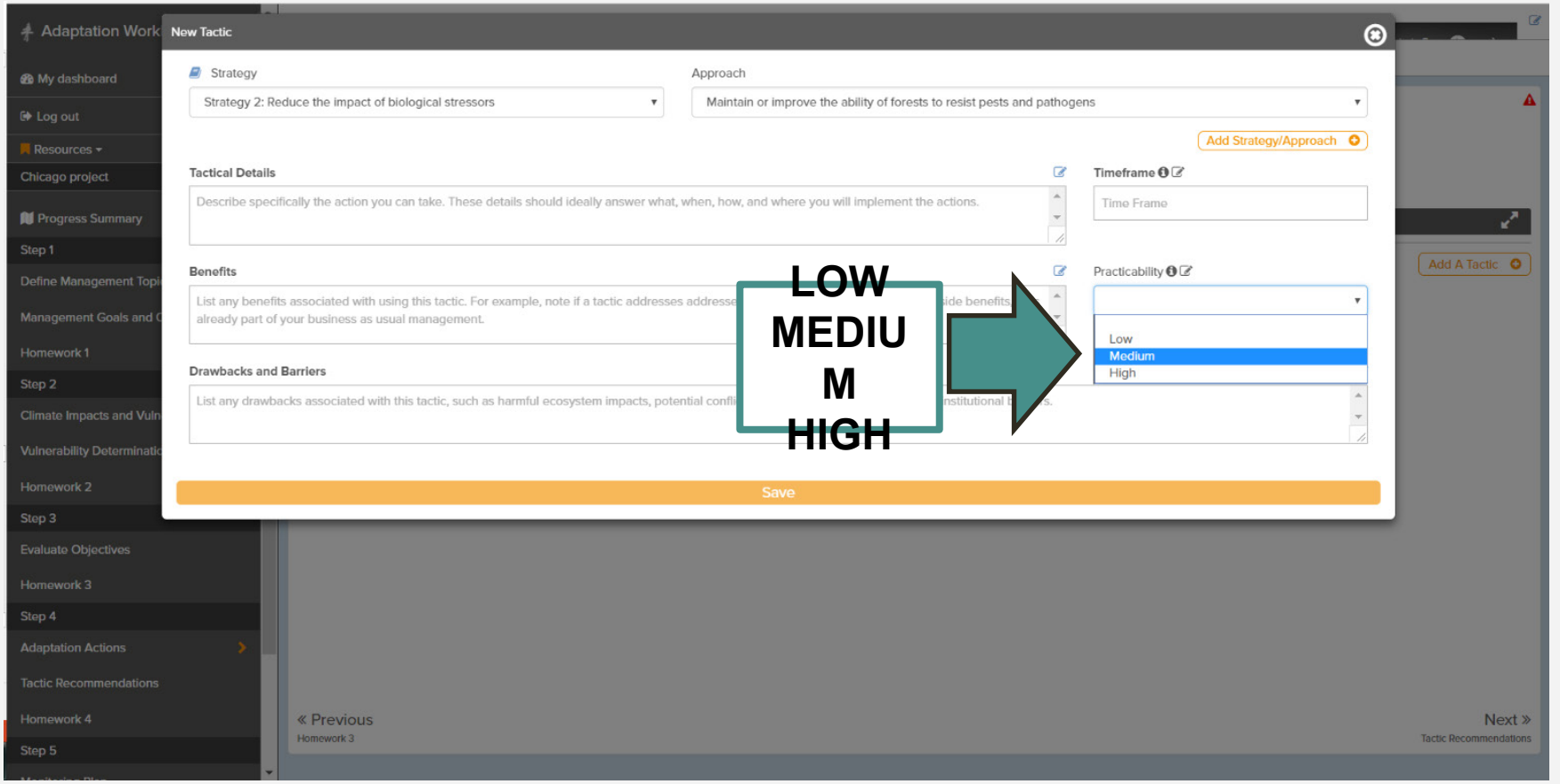


Step 4: IDENTIFY adaptation approaches and tactics for implementation.

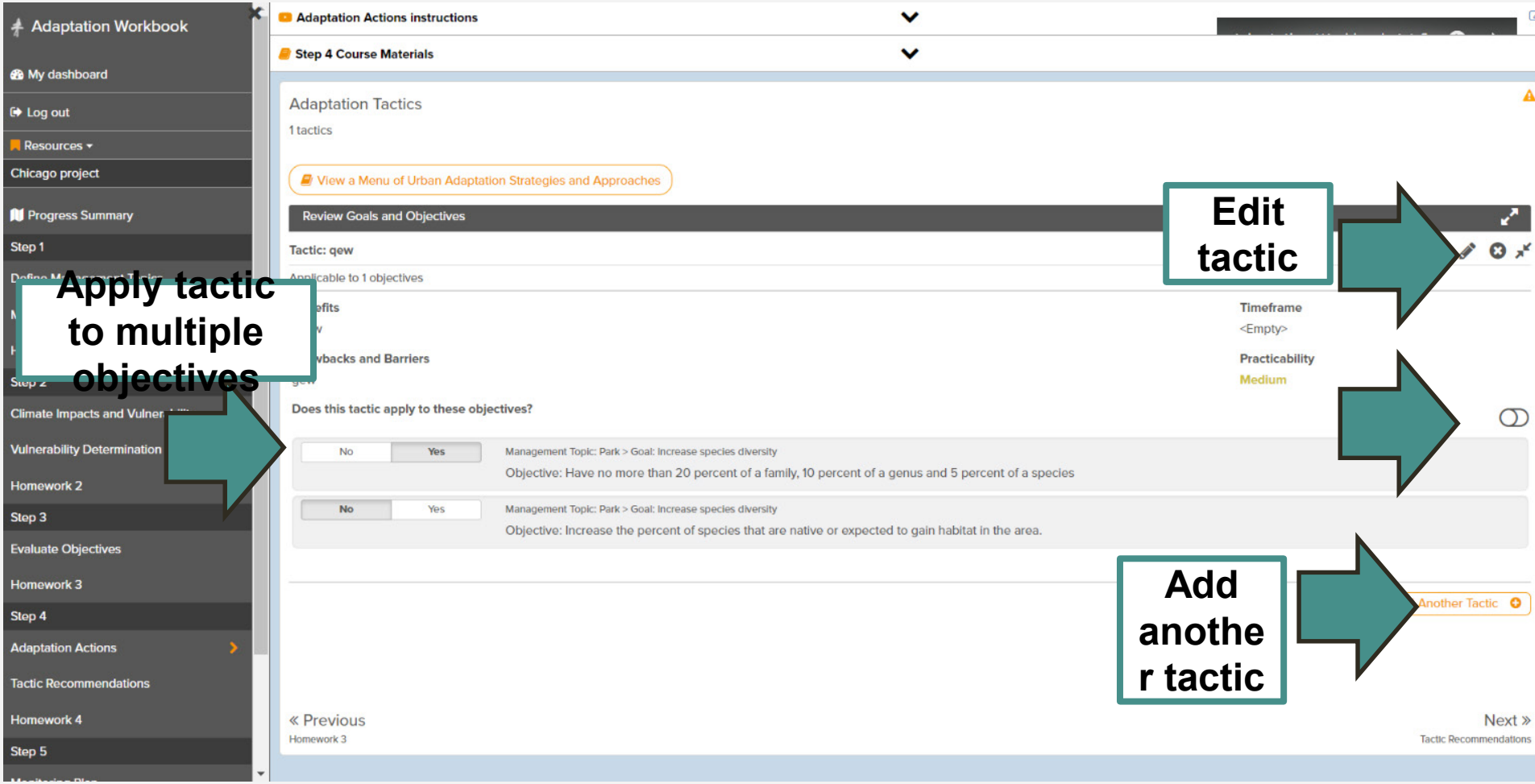
Practicability – Is it both ***effective*** (will meet desired intent) and ***feasible*** (capable of being implemented)?

- **High:** Yes to both!
- **Moderate:** Yeah, but it will take some additional effort or planning…
- **Low:** No, the barriers/drawbacks seem too big or the benefits too small.

Practicability



Apply tactics to objectives



Step 4: IDENTIFY adaptation approaches and tactics for implementation.

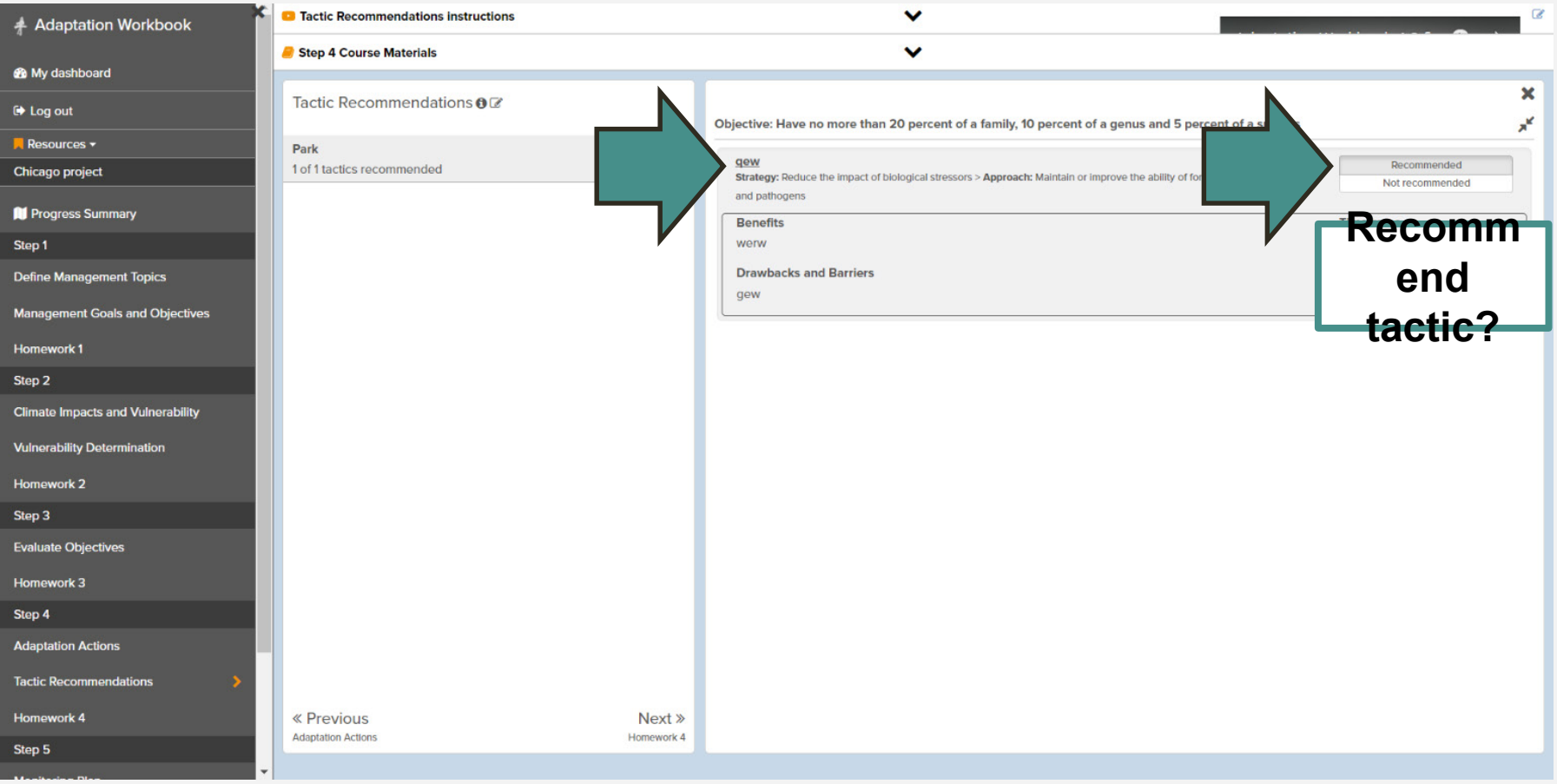
Recommend Tactic– Given all this, is this tactic likely to be helpful?

Also consider: trade-offs, urgency, likelihood of success, cost, and effort…

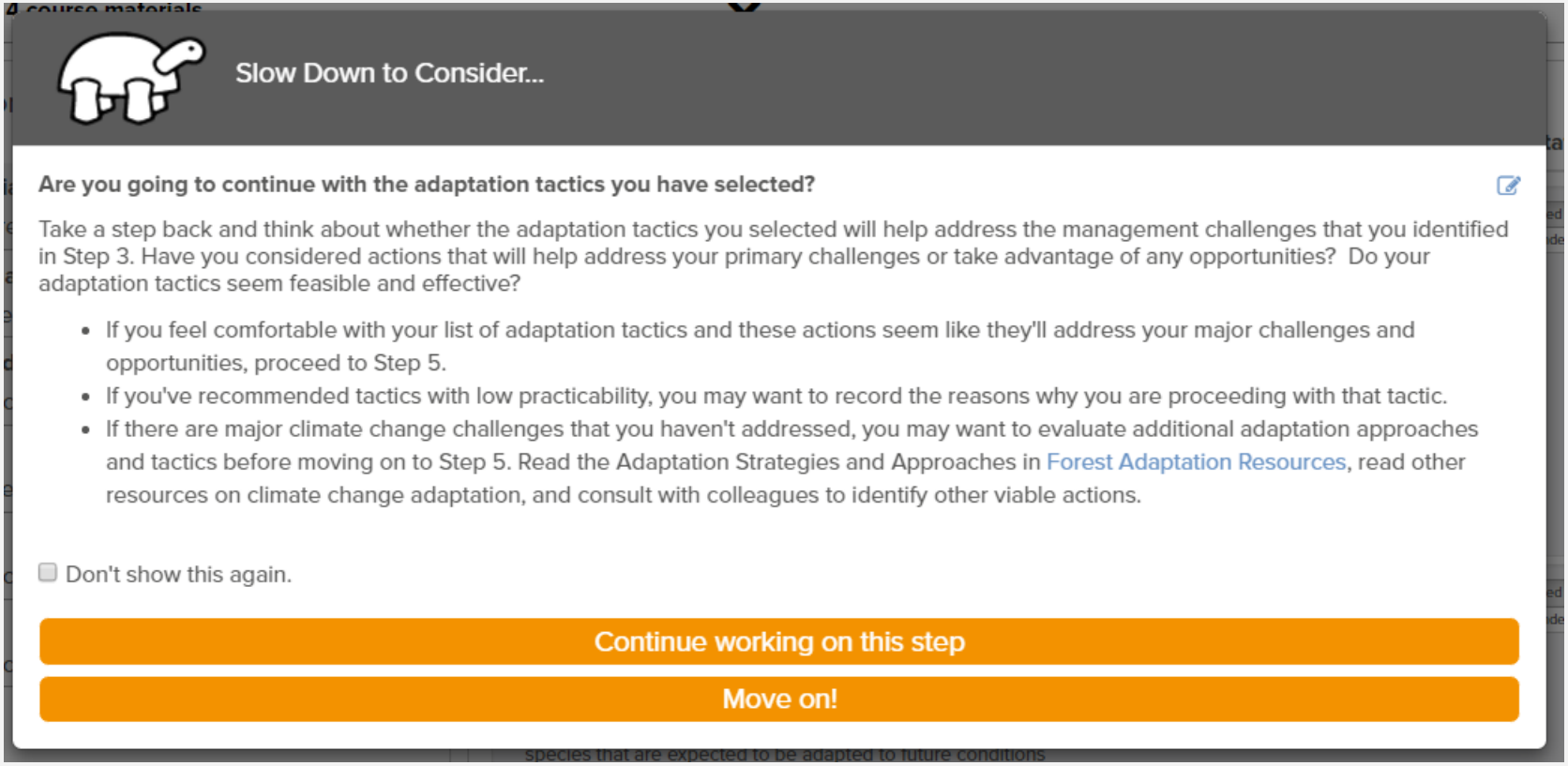
Yes: look to integrate into plan, prescription, or other activities

No: not useful at this time

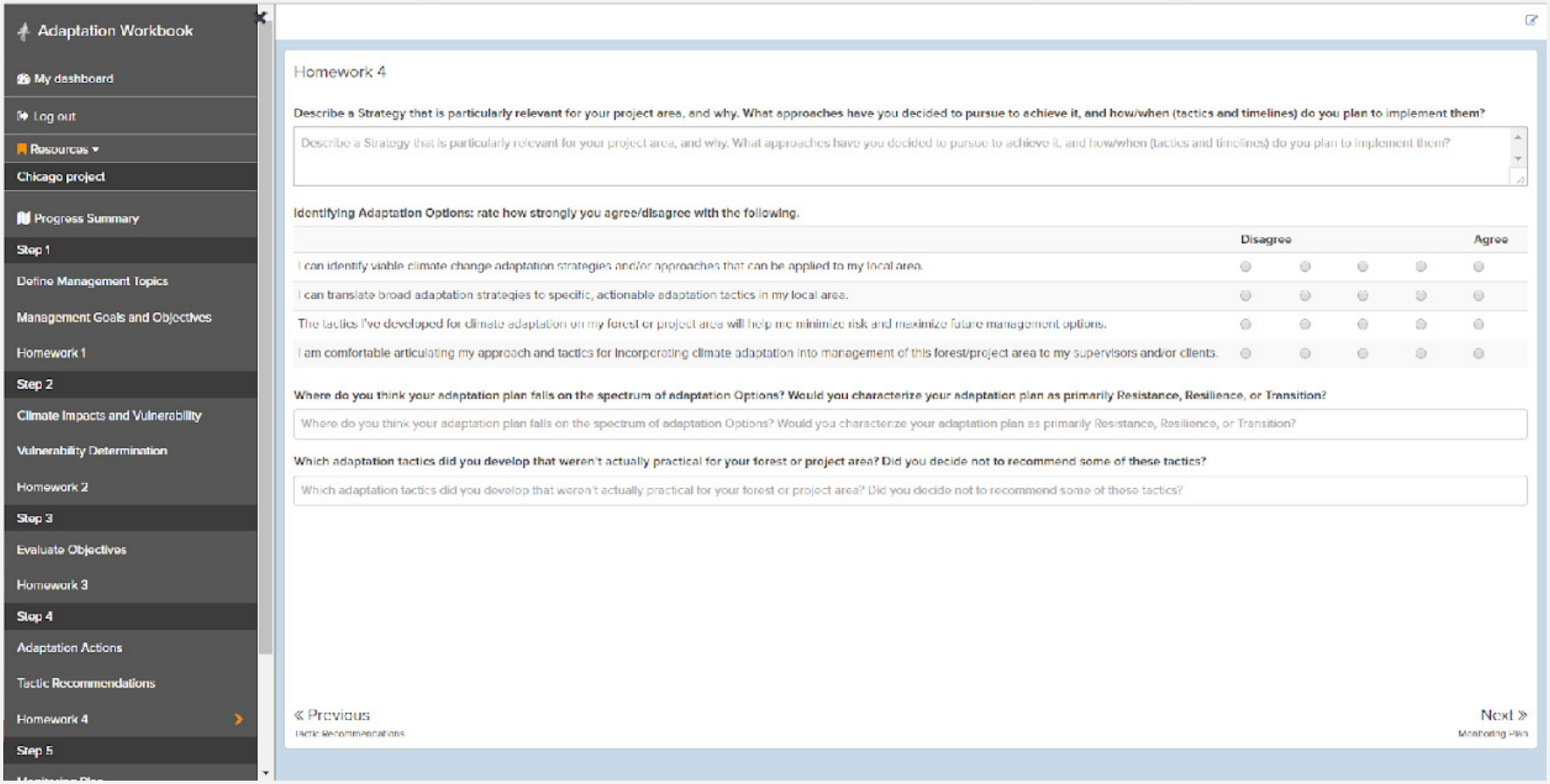
Recommend tactic?



Step 4.2: Tactic Recommendations



Homework


Adaptation Workbook
My dashboard
Log out
Resources
Chicago project
Progress Summary
Step 1
Define Management Topics
Management Goals and Objectives
Homework 1
Step 2
Climate Impacts and Vulnerability
Vulnerability Determination
Homework 2
Step 3
Evaluate Objectives
Homework 3
Step 4
Adaptation Actions
Tactic Recommendations
Homework 4
Step 5
Homework 4
Describe a Strategy that is particularly relevant for your project area, and why. What approaches have you decided to pursue to achieve it, and how/when (tactics and timelines) do you plan to implement them?
Describe a Strategy that is particularly relevant for your project area, and why. What approaches have you decided to pursue to achieve it, and how/when (tactics and timelines) do you plan to implement them?
Identifying Adaptation Options: rate how strongly you agree/disagree with the following.
Disagree
Agree
I can identify viable climate change adaptation strategies and/or approaches that can be applied to my local area.
I can translate broad adaptation strategies to specific, actionable adaptation tactics in my local area.
The tactics I've developed for climate adaptation on my forest or project area will help me minimize risk and maximize future management options.
I am comfortable articulating my approach and tactics for incorporating climate adaptation into management of this forest/project area to my supervisors and/or clients.
Where do you think your adaptation plan falls on the spectrum of adaptation Options? Would you characterize your adaptation plan as primarily Resistance, Resilience, or Transition?
Where do you think your adaptation plan falls on the spectrum of adaptation Options? Would you characterize your adaptation plan as primarily Resistance, Resilience, or Transition?
Which adaptation tactics did you develop that weren't actually practical for your forest or project area? Did you decide not to recommend some of these tactics?
Which adaptation tactics did you develop that weren't actually practical for your forest or project area? Did you decide not to recommend some of these tactics?
« Previous
Next »

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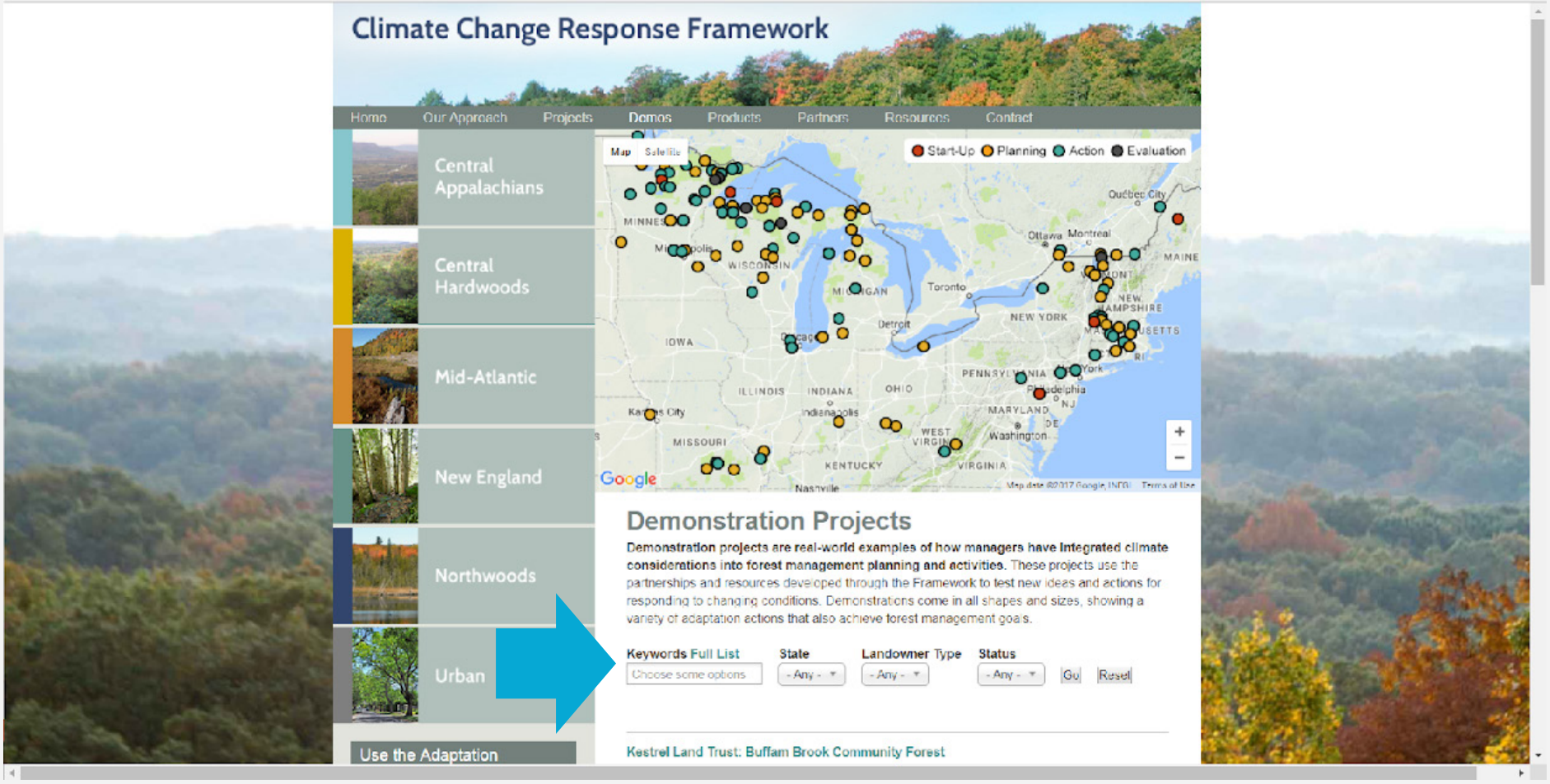

Filter projects by keyword, state, land ownership, or project status.

Assignment

- Go back and complete **Step 3** as needed
- Complete **Step 4:** Identifying Adaptation Actions
- Complete the **Homework** section after Step 4
- These course materials may be helpful:
  - Adaptation Strategies and Approaches
  - Adaptation Demonstrations
- Come to Session 5 (Feb 19) ready to discuss your approaches and actions!

Thanks everyone!

Troubleshooting? Stay on the line.

Questions?