

## **Social and Environmental Futures**

*Module for undergraduate Environmental Studies course, using the Yahara 2070 scenarios*

### **This module has several goals:**

1. To give students an opportunity to develop conceptions of themselves as citizens, community members, and ecological actors with a role to play in shaping global futures.
2. To introduce students to the problems and opportunities associated with social and ecological change at the regional and global scale.
3. To use UW-Madison's Yahara 2070 future scenarios as a tool for long-term thinking, discussion, learning, and writing.

### **Community-based learning component**

This course module is designed to encourage interaction with the community by 1) helping students develop a place-based understanding of social and ecological change; 2) facilitating discussion with non-university community members on desired futures; 3) writing vision and opinion statements that are shared with the general public.

### **About Yahara 2070**

The Yahara 2070 scenarios are plausible stories about possible futures for the Yahara Watershed. They are based on a range of changes that could impact the region's land and water resources and, ultimately, the well being of future generations. They provide a structured way to think about the inherent uncertainty of long-term change and can help us act more effectively in the present. None of the scenarios portray an ideal future. The outcomes of each have advantages and disadvantages.

Yahara 2070 was developed by researchers with the Water Sustainability and Climate Project at the UW-Madison. The scenarios are framed largely around issues related to the region's lakes and freshwater, but also examine a variety of important social and environmental issues that affect the well-being of local communities over the long term.

### **How to use this module**

This module was designed for an undergraduate introductory environmental studies class. The content can be tailored depending on whether the course is focused primarily on biophysical or social aspects of environmental change. The module can be taught in one of two suggested lengths: over one week of a class, with two lectures and one section meeting; or over two weeks of a class, with four lectures and two section meetings. Below are two suggestions for module organization, but individual class plans or assignments can also be used as needed for undergraduate courses.

*Option A:* Class 1; Class 2; Class 2(A). Assignments 1 and/or 2. Wrap-up with a final discussion about the role of future thinking in environmental studies and the questions it raises, such as the uncertainties of future prediction, differential vulnerabilities, and organizing community action.

*Option B:* All Classes. Assignments 1 and/or 2; 3 and/or 4.

## **Assignments**

### **1. Write the future.**

2-3 pp. double-spaced essay.

Imagine that, 60 years from now, future generations enjoy a high quality of life with resilient ecosystems and vibrant communities. What is your vision for what that will look like? The purpose of this essay is to tell a compelling story that portrays your vision of what the future will look like for the next generation. You can assume the voice of a specific person, you can tell a fictional news story, or use other creative narrative strategies.

### **2. Write an Op-Ed.**

Write a 600-word op-ed for the Wisconsin State Journal or the Isthmus describing your vision for the future, its best aspects and unavoidable tradeoffs, and the steps the community can take to get there. The Op-Ed must cite research from natural and social sciences and draw upon discussions and readings from class for ideas for positive changes in governance. Reference the Op-Ed project website for concrete suggestions for opinion writing:

<http://www.theopedproject.org/>

[We recommend workshopping the Op-Ed with another student and instructor.]

### **3. Public meeting reflection.**

Attend a public meeting or hearing. You may choose a meeting on any topic of your choice at the state, county, or municipal level.

- Dane County's committee meeting times and locations are posted here: <https://dane.legistar.com/Departments.aspx>.
- Wisconsin state hearings are posted here: <http://committeeschedule.legis.wisconsin.gov/>
- City of Madison public meetings are posted here: <http://www.cityofmadison.com/cityHall/WeeklySchedule/>

Write a reflection (2 pp. double spaced) that answers the following questions:

- 1) What issues were presented and debated at the meeting?
- 2) Could you infer people's affiliations and biases from the opinions expressed on the issue?
- 3) How did the meeting attendees work through questions or problems?
- 4) How do you see the issues addressed changing in the future?
- 5) How can you as an individual affect change on this issue in the future?

### **4. Community voices.**

In groups of 3-4, you will create podcasts of a conversation or conversations with community members. The podcasts will be focused on the future of the Yahara Watershed. Example questions for discussion with community members include the following:

- If you could find out three things about the future, what would they be?
- What words would you use to describe the ideal state of the region in 2070?
- What obstacles do you envision to achieving this ideal world?
- What words would you use to describe your worst-case scenario for the region in 2070?
- What measures or actions could be taken to prevent that worst-case scenario from occurring?

- Who or what will be most influential in determining the future?
- What surprises or unanticipated events might you imagine between now and 2070?
- Thinking of environmental changes in this region, who has benefited the most, and who has lost out?
- What is the most effective intervention that has influenced the environment or resources in this region? What made it effective?
- How has science contributed to understanding the environment in this region?
- Do we have to choose between farming, housing development, and clean water, or can we have them all?
- How should we go about making decisions when trade-offs are involved?
- Imagine far into the future: what do you most want to be remembered for?

Groups must submit a short proposal stating the person or people who will be interviewed and the planned questions.

### Class schedule

#### **Class 1: Ecological change, differentiated vulnerability**

Key questions: Why are climate and other ecological changes social issues? Who are the winners and losers in global change?

Class plan:

- Background on ecological change and human-environment relationships.
  - View short video clip, Naomi Klein's This Changes Everything clip: <https://www.youtube.com/watch?v=Rqw99rJYq8Q>.
  - View multimedia: Mountain of Ice: If the Ice Melts <http://www.pbslearningmedia.org/resource/ess05.sci.ess.watcyc.icemelt/mountain-of-ice-if-the-ice-melts/>
- Define terms *resilience* and *vulnerability*. For instructor background on these terms, we recommend the following articles:
  - Folke, C. (2006). Resilience: The emergence of a perspective for social–ecological systems analyses. *Global Environmental Change*, 16(3), 253–267. doi:10.1016/j.gloenvcha.2006.04.002
  - O'Brien, K. L., & Leichenko, R. M. (2003). Winners and losers in the context of global change. *Annals of the Association of American Geographers*, 93(1), 89–103.
- Discuss vulnerability and resilience in the context of current problems described in today's readings.

Readings for today:

- Washington Post. "The world's most famous climate scientist just outlined an alarming scenario for our planet's future." July 20, 2015. <https://www.washingtonpost.com/news/energy-environment/wp/2015/07/20/the-worlds-most-famous-climate-scientist-just-outlined-an-alarming-scenario-for-our-planets-future/>

- Easterbrook, “Global Warming: Who Loses and Who Wins?” The Atlantic (April 2007) <http://www.theatlantic.com/magazine/archive/2007/04/global-warming-who-loses-and-who-wins/305698/>
- [Optional] “A Burden to Share? Addressing Unequal Climate Impacts in the Least Developed Countries” David Cipler et al. International Institute for Environment and Development Briefing, Nov 2013. <http://pubs.iied.org/pdfs/17181IIED.pdf?>

## Class 2: The science of future thinking

Key Questions: What is sustainable decision-making? Why scenarios? How do we create quantitative predictions of the future, and what can this method tell us?

Class plan:

- Use online PowerPoint (here: <https://wsc.limnology.wisc.edu/yahara2070/undergraduate-module>) for short class lecture. This presentation covers the process of incorporating local stakeholders’ input into four stories about the future, and then making mathematical models to represent those stories’ implications for the environment.
- Watch short videos of the four Yahara 2070 scenarios: <https://wsc.limnology.wisc.edu/multimedia> (Yahara 2070 scenario previews).
- Short discussion and prep for next class meeting.

Readings for today:

Global scenarios: IPCC, Millennium Ecosystem Assessment

- Revkin, Andrew. 2013. Climate Panel’s Fifth Report Clarifies Humanity’s Choices. New York Times Sep 27. <http://dotearth.blogs.nytimes.com/2013/09/27/ipcc-global-warming-report-clarifies-humanitys-choices/>
- [Optional] Carpenter, S. R., Bennett, E. M., & Peterson, G. D. (2006). Scenarios for ecosystem services: an overview. *Ecology and Society*, 11(1), 29.

Yahara 2070 scenarios

- Seifert, Jenny. Yahara 2070 scenarios can inspire ideas and actions for a desirable future. [https://wsc.limnology.wisc.edu/sites/default/files/yahara2070\\_brief\\_WEB.pdf](https://wsc.limnology.wisc.edu/sites/default/files/yahara2070_brief_WEB.pdf)
- Four Yahara 2070 scenario narratives, found here: <https://wsc.limnology.wisc.edu/yahara2070> [option to assign students one narrative each, with reporting back to small groups on the big themes and events of each during class]. OR listen to the podcasts, also available on the Yahara 2070 website.
- Blog post on the Water Sustainability and Climate project’s modeling methodologies: <https://yaharawsc.wordpress.com/2015/11/04/how-to-simulate-the-future-of-a-watershed/>
- [Optional] Carpenter, S.R. et al. (2015). Changing Drivers and Plausible Futures of a Social-Ecological System: Yahara Watershed, Wisconsin, USA. *Ecology and Society*, 20(2), 10.
- [Optional] Yahara 2070 launch video: discussion panel with different perspectives <https://www.youtube.com/watch?v=IuX7ceEkbs4>

## Class 2(A): Section Activity

Homework before Section: To prepare for section discussion, visit the Yahara 2070 website (<https://wsc.limnology.wisc.edu/yahara2070>), read the four scenario summaries, and watch the video trailers to refresh your memory of the scenarios. As you do so, take a few minutes to think

through this question for each scenario, jotting down notes of ideas you want to bring up in discussion:

*Imagine a loved one that might be alive in 2070. How would their life be different in each scenario? In what ways does life seem better or desirable, and in what ways does it seem worse or undesirable?*

Section plan:

- In small groups, review the scenarios. Students will write what the future looks like for Lifestyles, Communities, and Environment (use Appendix A as template). Then they will discuss the pros and cons—or desirable and undesirable aspects—of the four Yahara 2070 scenarios from their point of view (see second column of table in Appendix B).
- As a large group, write up the most important pros (desirable aspects or best ideas) and cons (undesirable aspects or worst threats) from each group, using the categories in Appendix C, Building Our Vision worksheet. Then, identify and circle commonalities across the four scenarios, as well as across all of the small groups. Come to consensus on a shared vision of the five most important “pros” or desirable aspects of life and the environment in 2070.

Tip for consensus building:

The group should agree on a shared vision of the most important aspects of a desirable future. One simple way to seek consensus is for groups to conduct a “thumb-vote”: thumbs up indicates full agreement that the factors selected reflect a desirable future; thumbs parallel to the floor indicates you can live with the vision, even if you don’t fully agree with it; thumbs down indicates you disagree that the scenario reflects a desirable future. If there is disagreement, allow those who disagree to voice their reasons, and discuss modifications to the scenario that would eliminate thumbs-down votes.

Follow-up questions:

- Was it hard to come to consensus on the 5 most important aspects of 2070? Why do you think that is? What do you think this discussion would be like outside of the classroom, such as in a legislative debate or community meeting?
- What new actions could we undertake today, individually and as a class, to work toward the five most important elements we want to see in 2070?
- Who else should be involved to achieve the vision?

### **Class 3: Debating the best path forward**

Key Questions: How can we understand different perspectives on what people want for the future? What drives social and behavioral change?

Class plan:

- Divide the class into small groups to represent different community organizations: an environmental nonprofit, a tech firm, a farmers association, a real estate development group, and a university.
- Each group will choose one scenario among the four Yahara 2070 scenarios that they think best represents their interests.

- *Explain why your interest group supports this version of the future, and what would you change about the vision?*
- Each group then responds to one other group's presentation and chosen scenario.
  - *Why do your groups see things differently or the same way?*

Discussion questions:

- Was it easy or hard to take on the interests of the group to which you were assigned? Did your group assignment change your perception of the scenarios?
- Have you attended or watched a public meeting or congressional debate in which different stakeholder groups were advocating for their positions on an issue or plan? What was that experience like? Did this activity replicate anything you saw in that real-world context?

Reading for today:

- John, P., G. Smith and G. Stoker (2009). "Nudge nudge, think think: Two strategies for changing civic behaviour." *The Political Quarterly* 80(3): 361-370.  
<http://dx.doi.org/10.1111/j.1467-923X.2009.02001.x>

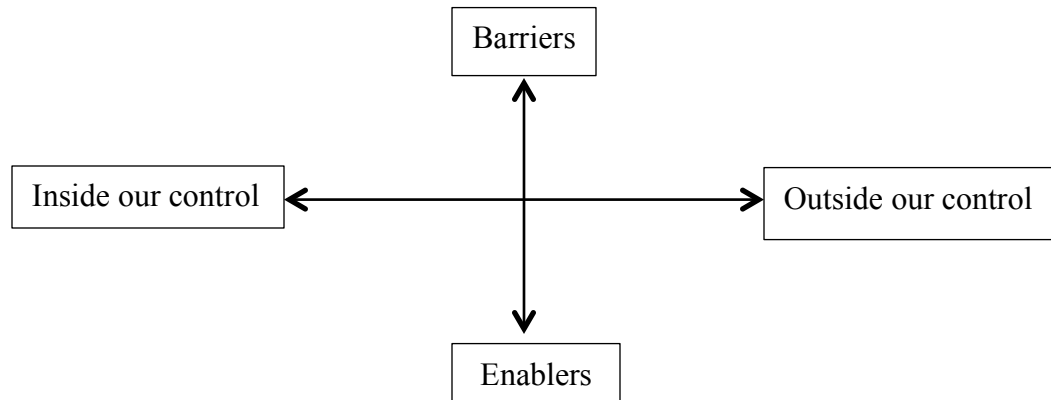
#### **Class 4: Build-your-own future**

Key Questions: What do you want the future to look like? What are the social and ecological changes that may occur along the way? What tradeoffs might be involved? How could we get there?

Class plan:

- Discuss social and ecological trends, drivers, and events that can lead to future change.
- Suggested discussion (see also Appendix D):
  - 1) As a large group, brainstorm the following and capture ideas on post-its notes:
    - a) What **present-day trends** could have a positive or negative impact on the five most important elements of our desirable future (from Class 2)? An example of a trend from Yahara 2070 is the movement toward renewable energy, which shows up in Accelerated Innovation and Connected Communities.
    - b) What **drivers** might have a positive or negative impact? Drivers are the forces that you think will decide the nature of the future and typically fall into one or more of these categories: social, technological, economic, environmental, political, and values. One example from Yahara 2070 is land-use change, a driver that is both social and environmental in nature.
    - c) What **events** could have a positive or negative impact? An example from Yahara 2070 is a natural disaster, such as the toxic algal bloom in Abandonment and Renewal.
  - 2) As a whole group, brainstorm some potential barriers and enablers to achieving the most important aspects of your shared vision, writing ideas on post-its notes. These could include the trends, drivers, and events you discussed above. Barriers are the factors that could slow progress or prevent your desired future state from happening, while enablers are factors that would help push things in the right direction. These factors could be within your control, outside your control, or a little bit of both.

- 3) Map the post-it notes in the following matrix: barriers (to achieving our priority action areas), enablers (toward achieving our priority action areas), and whether they are inside or outside of your control.



Readings for today:

- Interview with Naomi Klein on grassroots climate activism:  
<http://www.yesmagazine.org/issues/cities-are-now/naomi-klein-on-climate-heroes-who-inspire-her>
- Cooperstein, Why We Need to Envision Positive Futures  
<http://www.thesolutionsjournal.com/node/237342>

**Class 4(A): Section Activity**

Peer review of Write the Future stories and Op-Eds.

# APPENDIX A

## Yahara 2070 Scenario Summaries

### ACCELERATED INNOVATION

THE POSSIBILITY:

*What if we prioritize technological solutions to our water and climate challenges?*



#### CONSEQUENCES BY 2070:

OUR LIFESTYLES	OUR COMMUNITIES	OUR ENVIRONMENT*
<ul style="list-style-type: none"> <li>Technology influences everything</li> <li>Reliance on technology increases Material wealth increases</li> <li>Food comes from farms that rely heavily on technology to grow and enhance food; people eat less meat and dairy More people work in the tech industry than today</li> <li>Inequality still exists</li> <li>People are more disconnected from the natural world</li> <li>Individuals are vulnerable to technology failures (e.g., disease outbreaks)</li> </ul>	<ul style="list-style-type: none"> <li>Dane County has become a “solution center,” where lots of innovation happens</li> <li>Urban growth has increased due to an increased population and increased wealth, but the growth is dense (i.e., less sprawl)</li> <li>Communities rely on advanced public transportation and renewable energy systems, such as solar power and nuclear</li> <li>The economy is largely based in the tech industry</li> <li>Communities are vulnerable to technology failures</li> </ul>	<ul style="list-style-type: none"> <li>Technology enhances the benefits people get from nature</li> <li>Nature is highly controlled The lakes are improving, but still aren't cleaner than today and suffer from occasional algal blooms</li> <li>The environment is vulnerable to technology failures</li> </ul>

### CONNECTED COMMUNITIES

THE POSSIBILITY:

*What if a global values shift towards less consumption and stronger communities occurs in response to our water and climate challenges?*



#### CONSEQUENCES BY 2070:

OUR LIFESTYLES	OUR COMMUNITIES	OUR ENVIRONMENT*
<ul style="list-style-type: none"> <li>Less consumption and high life quality are central concerns</li> <li>Food comes mostly from local farmers; people eat more fruits, vegetables, and high quality foods, but less meat and dairy</li> <li>Inequality is decreasing, but still exists People participate more in policy-making and the democratic process</li> <li>People rely less on fossil fuels and more on renewable energy</li> <li>People spend more time with their communities</li> <li>Prices incorporate social and environmental costs, making some things more expensive and difficult, such as air travel</li> </ul>	<ul style="list-style-type: none"> <li>Communities are designed to enhance connections between people and with nature (e.g., shared backyards and more parks)</li> <li>It is easy to get around and between cities and towns by public transportation, bikes, or walking</li> <li>Wealth is measured by quality of life, not by material wealth</li> <li>The local economy improves Urban communities are denser; urban sprawl has stopped</li> <li>Communities rely on renewable energy; energy efficiency has improved</li> </ul>	<ul style="list-style-type: none"> <li>There are more natural areas and green spaces in the region</li> <li>Farms have become smaller and grow a high diversity of foods, which has improved biodiversity</li> <li>Lake shorelines have more vegetation to lessen flooding and help improve water quality</li> <li>Lake water quality is worse than in the beginning of the century, due to the legacy of past nutrient pollution, severe runoff events, and land-use changes that are inadequate at removing phosphorus from the soil. However, by 2060, water quality begins to trend toward improvement.</li> </ul>



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## NESTED WATERSHEDS

THE POSSIBILITY:

*What if the United States reforms how it governs freshwater, shifting to watershed-scale governance, in response to water and climate challenges?*



### CONSEQUENCES BY 2070:

#### OUR LIFESTYLES

- People prioritize water conservation and view water as “wealth”
- Food comes mostly from local farms; certain foods are more expensive due to impacts on water, such as meat and dairy
- People rely more on public transportation
- People still use fossil fuels
- Programs to improve water management have created jobs
- The Yahara is among watersheds that get paid to send water to dry US Southwestern communities

#### OUR COMMUNITIES

- The Yahara Watershed Management Authority designs local water management policies and programs
- Urban growth is more controlled
- Cities and towns are designed to conserve water and help clean up the lakes (e.g., with “green” infrastructure)
- There is better public transportation
- Water management has become an important economic activity in both the public and private sectors
- Incentives have enabled urban and farming communities to better protect freshwater through infrastructure and land management practices
- Communities are still vulnerable to extreme weather, such as flooding and drought

#### OUR ENVIRONMENT\*

- There are more natural areas to help improve freshwater supplies
- Farmland is managed to treat water as a crop
- There is less farmland to help improve freshwater supplies; food production remains the same, however
- The soil is becoming healthier, which helps protect water
- The lakes have become cleaner than in the beginning of the century, but erratic weather can cause setbacks (e.g., floods)

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## ABANDONMENT AND RENEWAL

THE POSSIBILITY:

*What if we don't do enough in response to water and climate challenges, and an environmental health disaster occurs?*



### CONSEQUENCES BY 2070:

#### OUR LIFESTYLES

- People's main concern is to survive—e.g., most people must grow their own food
- People are resourceful and waste nothing, because it is difficult or impossible to get more supplies of material goods
- Equality has increased; material wealth has decreased
- People are generally more reliant on each other
- Survival can be difficult

#### OUR COMMUNITIES

- The population is one-tenth of the size it was before the disaster
- People live on subsistence farms or in small and dense urban communities
- There is no government or centralized social support systems
- People barter goods and services, instead of using money, because of global economic collapse
- Some communities see the chance to create a new society

#### OUR ENVIRONMENT\*

- There are more natural areas, such as prairies and forests; they are growing back due to the lack of people
- There is more wildlife
- There is less farmland
- The lakes are slowly becoming cleaner, but they are still quite polluted with nutrients because of the past

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\*Climate changes are not included here, as the climates depicted in each scenario are not necessarily consequences of the changes that occurred. Each scenario was given a different climate change trajectory to reflect the range of changes that could occur.

**Appendix B: Consequences of Change Questions**

*TA/Instructor: Divide the group into four smaller groups and assign each group one of the scenarios. Have one person record their group’s responses.*

In your small groups, answer the following questions for your assigned scenario. If you are running short on time, you can skip the supplemental question.

*Recorders: Try to capture the main takeaways from this discussion, especially what the group thinks are pros and cons about each scenario. Be prepared to report out to the larger group.*

	<b>Change and consequences</b>	<b>The pros and cons</b>	<b>What would it take?</b>	<b>Supplemental question</b>
<i>Accelerated Innovation</i>	How did the Innovation Revolution change the ways people farm, build cities and communities, and interact with nature? What were some consequences of these changes?	What do you think are the pros and cons of relying on technology as a solution to social and environmental challenges?	What do you think it would take for Dane County to become a center for technological solutions to environmental challenges?	How could society anticipate and deal with potential negative unintended consequences of technological solutions to environmental challenges?
<i>Nested Watersheds</i>	How did the Reform change the ways people farm, build cities and communities, and interact with nature? What were some consequences of these changes?	What do you think are the pros and cons of government intervention as a solution to social and environmental challenges?	What do you think it would take for a government reform of the scale of Nested Watersheds to happen in the United States?	What are some other solutions you think people could undertake in response to a national water crisis?
<i>Connected Communities</i>	How did the Great Transition change how people farm, build and live in cities and communities, and interact with nature? What were some consequences of these changes?	What do you think are pros and cons of a values shift as a solution to social and environmental challenges?	What do you think it would take for a broad public values shift like the Great Transition to happen in your community? How about in the United States or worldwide?	How do people deal with “violators” of the new social paradigm, such as companies who don’t follow sustainability norms? What other ways might people effectively uphold collectively held values?
<i>Abandonment and Renewal</i>	How did the disaster change how people farm, build and live in cities and communities, and interact with nature? What were some consequences of these changes?	What do you think are the pros and cons of a social and ecological renewal that can follow a disaster?	What would it take to rebuild human life and society in the Yahara Watershed, if a disaster like this were to occur in the next few decades?	How could the disaster have been prevented? Consider the roles of government, technology, values, or other relevant forces of change.

### Appendix C: Building Our Vision Worksheet

*Imagine that, 60 years from now, future generations enjoy a high quality of life with resilient ecosystems and vibrant communities. What does that look like?*

As you imagine your desired future, consider the aspects listed in the chart below—e.g., What will \_\_\_\_ be like compared to today?

In addition to the best ideas for the future, consider what **threats** have been minimized or avoided in your vision.

Also consider how each of the following may or may not play a role:

- Technology
- Government
- Human values and/or community
- Economy
- Non-profit/grassroots organizations
- Land-use decisions
- Climate change
- Other forces of change

	<b>Best ideas for the future</b>	<b>Threats avoided</b>
Food & Agriculture ( <i>what do we eat? How do farmers farm? What do farmers grow/produce? Etc.</i> )		
Water and Ecosystems ( <i>what is the state of fisheries, wetlands, wildlife habitat, water quality, etc.?</i> )		

<p>Development and Land Use <i>(housing, urban areas, agriculture, natural areas, etc.)</i></p>		
<p>Infrastructure and Transportation <i>(what structures exist for moving people, supplies, water, energy, and waste?)</i></p>		
<p>Social Organization <i>(socio-economics, politics, etc.)</i></p>		
<p>Other</p>		

**Appendix D: What factors affect our path forward? Worksheet and Activity**

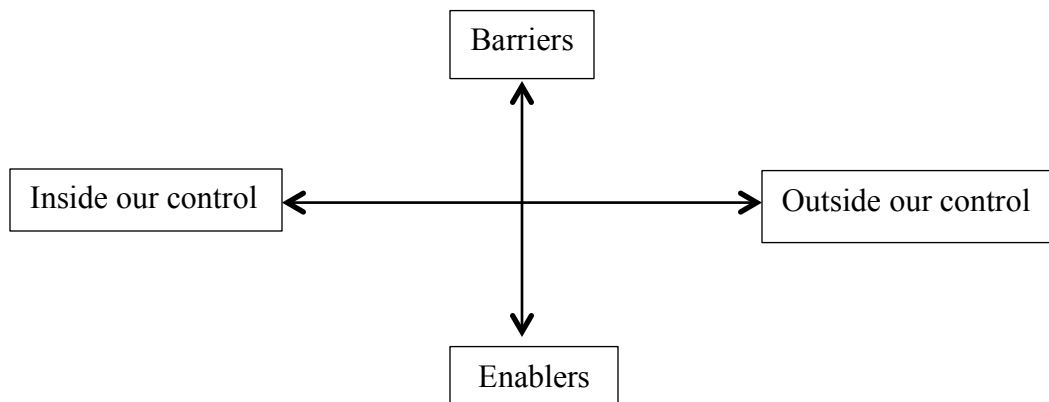
**1. Trends, Drivers, and Events**

As a large group, brainstorm the following and capture ideas on post-its notes:

- a) What **present-day trends** could have a positive or negative impact on the five most important elements of our desirable future (from Class 2)? An example of a trend from Yahara 2070 is the movement toward renewable energy, which shows up in Accelerated Innovation and Connected Communities.
- b) What **drivers** might have a positive or negative impact? Drivers are the forces that you think will decide the nature of the future and typically fall into one or more of these categories: social, technological, economic, environmental, political, and values. One example from Yahara 2070 is land-use change, a driver that is both social and environmental in nature.
- c) What **events** could have a positive or negative impact? An example from Yahara 2070 is a natural disaster, such as the toxic algal bloom in Abandonment and Renewal.

As a whole group, brainstorm some potential barriers and enablers to achieving the most important aspects of your shared vision, writing ideas on post-its notes. These could include the trends, drivers, and events you discussed above. Barriers are the factors that could slow progress or prevent your desired future state from happening, while enablers are factors that would help push things in the right direction. These factors could be within your control, outside your control, or a little bit of both.

Map the post-it notes in the following matrix: barriers (to achieving our priority action areas), enablers (toward achieving our priority action areas), and whether they are inside or outside of your control.



**2. Controlling the future**

In two to four breakout groups, discuss the barriers and enablers (if you break up into four groups, put two on barriers and two on enablers):

### Group 1: Barriers

- How will these barriers affect our ability to achieve our most important desirable aspects for 2070?
- Over what aspects of these barriers do we have control?
- Which of these barriers are we willing to or must we do something about?
- What can we do to remove the barriers or minimize their impact?

### Group 2: Enablers

- How will these enablers affect our ability to achieve our most important desirable aspects for 2070?
- Over what aspects of these enablers do we have control?
- Which of these enablers are willing to or must we focus on?
- How do we harness them to strengthen our efforts?

### **Feedback and discussion**

Each small group shares the results of their discussion to the larger group. Allow time for the larger group to discuss each matrix quadrant.

### **Next Steps**

Discuss the following as a large group. Make sure someone records answers for later distribution, perhaps on flipchart paper.

- What are possible next steps? By when should these be completed, and by whom?
- What research is needed for us to know if we can achieve our vision for the future?
- What resources do we need to achieve our vision?

This course module was created by Chloe Wardropper, a PhD candidate in the Environment and Resources program of the Nelson Institute for Environmental Studies at the University of Wisconsin-Madison. Contact [wardropper@wisc.edu](mailto:wardropper@wisc.edu) with questions.