



Sustainability leadership

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Learning objectives

- Recognize the systemic nature of sustainability issues
- Apply the iceberg model for systems change to analyse complex sustainability issues

Let's go fishing - Harvest game

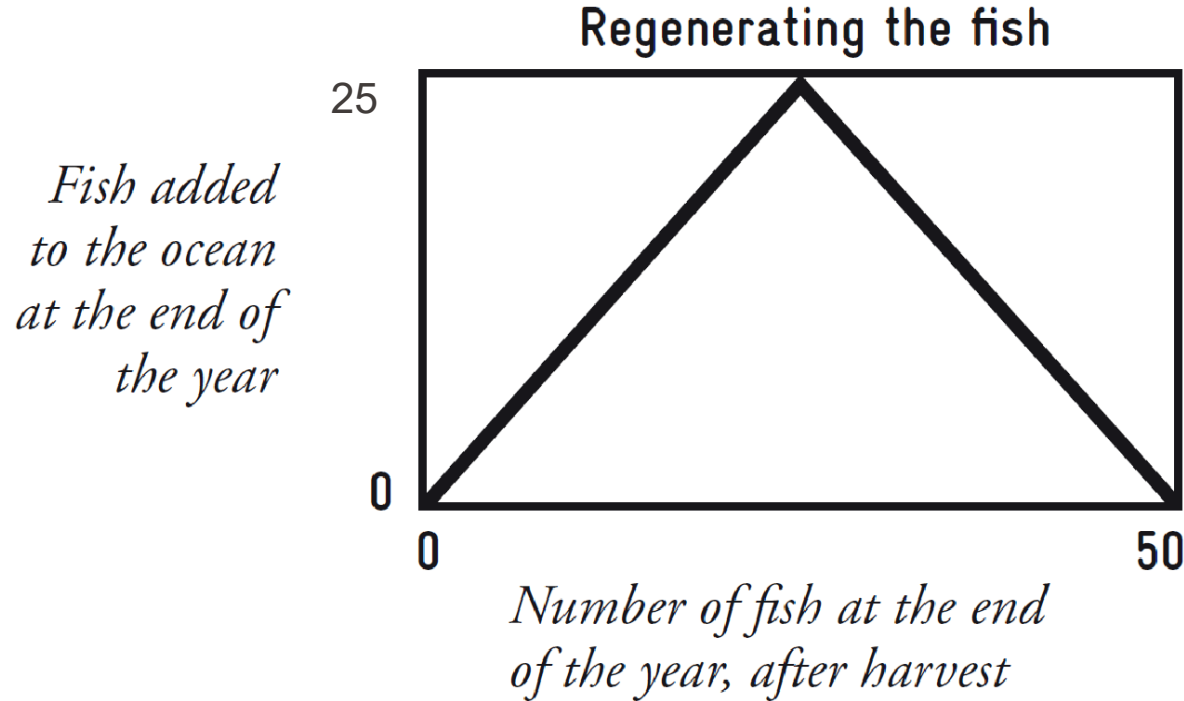


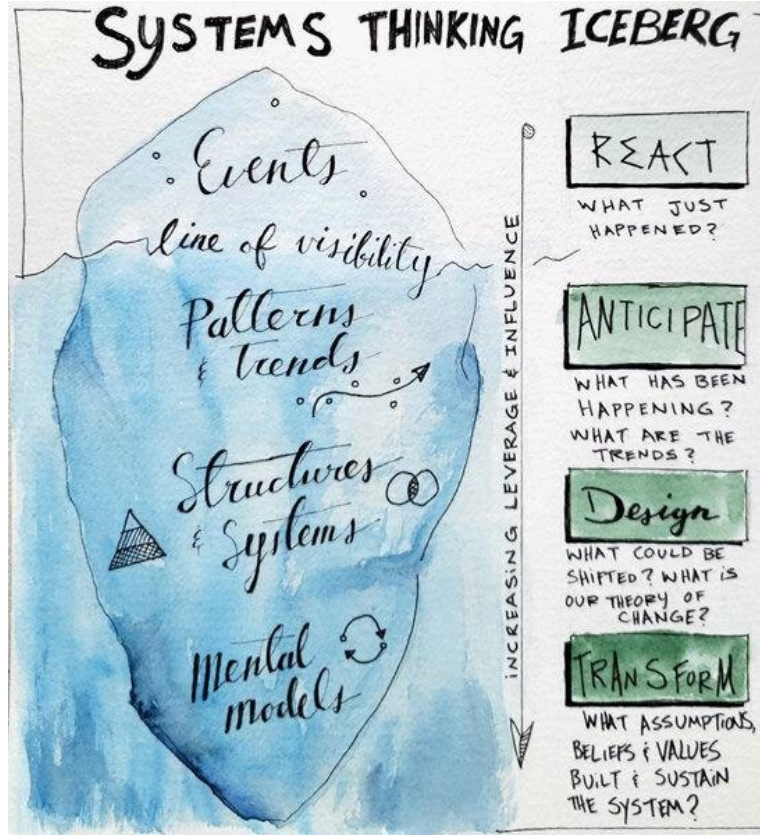
Winslow Homer, Fishing Boats, Key West
(1903)

Harvest – Rules of the game

- Your team (persons around your table) has the role of a fishing company
- Your team's goal is to harvest the maximum number of fish for itself over the course of the game, in order to feed your families.
- The ocean can support a maximum of 50 fish at one time. The game starts with between 25 and 50 fish in the ocean. The precise number is unknown to you.
- Each round represents 1 year. We will play for 6 to 10 years. The precise number of rounds is unknown to you until the end of the game.
- Your team will make one desired harvest request each year. Each request must be some integral number between 0 and 8 fish.
- Each round you will write the number on a slip of paper, put the slip in your ship and bring your ship to Michka and Melanie.
- Michka and Melanie will rearrange the ships randomly, then consider each request in sequence.
- If a request exceeds the number of fish remaining in the ocean, that ship will receive no fish that year. When a team's request can be filled, we will put the requested number of fish in their ship.
- Ships are returned to their respective teams.
- Fish are regenerated according to the following regeneration chart.
- The next round begins unless the final round has been completed.

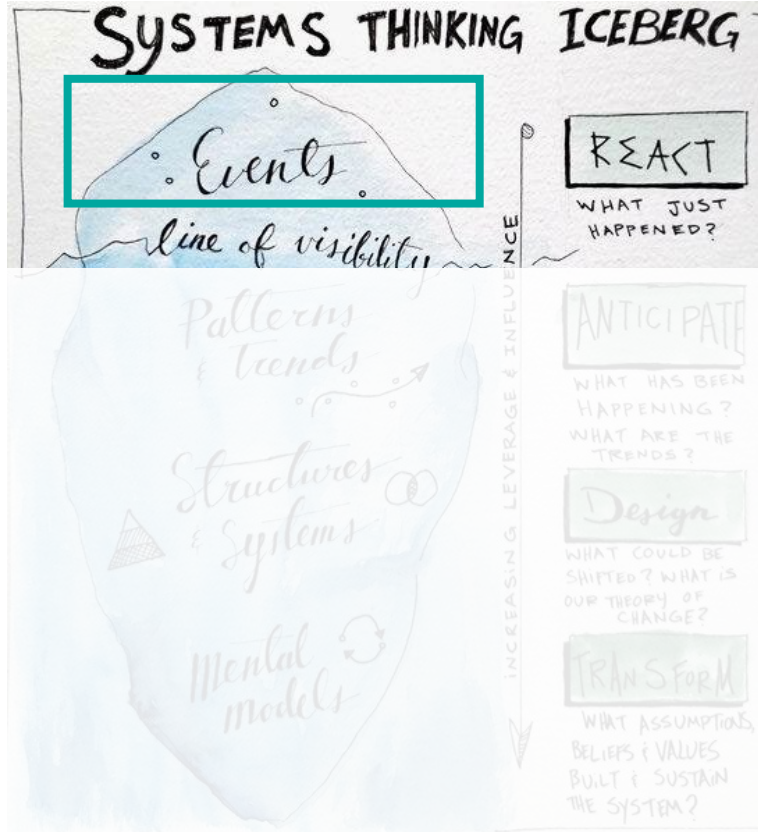
Fish regeneration





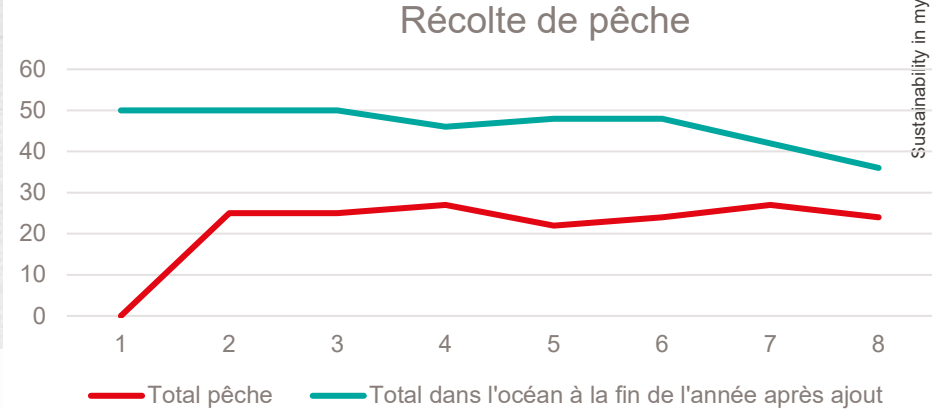
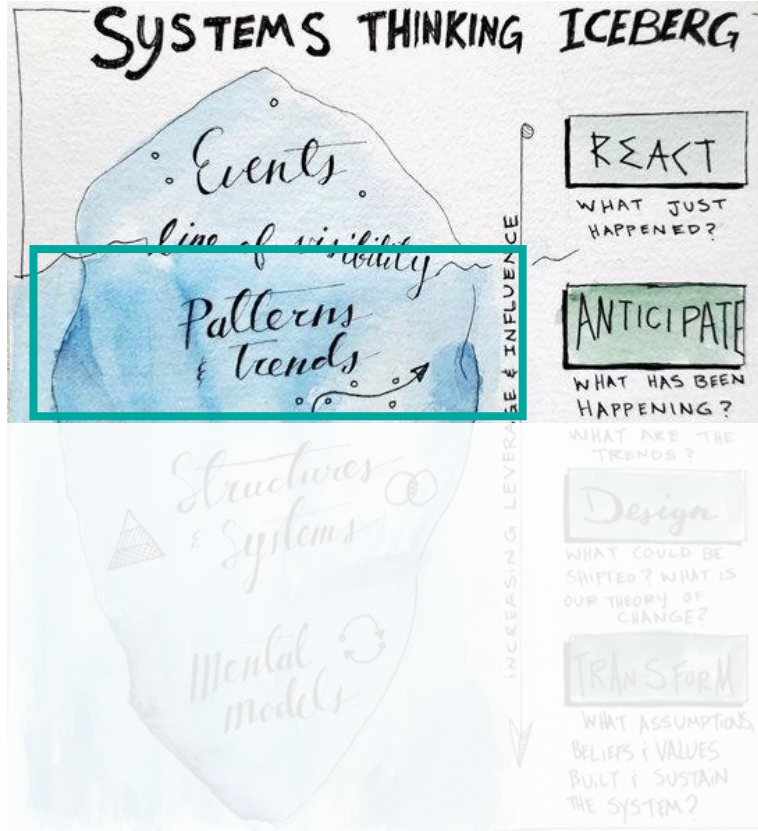
Harvest game debrief

What harvests did teams achieve?

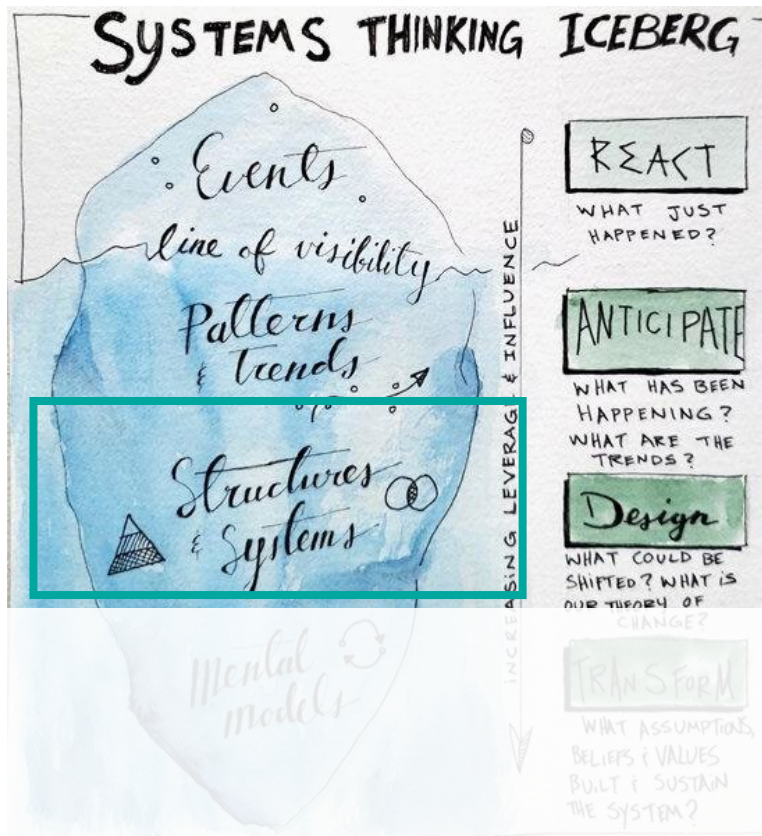


1. Team A: 55
2. Team B: 63
3. Team C: 48
4. Team D: 52

What patterns and trends came out?



What rules, incentives and power dynamics contributes to these patterns?



- How were the rules of the game responsible for this result?
- What would have been the maximum possible harvest available to all teams in this exercise? 62 fishes
- What policies would you have to follow to achieve maximum harvest for all teams?

PEOPLE NOT RESPECTING THE RULES → DISRUPTION
⊕ LYING

POLICIES: PUNISHMENT, OVERARCHING BODY ENFORCES IT.

CHANGING THE RULE TO MAX 6 (= QUOTAS)

↓
PEOPLE MIGHT STILL DISOBEY. HOW TO ENFORCE?

EVERYONE COULD WRITE TRANSPARENTLY TOGETHER THEIR PLEDGE.

SOCIAL CULTURE OF RESPECT

BOREDOM

RULES DID NOT CLEARLY POINT TO 1 WINNER.

END AT MAX 10 YEARS. MADE MAXIMIZING POSSIBLE → REINFORCES SHORT-TERM THINKING

INACTION AGAINST CHEATING REINFORCES CHEATING.

HIGHER OPERATIONAL COST FOR FISHING MORE.

SEEING MORE THE EFFECT
OF DAMAGE → MORE ACTION

(LACK OF) INFORMATION / EDUCATION
SHAPES BEHAVIOR

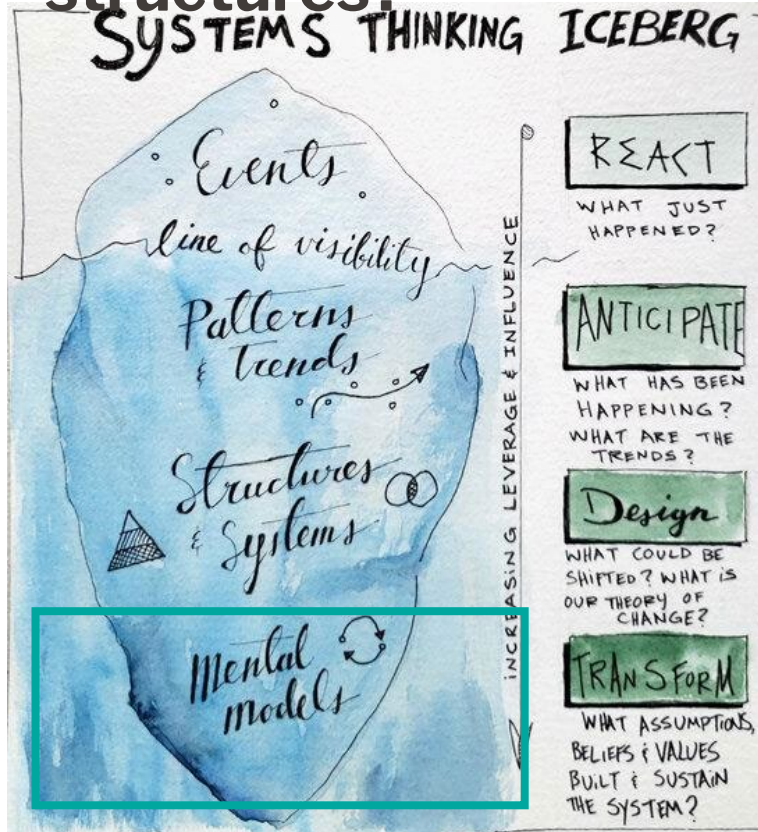
LESS FISH
↳ MORE SCHOOLING

(25
4)

System structure level

- Max fish population 50
- Regeneration rate graph -> sustainable harvest = 25 fish per year
- Incomplete knowledge of the ocean, lack of information and transparency leading to suspicion
- Overfishing produces an immediate and clear gain at first, while the consequences of harvesting more fish than can be regenerated is unclear and delayed for several rounds
 - Reinforcing feedback loops (the more we fish, the more we gain immediately)
 - Delays in other feedback loops (the impact of individual action on the resource as a whole is not visible immediately)
- Competition between teams
 - Induced by the rule «Maximize the harvest per team»
- Time limit : 10 years, induced the max possible extraction

What mental models (beliefs, attitudes, morals, expectation, values, assumptions) led to these structures?



- Why might the ocean protection policies not be followed?
- Was there a winner in the game?



Mental model level

- Short-term gain over long-term gain
- Quantity over quality
- Competition mindset
- Lack of trust in the others
- Belief of unlimited Abundance

“Probably all the great fisheries are inexhaustible; that is to say that nothing we do seriously affects the number of fish.”

– Thomas Henry Huxley, 1883

Beyond fishes

This system dynamics is called the tragedy of the commons

- When there is a commonly shared resource, every user benefits directly from its use, but shares the costs of its abuse with everyone else. Therefore, there is very weak feedback from the condition of the resource to the decisions of the resource users. The consequence is overuse of the resource, eroding it until it becomes unavailable to anyone.” (Meadows, 2002)
- effective solutions for a «tragedy of the commons» scenario never lie at the individual level (Meadows, 2002)

The tragedy of the commons doesn't only happen in fisheries

Examples

- Land
- Pastures
- Forests
- Irrigation
- Clean Air & Water
- Climate and atmosphere
- Energy
- Mineral
- Beaches, Swimming pools
- Roads and highways
- Parking spaces
- Views
- IT services & HR when centralized in an organization
- Attention of people

The tragedy of the commons – the climate counter part

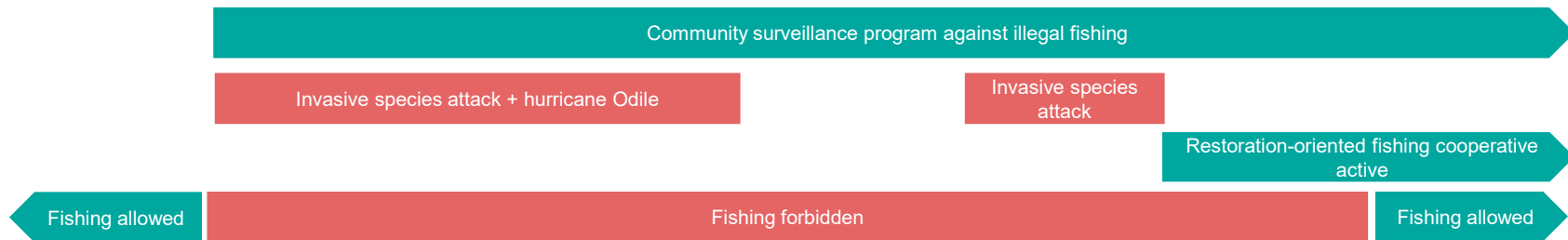
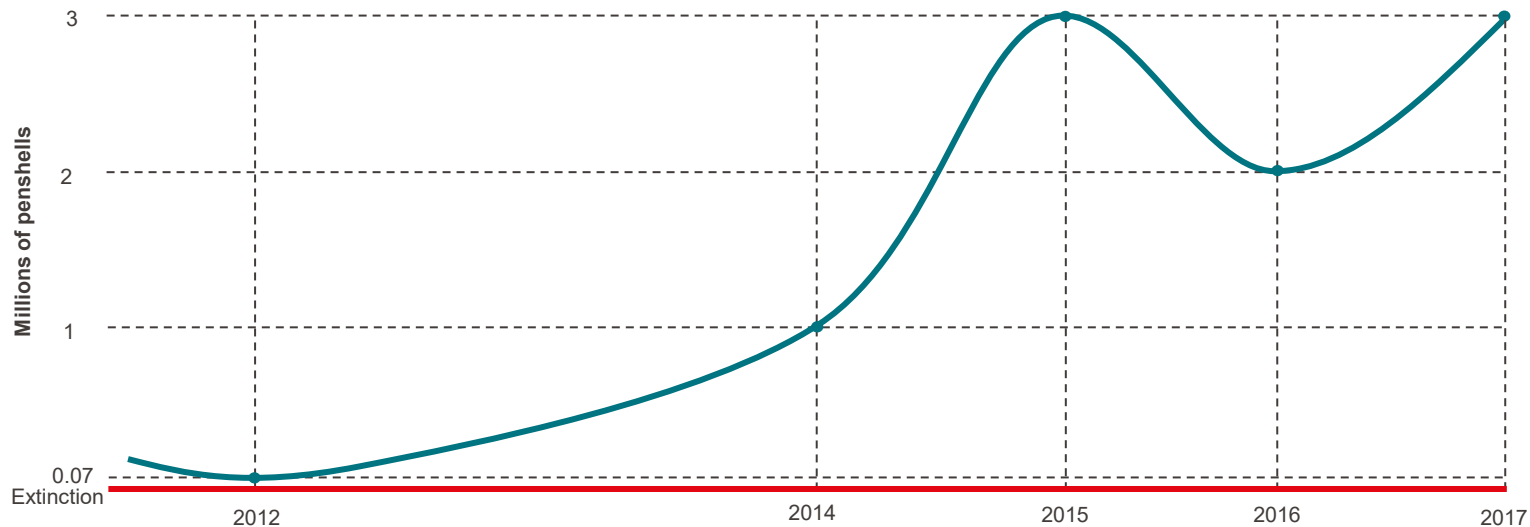
- *“One reason it is so hard to slash carbon emissions is that climate change occurs globally. The countries that produce the most greenhouse gas all need to take action to fix the problem. That raises a classic economic dilemma called the tragedy of the commons.”* David Kestenbaum, National Public Radio, United States
- *“When countries act in their own interests and emit high levels of CO₂, they feel the immediate gain (greater economic growth, for instance), but not the future and distant losses related to global warming. If just one country emitted high levels of CO₂, there may be little to no negative consequences. But when many countries emit high levels of CO₂, everyone suffers.”* (Meadows et al, 2016)



A way out of the tragedy of the commons

How a community of fishermen in Mexico managed to get out of this system trap

El Manglito's timeline





https://vimeo.com/194462144?embedded=true&source=vimeo_logo&owner=8210656

Insights from El Manglito's way out

- Collaboration between the scientists (the NGO) and the local fishermen community towards a common goal and vision
 - Dialogue circles & regular check-ins
 - Building trusting relationships
 - Embracing the interconnection between restoring fisheries and restoring communities
- Collectively mapping the fishery and understanding what led to the overfishing
- Education on the consequences of the resource overshoot (e.g. overfishing)
- Collective agreement to close off the commons (e.g. fisheries) for 5 years to allow it to replenish
- Community (including women) engagement in the restoration of the fishery
 - Community surveillance and paying fishermen for the surveillance
 - Redefining the role of fishermen as ecological restorer
- Restorative justice for rule violators (e.g. illegal fishing)

What lessons from El Manglito are applicable to climate and sustainability?

El Manglito's story

- “In a very humble way, this community is showing that, for a tragedy of the commons, there can be a miracle of **collective leadership** and a power in **shared vision**” Liliana Gutiérrez Mariscal
- “[Overfishing is] driven by a **lack of trust** on all sides. But, ironically, seeing together how this lack of trust punishes everyone can lay a foundation for building trust going forward. When done with **real listening and partnership**, the **systems mapping** can be another strategy for re-building that trust.” Joe Hsueh

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Coming next

September 12th

Sustainability
leadership, part
1

September 30th

Journal club

October 1st

Guest speakers

Sustainability
leadership, part
2

Opportunity to reflect on a personal challenge related to sustainability in your research