

Governing Science in the California Delta

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The Delta Science Enterprise

The Delta Science Program is the core organization of the Delta science enterprise: “the collection of science programs and activities that exist to serve managers and stakeholders in a regional system. The elements of an enterprise range from in-house programs within single agencies or other organizations to large-scale collaborative science programs funded by governments, to academic research that may operate independently of management and stakeholder entities” (Delta Stewardship Council, 2018).

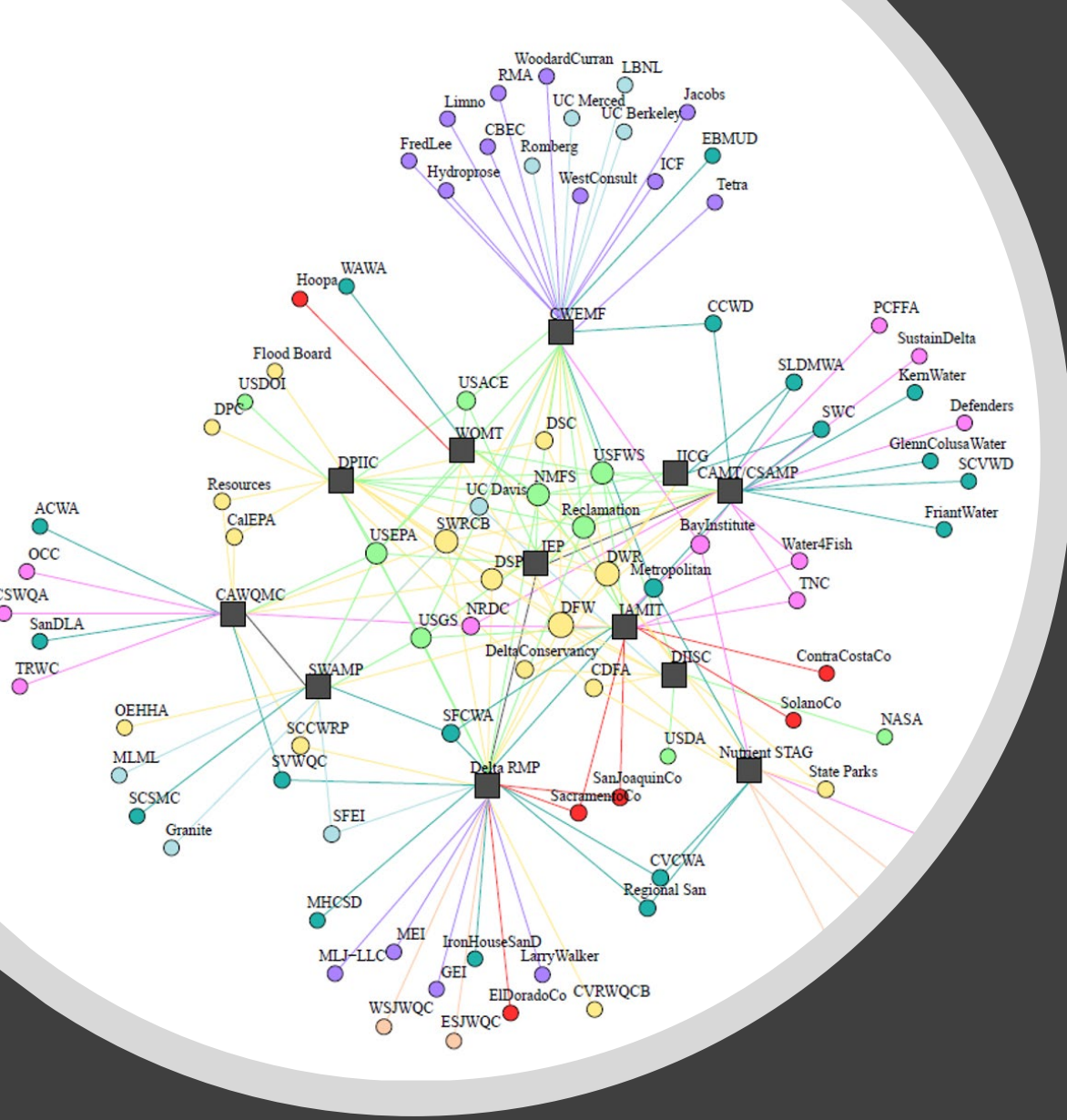


Figure 1. The collaborative Delta science governance Full Network, showing the main 12 collaborative Delta science venues (black) and all of the organizations (colors) that participate in at least one such venue. Organizations are connected with ties (gray) to venues if they participate in that venue.

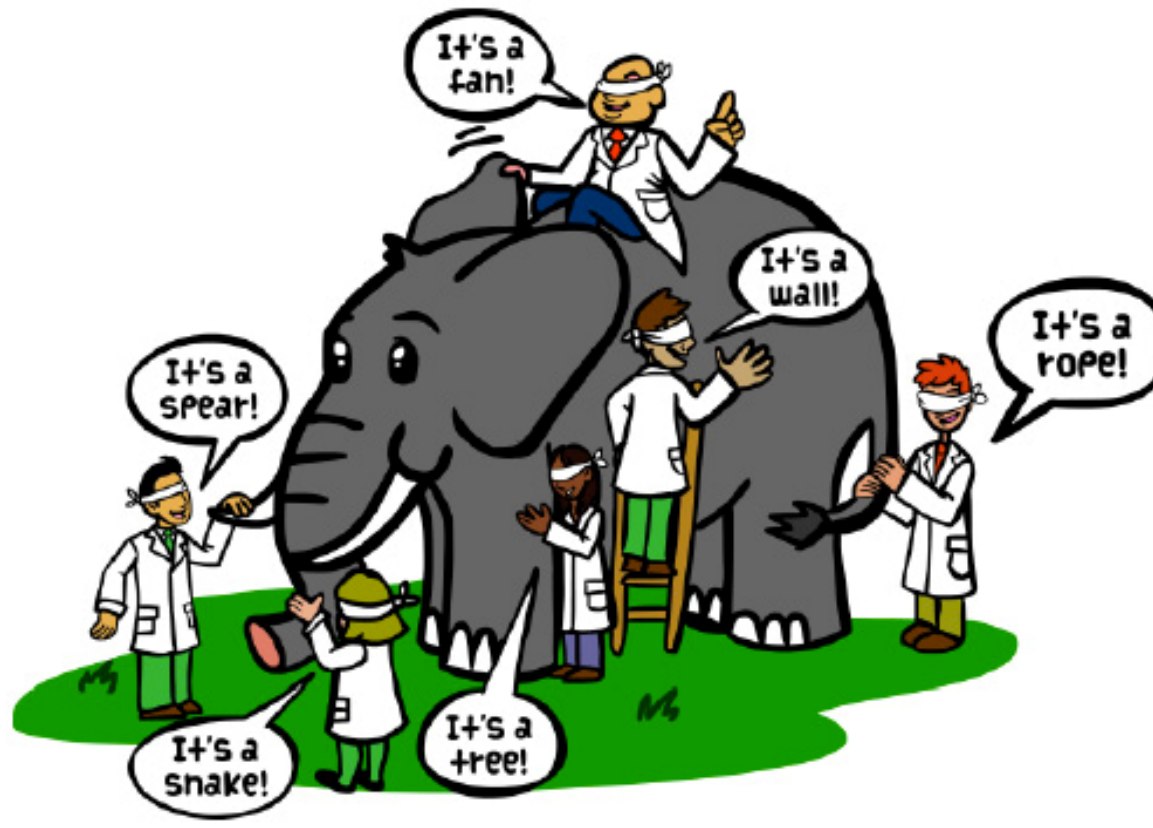


Science Governance is Messy

“Public policy is almost always a mess. Let's acknowledge the inevitable and figure out how to manage a messy situation. Trying to define a policy “problem” is hard enough. Trying to find a solution is even harder. Trying to do either in a policy-making structure in which everyone is involved, but nobody is in charge, is nearly impossible.”

--Phil Isenberg, 2016. Former Chair of Delta Stewardship Council

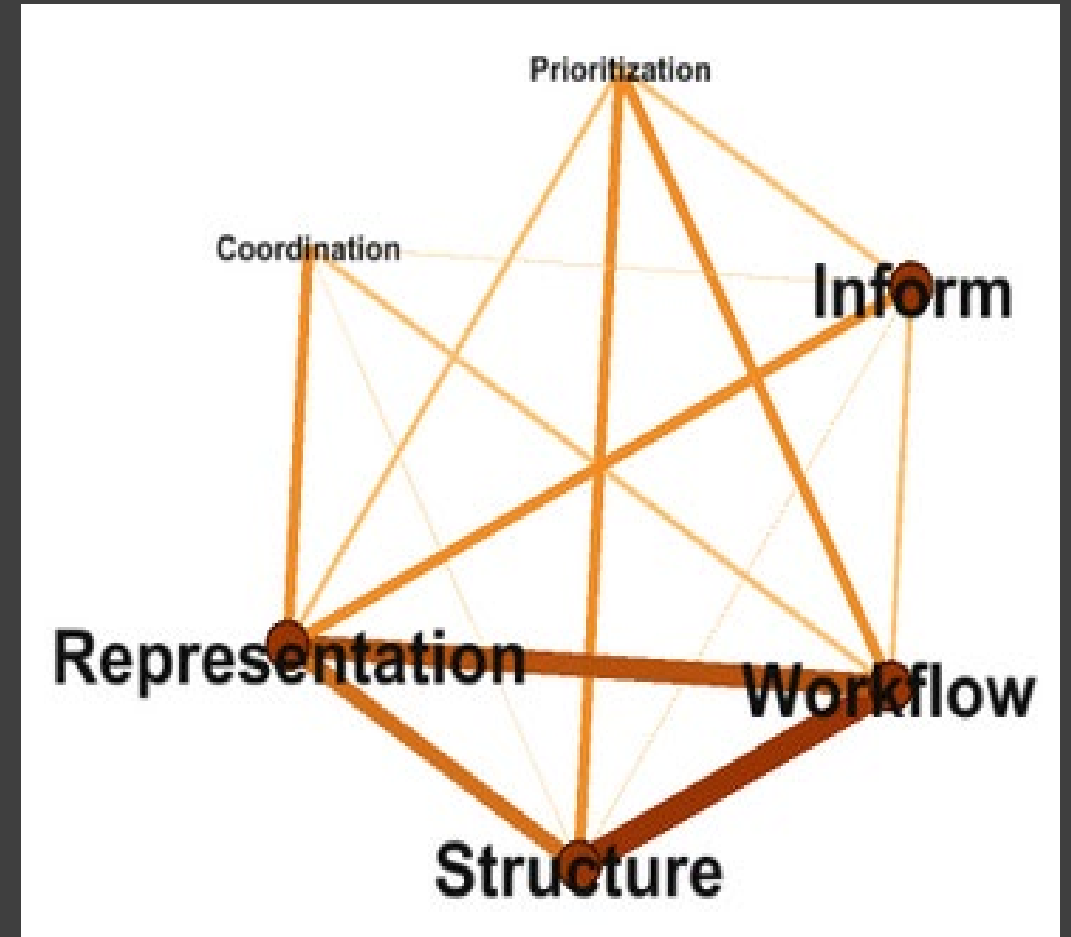
Key Questions for Science Governance



- What aspects of the complex Bay-Delta social-ecological system should we observe?
- How can we integrate knowledge, collaboration, and the scientific workflow across the science enterprise?
- How do we link scientific and other kinds of knowledge to policy decisions and adaptive management?
- How do we sustain the science enterprise?

Science Governance Research

- 2019: Social Science Task Force
- 2020: Delta Science Fellow Matthew Robins maps network
- 2020: Science Governance Workshop
- 2020: Science Governance focus group as part of Delta Science Needs Assessment
- 2021: Delta Science Stakeholder Survey
- 2022-23: CSAMP/CAMT interview coding, science leadership interviews, continued analysis of Delta Science Survey

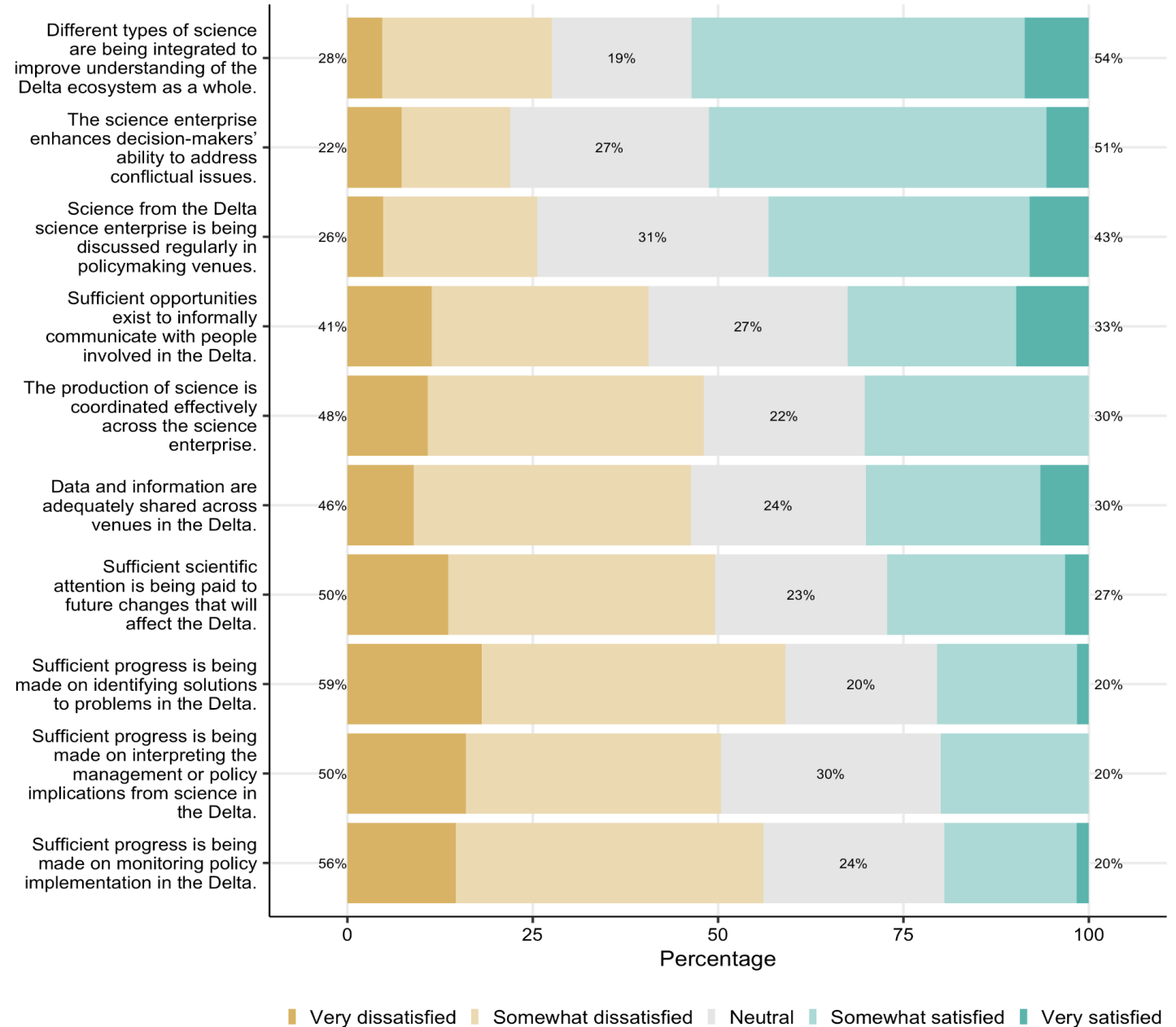


Mental model of science governance derived from "Mentimeter" prompt "Please define science governance" 23 written answers, from 2020 Science Governance focus group.

Delta Science Stakeholder Survey: Better at Learning than Doing!

- Survey distributed via lists of key science forums
- 222 responses, 180 useable
- Respondents proportional to size of science forum
- Most respondents report being “heavily involved”

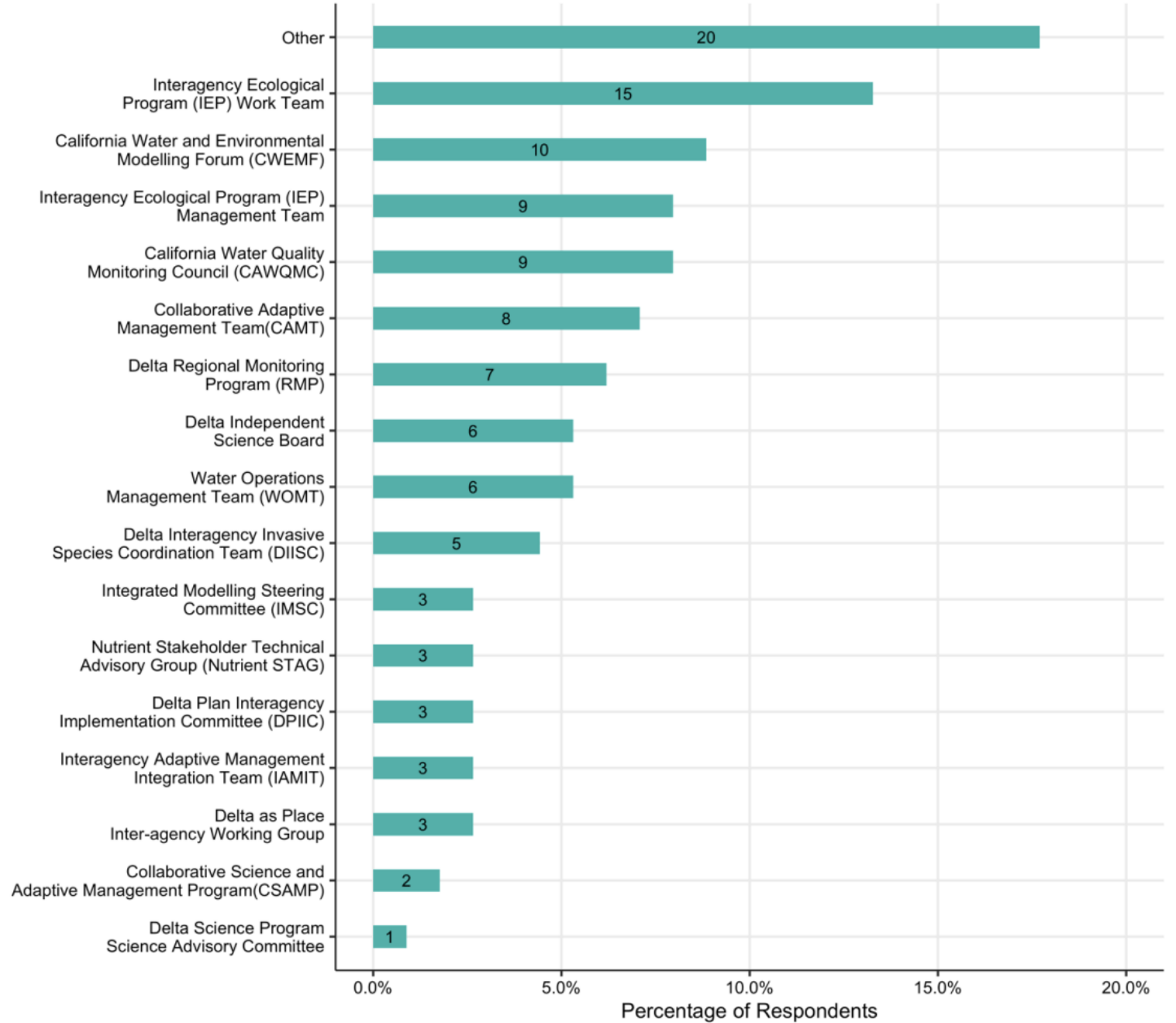
Question: Based on your experience with the Delta science enterprise, to what extent do you agree or disagree with the following statements about the science enterprise overall?



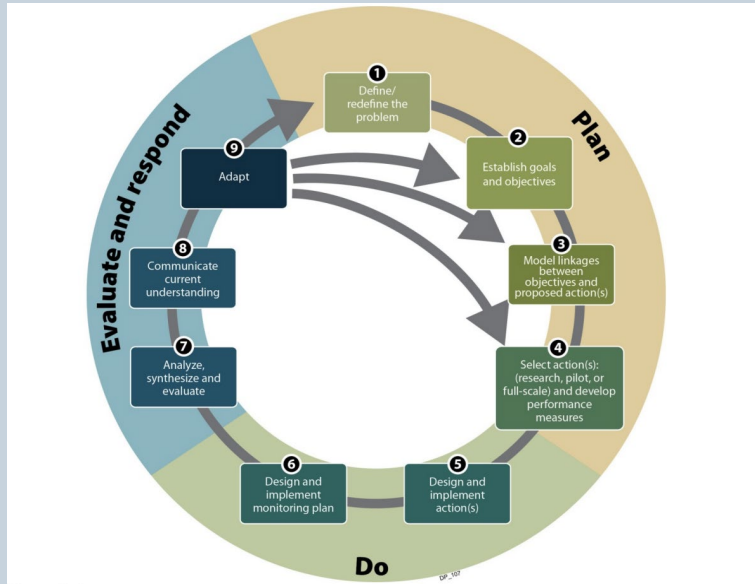
Participation Across Science Forums



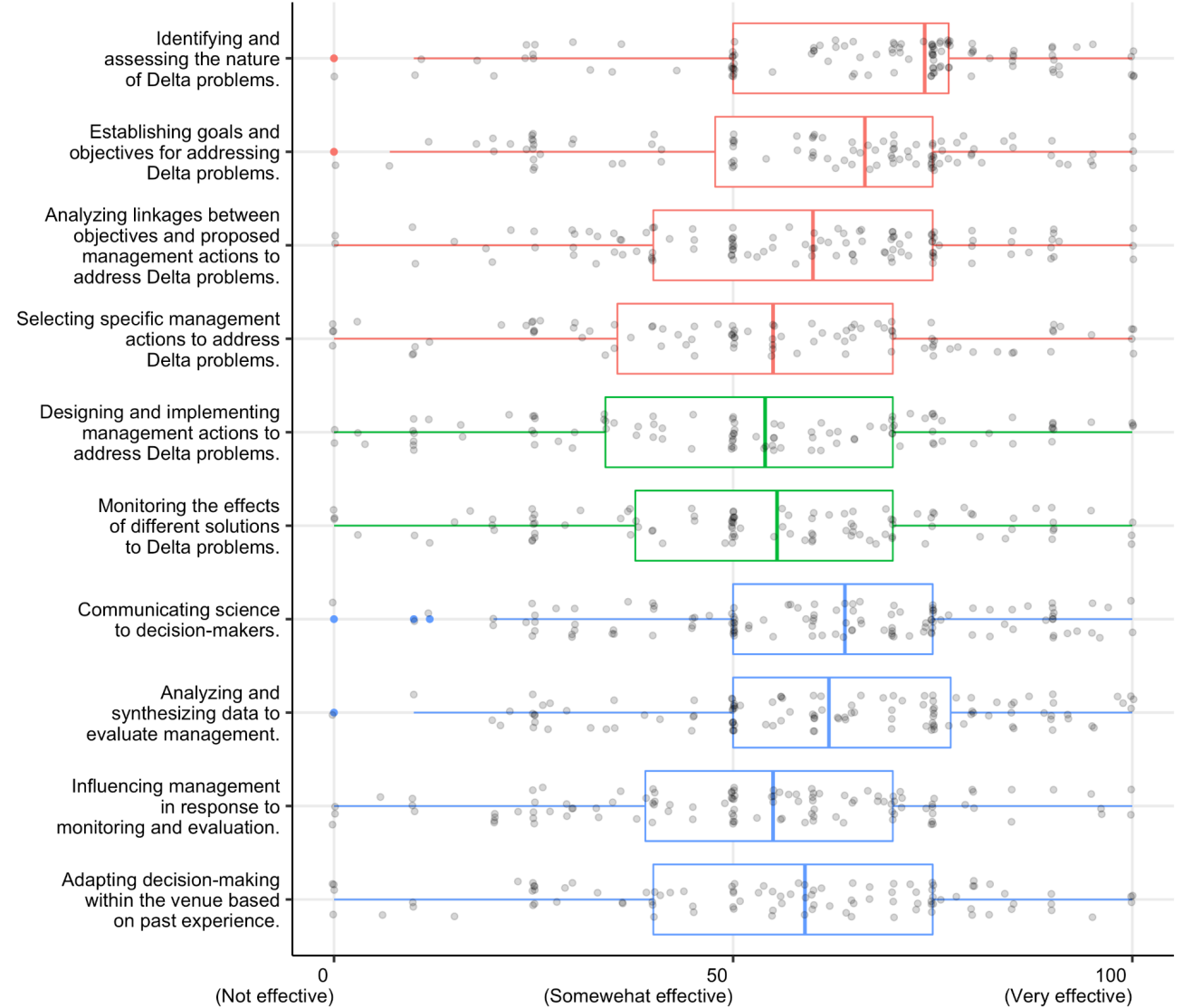
Question: Of the forums where you regularly participate, which of them do you consider the primary forum where you spend the most time?



Forums are most effective during “planning” stage of adaptive management, and least effective during the “do” stage



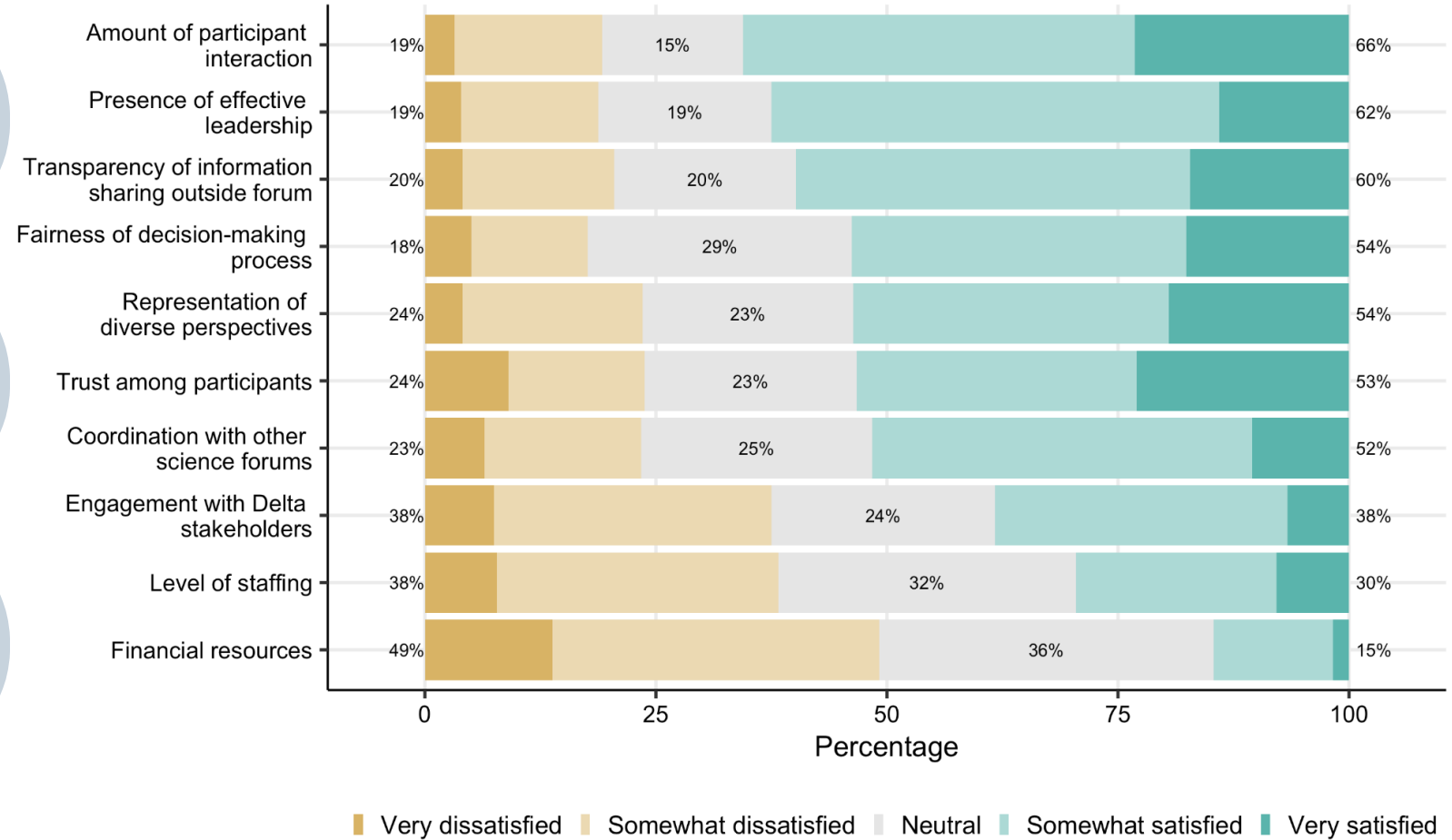
Question: In the previous question, you indicated 'forum name' as the primary forum where you spend the most time. How effective would you say 'forum name' has been in achieving the following goals with respect to Delta management issues?



Plan Do Evaluate and Respond

Highest satisfaction with social and institutional aspects of their primary forum, and least satisfaction with forum resources

Question: In your opinion, how satisfied or dissatisfied were you with the following aspects of the 'primary forum'?



Qualitative Responses: Science enterprise has led to important changes in Delta policies and issues

- **Water quality/contaminants:** “Coordinated tributary flows to meet salinity goals”
- **Ecosystem restoration:** “Recognition of the importance of floodplains in driving lower trophic productivity and the resultant drive behind restoration efforts”
- **Fisheries:** “Better understanding of the factors influencing delta smelt entrainment led to more effective management of project export pumping and reduced salvage”
- **Integration of social science:** “The Delta ISB Delta as an Evolving Place thematic review in part led to the Social Science Task Force which wrote the Delta Social Science Strategy which is now being implemented by the Delta Stewardship Council and others”

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Top science needs:	Top priority changes:
<ul style="list-style-type: none">- Designation of climate impacts and linked management strategies- Improve science communication about science activities, decision-making processes, and the science-informed policy life cycle- Integration of social science across research efforts- Expand spatial scale to include broader watershed needs	<ul style="list-style-type: none">- Create an inter-agency entity to facilitate collaboration across the science enterprise- Increase science communication and funding for communication efforts- Prioritize infrastructure to support science funding- Support for data integration and accessibility across the science enterprise

Recommendations

Coordination

- Develop a “Science Enterprise Leadership Consortium” (SELC)—the DPIIC for science
- Investigate how to make monitoring efforts better integrated and coordinated by identifying programs with overlapping management questions.
- Build a communication network among existing programs that are working well.

Technical

- Resolve the scale mismatches between status and trends and effectiveness monitoring and real-time forecasting and understanding population dynamics.
- Develop a systems model of the Delta that identifies which monitoring programs and data sets are related to different aspects of the Delta system.

Research (Ongoing)

- Continue to research the organizational and social barriers to collaboration
- Integrate social science into the monitoring enterprise.

Appendix: Preliminary Bayesian Model Results

