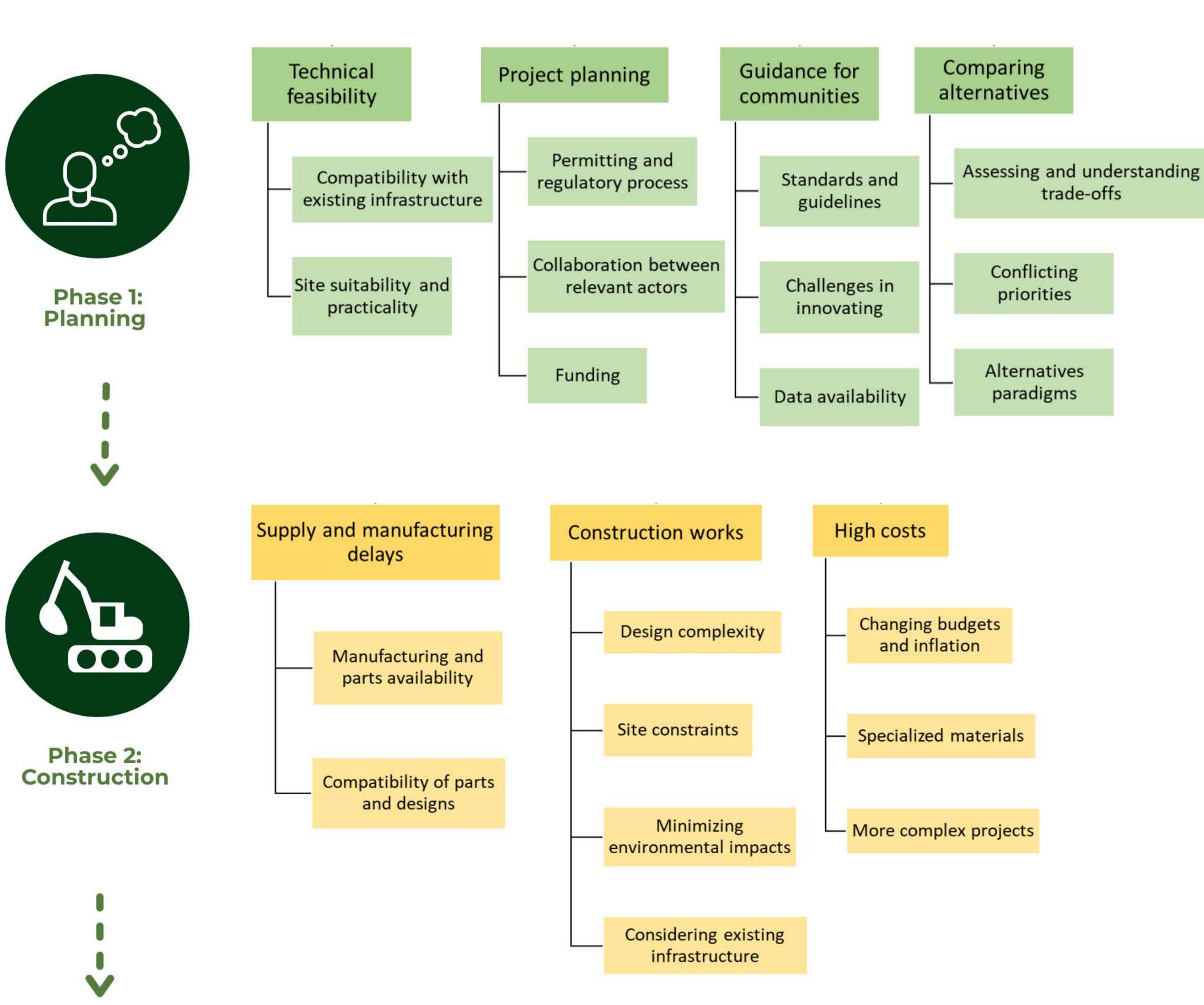
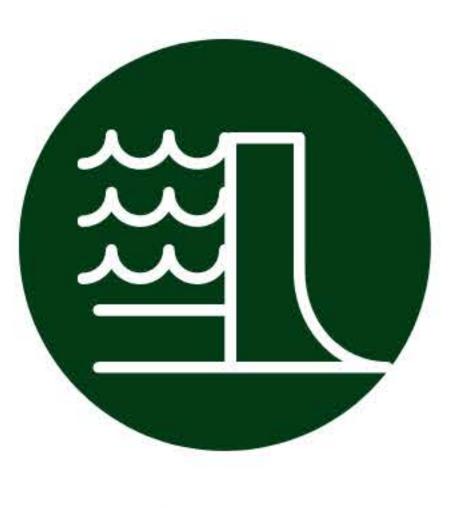
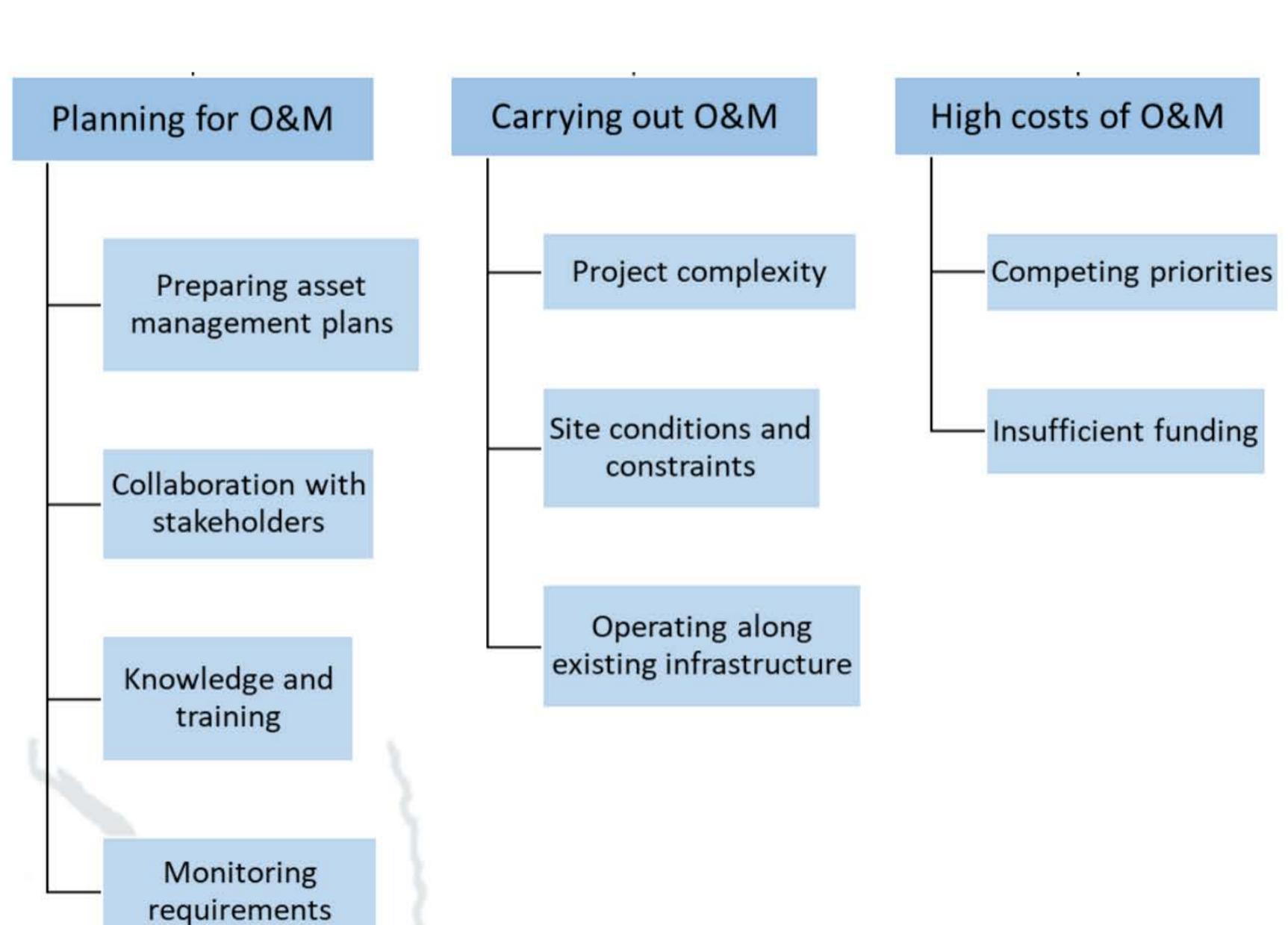
Challenges for implementing flood control infrastructure





Phase 3: Post construction

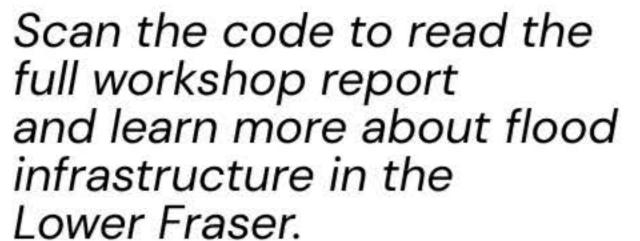


Infographic prepared by Mauricio Carvallo Aceves, based on the results from a cross-sector virtual workshop on flood control infrastructure hosted on April 13th, 2023.













Recommendations to address challenges in flood infrastructure



- A more centralized body to carry out projects at a relevant watershed scale.
- Streamline permitting process between jurisdictions and agencies.
- Creation of national floodgate design standards.
- Flexible financial arrangements.

Collaboration and communication



- and stakeholders early.
- jurisdictions to share knowledge and
 - Memorandums of

- Creating task forces focused
- Creating task forces focused on sediment removal within municipalities.
- Using advanced sensors to facilitate
- streamkeepers) to help in monitoring and



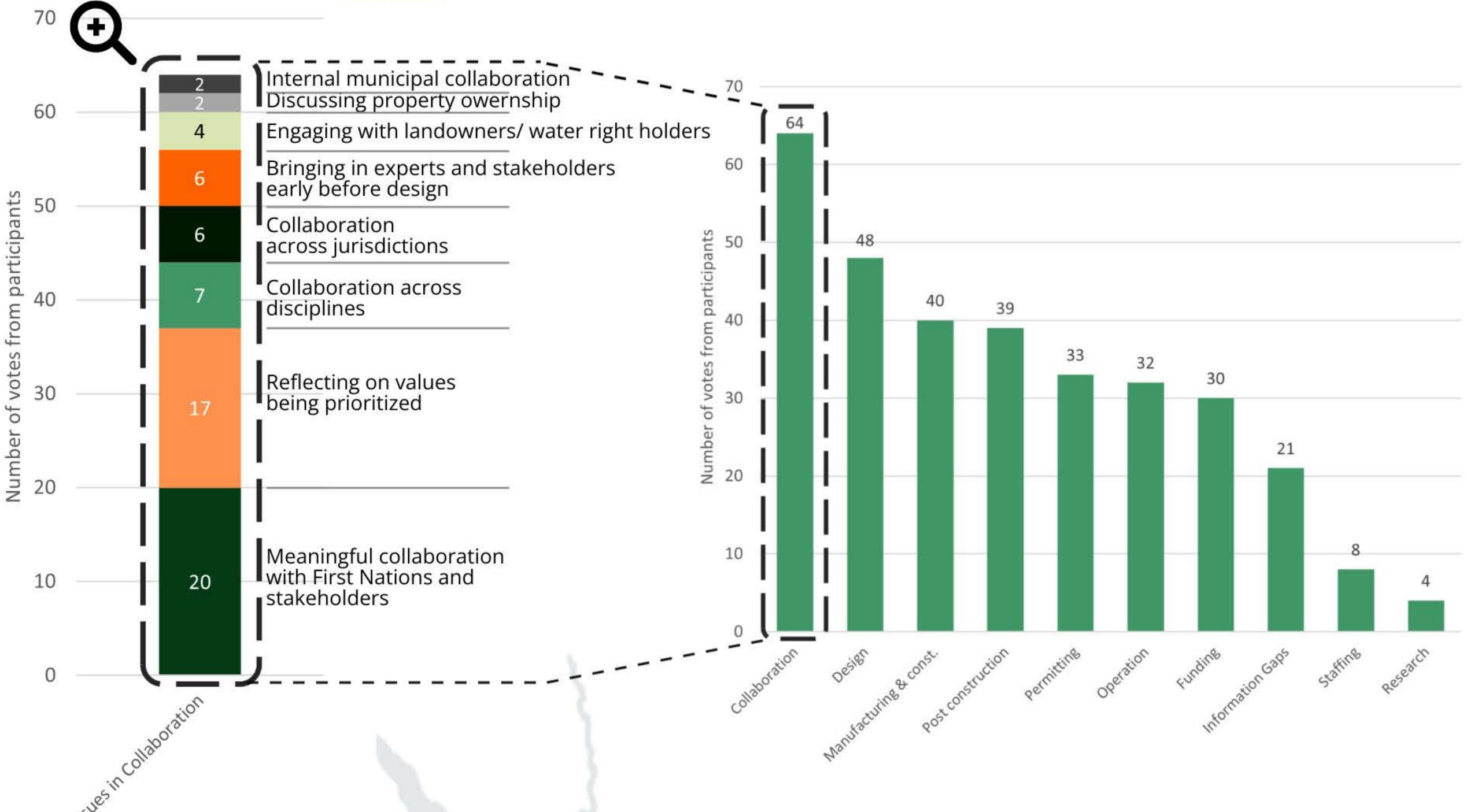
- Supporting small-scale pilot projects.
- Developing public awareness campaigns help raise interest and support from residents and stakeholders.
- Developing online courses for professionals to help advance training and awareness.
- Exploring alternative paradigms such as removing floodgates where possible.

Changing perspectives





Which issues do participants think are most important to address?



Infographic prepared by Mauricio Carvallo Aceves, based on the results from a cross-sector virtual workshop on flood control infrastructure hosted on April 13th, 2023.







Scan the code to read the full workshop report and learn more about flood infrastructure in the Lower Fraser.







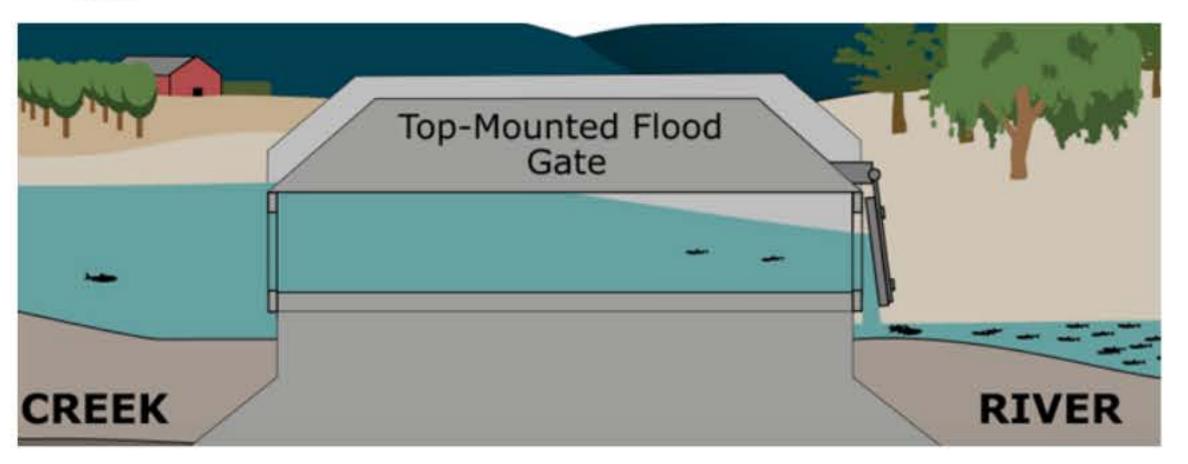




Problems and solutions for floodgates



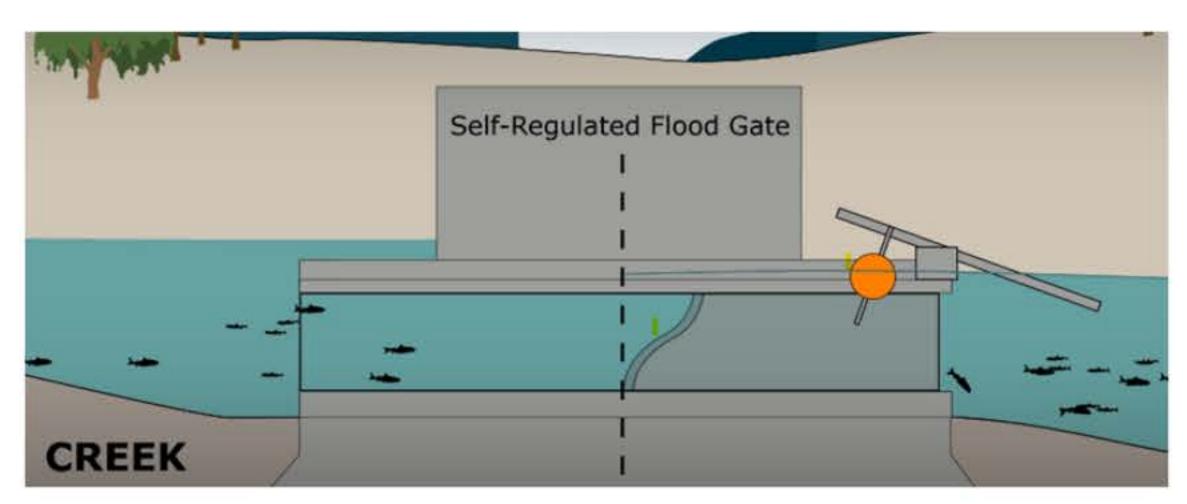
Conventional top-mounted flood gate



- One of the most commonly used designs.
- Often use heavy gates, with iron flaps that rarely open and often for only short periods of time.
- When open, the water rushing out can be flowing too fast for fish to swim into the gate.
- The opening can be too narrow for larger fish to pass through.



Example of fish-friendly design with self-regulated gate



- Modified version of a top or side mounted gate.
- Inclusion of a counter-balance mechanism, such as a float that results in the gate being open more often, and for longer.
- The gate only closes when the water levels on the river gets high enough to push the float up.
- The default position of the gate is open.
- Designs may include remote sensors, floats, or cables sensitive to resistance to activate gate closure and opening.

Identified barriers to implementation for each life-cycle phase:



Participant comments:

"... if [a design] is better for fish passage, but worse for salinity coming into a water license holder's access point, hands are tied." – Group 1 participant



Phase 1: Planning

 Having to balance multiple priorities and values (e.g., protecting agricultural lands and ensuring safe fish passage too).

"There may be uncertainty of design for fish passable gates. Engineers may want to stick with more familiar designs." Group 8 participant.

- Insufficient standardized guidelines for designing and operations
- Specific
 monitoring and
 maintenance needs
 to ensure adequate
 performance
- Difficult site conditions that restrict design and windows for site access
- Highly specialized work that requires additional training.
- Complex projects, which often result in higher costs.



Phase 2: Construction

Phase 3:
Post construction

Infographic prepared by Mauricio Carvallo Aceves, based on the results from a cross-sector virtual workshop on flood control infrastructure hosted on April 13th, 2023.







Scan the code to read the full workshop report and learn more about flood infrastructure in the Lower Fraser.

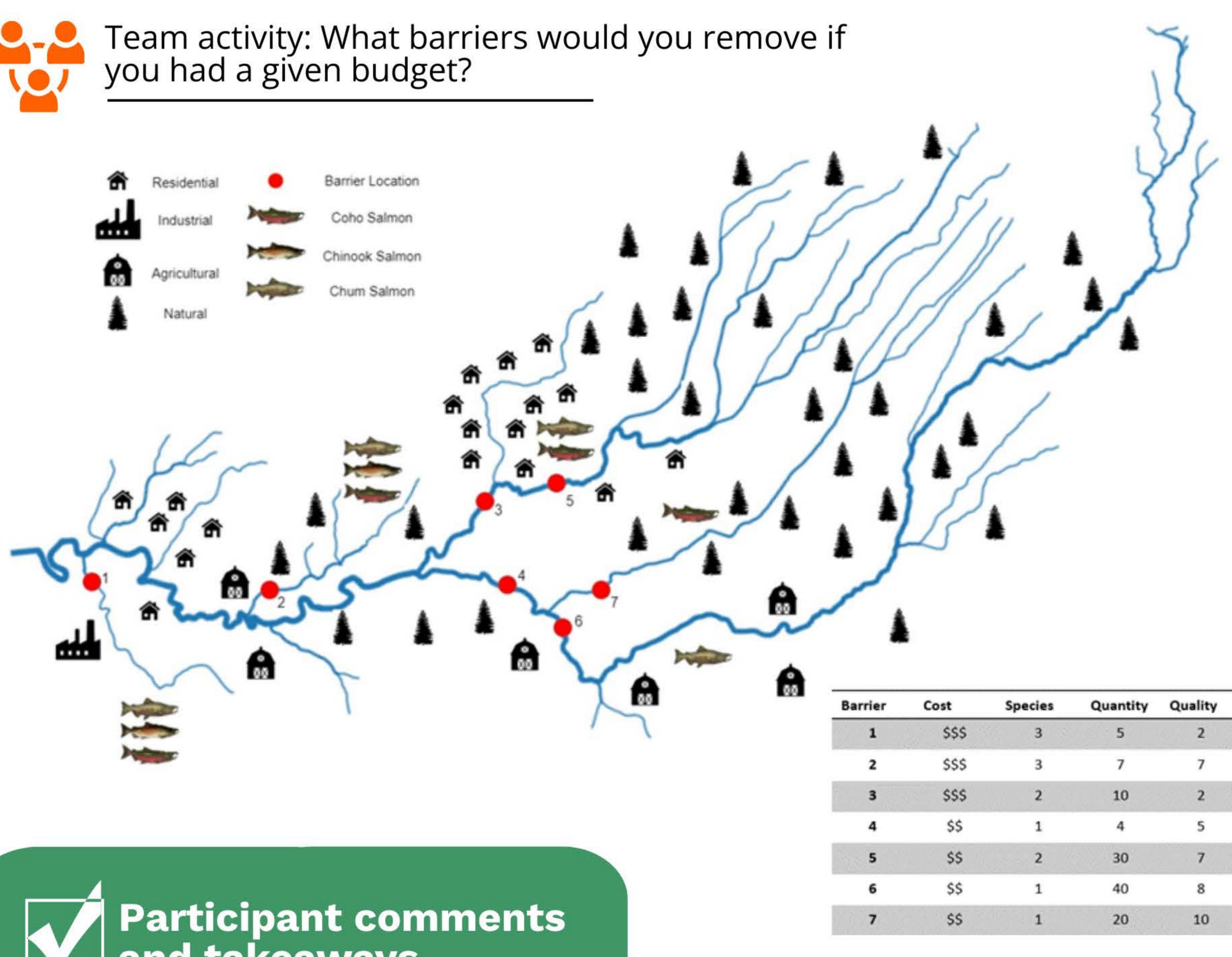








Prioritizing in-stream barrier removal



and takeaways

Prioritization depends on what the objectives are (e.g., protecting farmland). Optimization tools do not provide the "right" answer.

Values play an important role in the decisionmaking process.

Information is needed on stream conditions upstream and downstream.

Beyond the habitat area or number of species, the health of each species should be considered.

It is important to incorporate information on future stream conditions.

Different budget levels can result in very different choices.

Different budget levels can result in very different choices.

Examples of participant responses:

Budget level	Barriers to remove	Comment
\$\$\$	No.1	It seems like a good balance of habitat size and quality, and it impacts 3 species.
\$\$\$\$	No. 4 & 6	There is large watershed area upstream barrier No.6, but you would need to remove No. 4 for it to be useful.
\$\$\$\$\$	No. 3 & 5	It may be a shorter reach, and it may not include all 3 species, but could have a high social impact given the residential land-use upstream from barrier No. 5

Infographic prepared by Mauricio Carvallo Aceves, based on the results from a cross-sector virtual workshop on in-stream barriers hosted on June 1st, 2023.







