Quantitative Group Model Building
10 Sessions

Session 1: Introduction and Problem Articulation

Objective:

Introduce participants, outline goals, and identify the problem.

Activities:

- Welcome and introductions
- Overview of GMB and objectives
- Discuss and agree on the problem to be modeled
- Initial brainstorming of key variables and boundaries

Session 2: Conceptualization and Causal Loop Diagrams

Objective:

Develop a shared understanding of the problem through causal loop diagrams.

Activities:

- Review key variables identified in Session 1
- Introduction to causal loop diagrams (CLDs)
- Group exercise to create initial CLDs
- Discuss feedback loops and system behavior

Session 3: Refining Causal Loop Diagrams

Objective:

Refine and elaborate on the causal loop diagrams.

Activities:

- Review and refine CLDs developed in Session 2
- Identify additional variables and feedback loops
- Group work to enhance and detail the CLDs
- Validate CLDs with all participants

Session 4: Identifying Key Leverage Points

Objective:

Identify key leverage points and potential interventions.

Activities:

- Discuss and identify leverage points in the refined CLDs
- Group brainstorming on potential interventions and strategies
- Prioritize interventions based on potential impact and feasibility

Session 5: Introduction to Stock and Flow Diagrams

Objective:

Transition from CLDs to stock and flow diagrams.

Activities:

- Introduction to stock and flow concepts
- Translate key elements from CLDs to stock and flow diagrams
- Identify stocks, flows, and feedback loops

Session 6: Developing Stock and Flow Diagrams

Objective: Develop detailed stock and flow diagrams.

Activities:

- Group work on refining stock and flow diagrams
- Identify key stocks and flows in detail
- Discuss the relationships and dynamics between elements

Session 7: Model Quantification

Objective:

Quantify the elements in the stock and flow diagrams.

Activities:

- Introduction to quantification methods
- Group exercise to assign numerical values to stocks, flows, and parameters
- Discuss data sources and estimation techniques
- Validate quantified elements with all participants

Session 8: Initial Model Simulation

Objective:

Begin simulating the quantified model.

Activities:

- Introduction to simulation tools (e.g., Vensim, Stella)
- Run initial simulations and analyze results
- Validate model structure with participants

- Identify and discuss any discrepancies or unexpected behaviors

Session 9: Advanced Model Simulation and Validation

Objective:

Perform advanced simulations and validate model behavior.

Activities:

- Run more complex simulations to explore model behavior
- Analyze simulation results in depth
- Validate model behavior and refine parameters
- Conduct sensitivity analysis to understand key drivers

Session 10: Policy Design and Final Presentation

Objective:

Design policy interventions and present the final model.

Activities:

- Discuss potential policy interventions and scenarios
- Group work on designing and modeling policy interventions
- Simulate different policy scenarios
- Analyze and compare scenario outcomes
- Prepare final presentation of the model, policy interventions, and findings
- Deliver the presentation to all stakeholders
- Gather feedback and discuss potential improvements
- Outline next steps and future work, including implementation and monitoring plans

SYSTEM DYNAMICS

CLOSING THE LOOP