

Framework Breakdown

DRAFT – do not distribute

Please review the framework and implementation process ahead of the October 5 workshop. We will discuss ways to improve this framework during the workshop.

This document is for workshop purposes only and is not to be shared outside the participant group. A revised framework slide deck will be shared with the workshop report, both of which can be shared.



PLEASE REMEMBER:

Our goal is not to completely overhaul existing systems, but to make them stronger and more effective in the estuary area.

The draft framework presented here is *one possible approach*. This workshop is for all participants to redesign this framework as you wish!

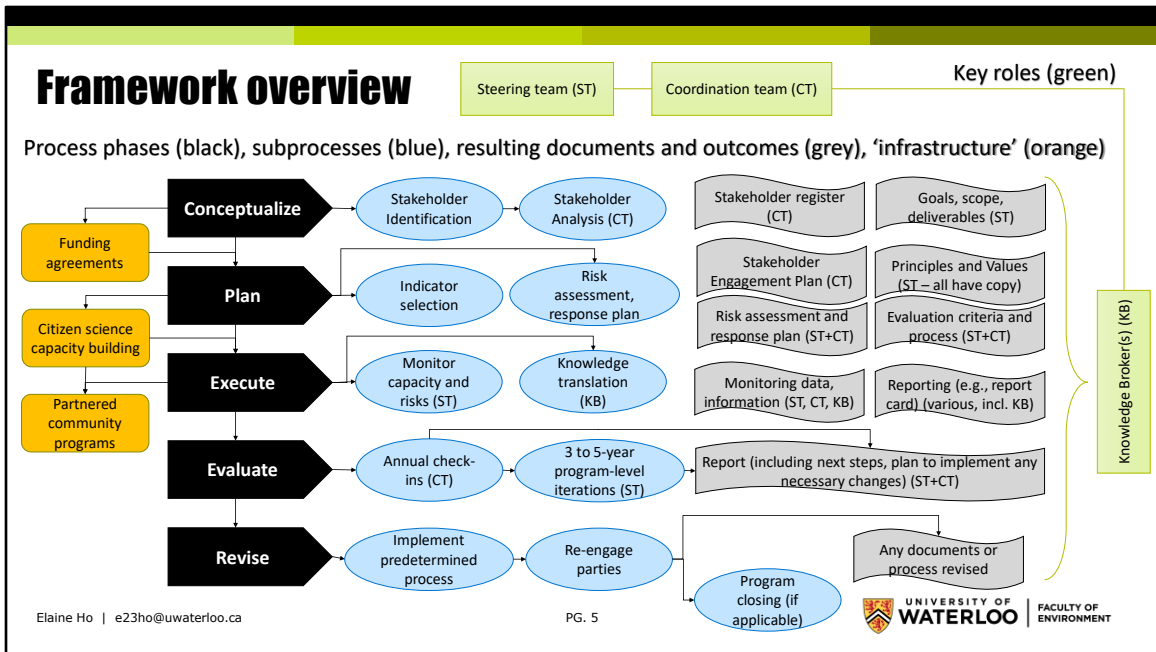
Your contributions matter. Make notes on what you would like to change and bring them to the workshop.

Contents

- Introduction (slide 4)
- Framework overview (slide 5)
- Process overview (slide 6)
- From monitoring to cumulative effects assessment (slide 7)
- Framework breakdown (slides 8-37)
- How is this different? (slides 38-42)
- Closing (slides 43-45)

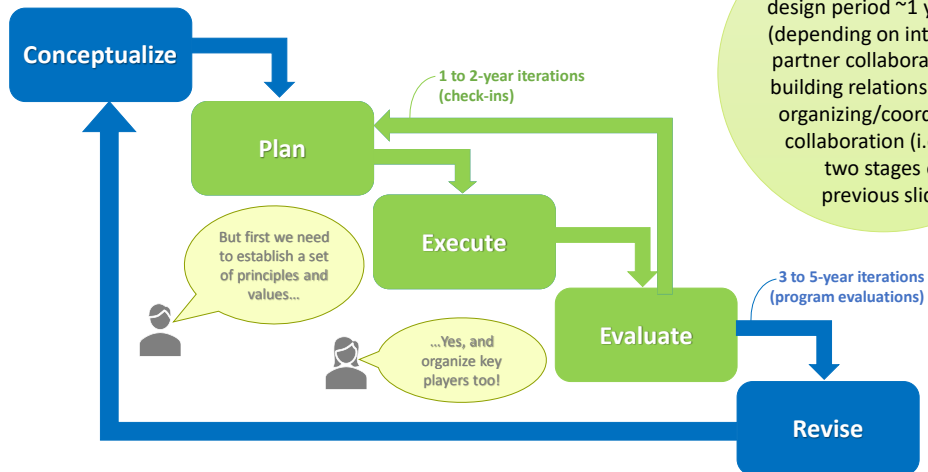
Two parts: Framework + Process

- **Research goal:** Develop a monitoring framework that considers cumulative effects, is co-created by diverse stakeholders, and that connects monitoring to broader river or lake management decisions.
- **Result:** proposed framework for Grand River Estuary Working Group (potential other EWGs in estuaries across Great Lakes, perhaps linked to binational work).
 - The **framework** is the *organization* of components (e.g., parties, values, processes, tools, actions, outputs/outcomes, etc.)
 - The **process** is the sequence of *iterative steps* used to translate the conceptual framework into concrete action.



- Steering team (ST): representative of interest groups or monitoring partners
- Coordination team (CT): small group of dedicated/specialized staff
- Knowledge Broker(s) (KB): works closely with coordination team, potentially has some overlap; roles are to bring information to where it needs to go (external), and to ensure clear and regular communication occurs within the framework (internal)

Process overview



Elaine Ho | e23ho@uwaterloo.ca

PG. 6

Embedded adaptive processes (two levels of iterative cycles)

- Annual or bi-annual check-ins (annual recommended)
- Whole-program review every 3-5 years. Whole-program review should follow turnover of Provincial government as closely as possible, no less than 3 years after the previous review, no more than 5 years after. 4 to 5-year reviews should be satisfactory given interim check-ins.

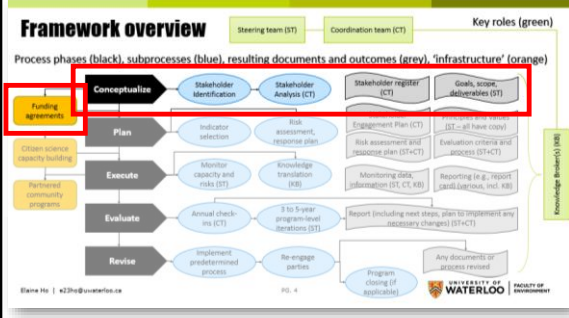
From monitoring to cumulative effects assessment

Reason for monitoring	Questions of conventional monitoring	Questions of cumulative effects assessment
Characterization, baseline, ongoing monitoring	<u>Characterize conditions:</u> 1. What conditions exist? 2. What phenomena are normal? 3. What variability is normal?	<u>Characterize relationships:</u> 1. What relationships exist among parameters? 2. To what extent do these relationships drive known phenomena?
Issue-based monitoring (deep dive, test decisions, pilots, answer questions)	<u>Quantify impacts of separate stressors:</u> 1. How has the state of one or more parameters changed? 2. What stressors drive this issue?	<u>Quantify relationships among stressors:</u> 1. What interactions or combination of stressors influence the issue? 2. How can these relationships be leveraged to diminish/resolve the issue?

Some interviewees raised the idea that all monitoring is cumulative effects monitoring, while others alluded to the idea that conventional monitoring and cumulative effects monitoring are two distinct practices that are not easily integrated. After reviewing literature, consulting with practitioners and undertaking interviews, I have proposed here the idea that cumulative effects assessment (CEA) can be – at least in some form – a natural progression built on conventional monitoring data. This table demonstrates the questions that may be asked under each category of monitoring.

FRAMEWORK BREAKDOWN

This section looks at each part of the framework

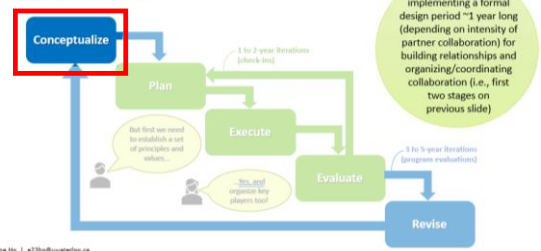


Funding agreements...

Goals, scope and deliverables...

...and developing the Stakeholder Register

Process overview



Components within conceptualization

Funding and in-kind agreements

- What agreements depends on which aspect of the program
 - Between Federal and Provincial governments and conservation authorities (where they exist) with clear outcomes, expectations, and repercussions for breaking commitment
 - Replicate existing models – government funding to universities for specific research outcomes and products
 - Formal partnerships/collaboration with public/community group (e.g., Friends of the Grand River, lakefront community group, Trout Unlimited, NGOs)
- In-kind contributions → sharing among partners and with communities
 - Access to labs, equipment, tools, training
 - For community groups and members, access would require partnership with academia (the accessing partner, overseeing equipment use)

Goals, scope, deliverables

Held by Steering Team

- Have clear expectations *before* any implementation (program start and check-ins)
- Translate decision maker needs into a set of questions to be answered
 - Be clear on what should be monitored and how the data will be used (what story will this tell?)
 - At program start and annually at check-ins
- Create clear, measurable objectives (and criteria for success)
 - Ongoing monitoring steered by decisions being made or issues of priority
 - Project-specific monitoring for deep dive of issues and testing decisions
- Determine what format information needs to be delivered in, and to whom

The objectives here are to ensure diverse parties have input into the visioning and that monitoring is directly linked to management and decision-making

FOR YOU TO THINK ABOUT...

What goals or objectives would you suggest for this kind of working group? What decisions, priorities or aspects of your mandate do your proposed goals or objectives relate to?

Please raise your suggestions during workshop Discussion A

Governance

- Leadership consists of two teams
 - Core planning and steering team (representative of interest groups or monitoring partners)
 - Coordination team (small group of dedicated/specialized staff)
- Additional person or team: knowledge broker(s) – works closely with coordination team, or has some overlap
- Stakeholders and rightsholders define their own roles
 - Consider organizational capacity, and ability to adapt to changes in priorities and/or processes
- Define roles clearly – monitoring partners (incl. citizen science), management, decision makers, community members (if not a monitoring partner)

Identify interest groups (stakeholders, rightsholders, influencers)

- Mandated agencies, decision makers, persons and groups who are impacted by issues being managed, or who may impact the issues and our ability to monitor/manage them (i.e., influencers – may include community champions)
- Engage community groups and residents on the water – riverfront and lakefront
 - Present the big picture of monitoring, ask if interests are shared and if they wish to partner (collect data) or mobilize others
- Tools and approaches might include brainstorming, Delphi technique, questionnaires, surveys, focus groups, interviews, information sessions

The steering and coordination teams would lead this, but everyone involved would contribute to identification of interest groups/stakeholders (i.e., you know your networks best!)

Stakeholder analysis

Done by Coordination Team

- Stakes may include interest, rights (legal or moral), ownership, knowledge (i.e., specialist or internal community knowledge), contribution (including funding or in-kind)
- Categorize stakeholders (priority of involvement based on interest)
- Analyze each group (e.g., [salience model](#) for large, complex groups)
- Begin to strategize engagement (i.e., high level – engage always, sometimes, or as needed; engage in-person vs. virtually...; engage whole group vs. engage representatives or subset)



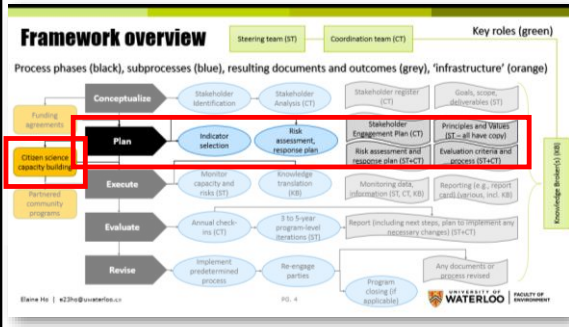
This is usually done by someone with formal stakeholder management training, Project Management training (6th Edition and/or current member of Project Management Institute to access tools and templates), or someone with knowledge of social network analyses. A consultant might be used to fully or partly lead the stakeholder identification, analysis, and strategizing.

Stakeholder Register

Held by Coordination Team

- For each stakeholder/rightsholder (person or group of interest):
 - Identification
 - Assessment (priority of involvement based on interest)
 - Classification (grouped for method of engagement)
 - Other information (e.g., contact method, communication/accessibility accommodation...)

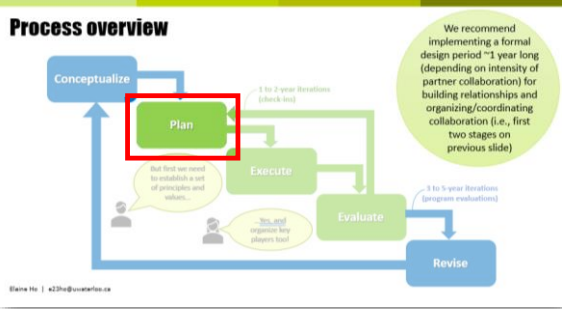
The Stakeholder Register is a document that will be used for frequent reference by the coordinators, knowledge broker(s), and likely by core collaborators. It will likely evolve throughout the project, and especially from one iteration of the monitoring framework to the next.



Citizen science capacity building...

Indicator selection and monitoring logistics...

...and risk assessment and response planning



Planning processes and infrastructure

Citizen science capacity building

- When civil society is engaged, capacity will always need to be built. The building of capacity is partly led by the community groups being engaged but is also the responsibility of existing collaborators that have capacity and that may benefit from collaborating with community groups. Capacity may include:
 - Funding
 - Training/knowledge
 - Access to equipment and services (e.g., laboratories) – potentially via academic partner
- Will need to create a mechanism for community (at large) observations and reporting (i.e., app, web portal, other means for community members to contribute to citizen science – alternatively, promote the use of existing tools)

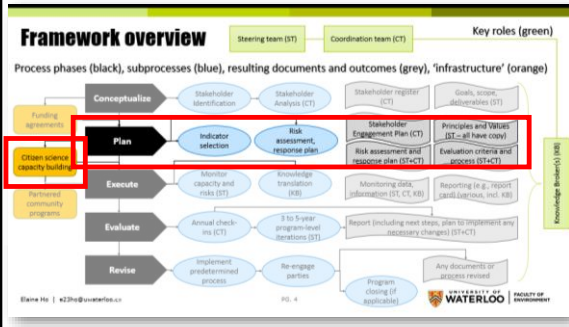
Indicator selection

- Use a formal process for selecting indicators. This helps remove biases and ensure broad considerations are incorporated into the decision to monitor (or not to monitor) each indicator.
- A sample process emerged from our exploratory study in Muskoka: Criteria-based Ranking (CBR). We demonstrated that a different set of indicators can emerge when broader criteria are applied. A short (freely accessible) publication is [here](#).
 - Criteria may include whether the indicator will be used for reporting, whether it is important/relevant to the decision maker and/or to community members, etc.
 - Note: this has been tested (as a proof of concept) in the context of broad characterization; whether this method is applicable for a specific issue or question is uncertain, as indicators would be intentionally biased for addressing the issue/question.

Risk assessment and response planning

Held jointly by Steering and
Coordination Teams

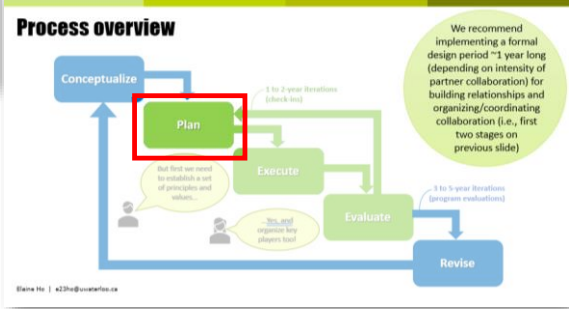
- What are risks (or, in a SWOT analysis, threats) to the successful implementation of the working group's monitoring activities and to achieving its goals? Examples:
 - Funding cuts (mitigated by formal funding agreements)
 - Changes in priorities
 - Withdrawal by active partner/collaborator(s)
 - Regional/national/international crises impacting workflow and other aspects of the collaboration (e.g., pandemic)
- Are there alternative ways to continue monitoring programming and/or to achieve goals if the initial implementation plan is impeded?
- How should collaborators respond to a risk being realized?



Stakeholder engagement plan...

Principles and values...

...plan monitoring and generate evaluation criteria and process



Planning outputs

Stakeholder Engagement Plan

Held by Coordination Team

- Strategies and actions based on needs and expectations of stakeholders. Essentially, the 'how to' and 'when' (and for how long) guide that is generally created by the Coordination Team with input from stakeholders themselves.
- Tools or approaches might include:
 - Stakeholder mapping
 - Social network analysis (i.e., of monitoring partners/governing organizations – those who attended the workshop we held at the Canadian Water Resources Association National Conference on May 25, 2019 did a mini version of a social network analysis)
 - Engagement assessment matrix
 - Meetings and/or focus groups

Stakeholder Engagement Plan – potential roles

Held by Coordination Team

- Recommendations (from interviews, consultations, and other phases):
 - Governments – long-term monitoring, implement political and legislative infrastructure
 - Governments and water managers (incl. Conservation Authorities) – characterization, ongoing monitoring
 - Water managers (incl. CAs) – facilitate collaboration and public education; monitoring to focus on mandated areas (e.g., flood mitigation) and characterization
 - Universities – short-term (>5 years) research on specific issues, emerging phenomena, and assessing efficiencies or efficacy of decisions
 - Other community organizations (including NGOs) – contribute to ongoing and project-based monitoring, short or long term (depends on interest and capacity), fills personnel gap for data collection and education of other community members

Underlying principles and values

Held by Steering Team, all participants have a copy

- Water essential and finite; it provides sustenance for every organism on the planet
- Impacts are shared by all, though not equally
- What we put into the watershed returns to us in one form or another
- We will manage as stewards and demonstrate gratitude for what water provides
- We must view humans as part of nature (internal to problems). We are not separate.
- Nation-to-nation histories must be openly acknowledged, and efforts made to reconcile

These are based largely on public and Indigenous engagement. Incorporating community values and allowing them to guide the design of monitoring is one way to ensure relevance, meaning, and the creation of shared spaces without the need to constantly engagement. The values and principles listed here are a sample of what may come out of more comprehensive and representative processes that we recommend for actual implementation (i.e., during the ~1-year design phase). What's more, if done well the first time, this kind of engagement would not need to be repeated often (i.e., perhaps once per generation) and would apply to all aspects of monitoring and management that are relevant to the method of engagement (i.e., relevant to the parties involved in the areas they were identified from). This could be created for this purpose only (which would be a loss of an opportunity while engaging with the public), or it could take the form of a community Charter (for water, the estuary, local governance - whatever scope partner organizations wish to carry this forward).

Underlying principles and values

Held by Steering Team, all participants have a copy

- Open, transparent communication and data sharing
- Iterative, adaptive processes do not fail; they improve
- Monitoring can empower management when designed for this purpose
- Partnerships and collaboration are the foundation of program implementation
 - Collaboration is the basis on which we can explore complexities
 - All partners and collaborators have something valuable to offer (citizen science, community organizations, non-profit organizations, academic institutions, etc.)
- Include both Western and Indigenous knowledge forms (problem definition, data collection where possible, narratives and reporting)

These are based largely on public and Indigenous engagement. Incorporating community values and allowing them to guide the design of monitoring is one way to ensure relevance, meaning, and the creation of shared spaces without the need to constantly engagement. The values and principles listed here are a sample of what may come out of more comprehensive and representative processes that we recommend for actual implementation (i.e., during the ~1-year design phase). What's more, if done well the first time, this kind of engagement would not need to be repeated often (i.e., perhaps once per generation) and would apply to all aspects of monitoring and management that are relevant to the method of engagement (i.e., relevant to the parties involved in the areas they were identified from). This could be created for this purpose only (which would be a loss of an opportunity while engaging with the public), or it could take the form of a community Charter (for water, the estuary, local governance - whatever scope partner organizations wish to carry this forward).

Plan monitoring

- Intensity determined by questions (from decision making needs)
 - Lower intensity in the river portion (less variability), higher intensity in nearshore
 - Clarify scale of monitoring – how refine do data need to be?
- Long-term data contribute to trends, baseline, assessment of cumulative effects
 - Seek to understand system drivers, cause-effect relationships

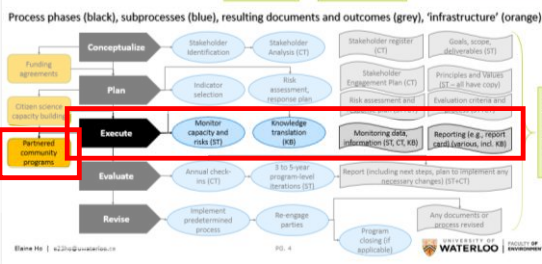
Monitoring practices have been established for years and generally work well. This framework does not propose any changes to monitoring protocols or practices, other than ensuring monitoring questions are founded in decisions and/or management priorities. As such, we do not go into how to monitor the aquatic environment; monitoring personnel have more than sufficient knowledge to carry this out without discussion from our workshop group.

Evaluation process and criteria

Held jointly by Steering and
Coordination Teams

- Everyone in core teams, as well as main monitoring partners, should have the same idea of what success looks like
- Each iteration and the final monitoring review should include a review using criteria of success, and a review of the criteria themselves
- Ensure to incorporate broad values and perspectives into criteria (generating the principles and values will facilitate this). Ensure criteria are still relevant as time goes on.
- Set a minimum time passing before reporting on the state of the program or collaboration (e.g., do not share the state of affairs externally until year 3); this prevents naysayers from preventing progress before it has a chance to happen

Framework overview



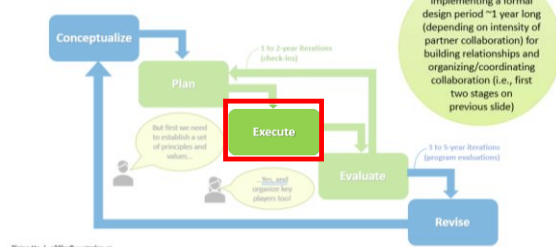
...implement partnered community programs...

...and monitor capacity and risks

Elaine Ho | e23ho@uwaterloo.ca

Carry out monitoring, report on data (knowledge translation)...

Process overview



Elaine Ho | e23ho@uwaterloo.ca

PG. 28

Program execution

Carry out monitoring

- Characterize drivers of the system, not just baseline conditions
 - Capture variation (baseflow + extreme conditions)
- Health indicators for characterization
 - E.g., swimmable, fishable (incl. edible), drinkable (note: drinking water on reserve and at the lake – in Haldimand County – is a priority of both communities)
- Threats indicators as early signals – emerging issues, proactive management
- Western and Indigenous science, data, cultural knowledge
 - Intergenerational knowledge/memories, oral history (Canadian and Indigenous) for baseline and characterization
 - Respect [OCAP principles](#) – ownership, control, access, possession (read more [here](#))
- Unquantifiable observations – experiences, learning, culture

PG. 29

Analysis and interpretation

Done by monitoring partners
with involvement from
Knowledge Broker(s)

- Hire consultants to analyze and communicate citizen science data
 - Community groups may do their own reporting targeted to their audiences
- Communication to general public
 - Indigenous and Western reporting specific to audiences – broad engagement
- Cumulative effects considered using analysis tools (e.g., system mapping, Bayesian networks, other models)
 - Incorporate short and long-term data, as well as combination of water quality, quantity and biomonitoring data

Reporting

Done by monitoring partners
with involvement from
Knowledge Broker(s)

- Open data
 - Usable by all parties without permission
 - Transparent methods, descriptions, lay language
- Public education (to influence decision making)
 - Muskoka Watershed Council completely redesigned its communications for their 2018 Watershed Report Card – check out their diverse and innovative formats [here](#).
- Use succinct, plain English reports for decision making (i.e., similar style to a Memorandum to Cabinet or other tool used by Ministers)
- Knowledge broker's role: facilitate communication and ensure information gets to where it needs to go

Partnered community programs

- **Water Warriors:** community champions and influencers
 - Provide recognition, leverage champions and influencers to engage with community members and influence opinion, education, behavioural change, or other involvement (e.g., citizen science)
- **Water and women:** champions (of any gender) addressing female-specific issues related to water, e.g., domestic abuse, pregnancy and prenatal health, early years health, menstruation and sanitation
 - Provide recognition, leverage (as above) and empower
- **Future Leaders:** connecting youth with water practitioners, community elders
 - Mentorship, water science/management scholarship

We propose the use of community programs to identify community champions implemented for the purpose of leveraging to the benefit of water monitoring and management personnel. This may increase community knowledge, engagement, and desired behavioural changes with minimal time, personnel or funds committed by the working group.

Water Warriors are general community champions (e.g., active community members who are very engaged and work to engage others) or influencers (e.g., religious leaders in some communities, Councilors, clan leaders, etc.).

Water and women is also for anyone in the community but dedicated to specific issues. This recognizes that women (in Canada and abroad) are often disproportionately impacted by challenges related to water quantity or quality and contributes directly to Canada's Sustainable Development Goals targets: <https://www144.statcan.gc.ca/sdg-odd/index-eng.htm> (e.g., 5.5 and 6.2). This also acknowledges that females often have a more personal and intimate relationship with water systems than males due (i.e., Indigenous water keepers are women, many Canadian women are also more aware of impacts of water due to menstruation, pregnancy, and breastfeeding). Several Indigenous youth I engaged with also

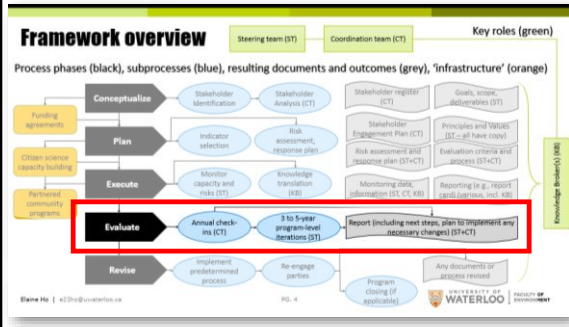
connected violence against women – especially Missing and Murdered Indigenous Women and Girls – to water issues in part due to the dumping of bodies in rivers to hide the evidence and the use of rivers to traffic women and girls.

The Future Leaders program is less connected to immediate goals and so is not as easily leveraged in the short-term but provides long-term gains as young people are trained to understand the water system in certain, more conscious ways.

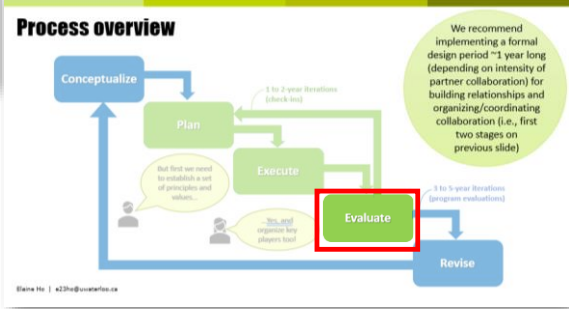
Monitor capacity and risks

Done by Steering Team

- Steering Team tracks the potential risks identified in the planning stage to assess whether any are close to being realized, or have been realized (at which point the response that was planned is initiated)
- In addition, the Steering Team – in collaboration with the Coordination Team and in communication with partners/collaborators – ensures all parties have the capacity and access they need to carry out their roles
 - Where capacity is insufficient, the Coordination Team first attempts to fill the gap through existing partners/collaborators. Otherwise, discussions would be underway to identify how the capacity gap might be filled.



Check-ins, iterations...

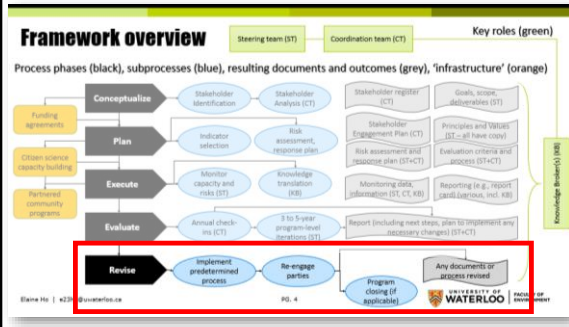


...and reporting what will be done next

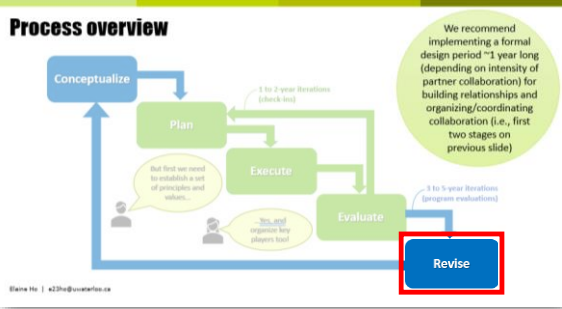
Interim and full-cycle evaluations

Iterations

- *Check-ins* – keep tabs on surrounding areas (stressors *from* and effects *to* outside); raise any issues or share information; status updates on deliverables/analysis
- *Program evaluations* – ideally close to provincial turnover
- *Both* – check against goals, questions, deliverables; assess roles, communication, consultation/engagement, capacity



Making changes (revisions)...



...and ending the program if no longer needed

Interim or full-cycle revisions

Revision

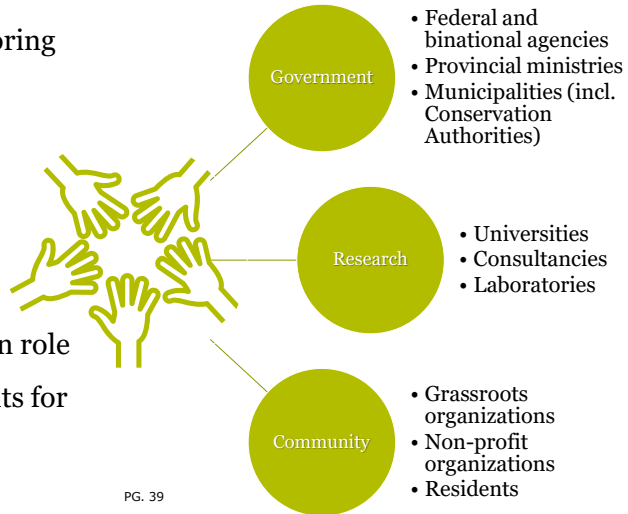
- Based on decision maker priorities
- Where program changes are made, ensure comparability of data and engagement of all parties necessary
 - I.e., if a monitoring protocol is changed, the old and new protocols would ideally be used together for at least 1-2 years (multiple seasons) for comparability purposes
- Succession planning for personnel, funding continuance
- If it is determined the working group is no longer needed, an end of program process would be started here (i.e., where data will be kept, etc.)

HOW IS THIS DIFFERENT?

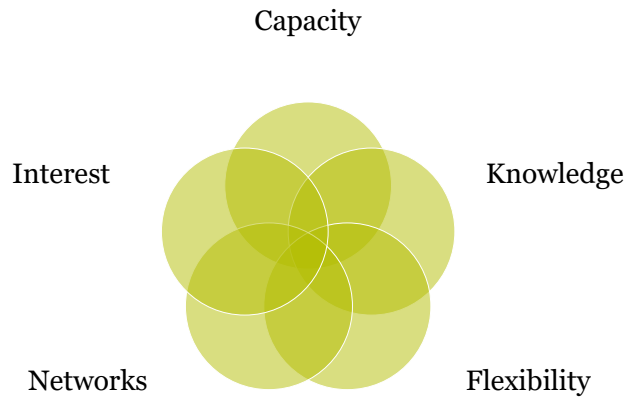
A summary of framework aspects demonstrating improvement over current processes

More and different engagement

- Different definition of monitoring partners
- Increased transparency
- Intercultural competency
- Capacity building
- Funding commitments
- Collaborators define their own role
- Formal process and documents for accountability



More equitable power dynamics



Roles and influence within the collaboration are not delineated by legislated authority, but by vested interest (established early in the process), self-identified roles, extent of collaboration and contributions to the Working Group

A focus on relationships

Relationships between...

- Humans and the environment (i.e., see principles and values)
- Collaborating organizations, agencies, individuals and communities

...are prioritized over process, timelines, and budgets (note: these are not completely disregarded; rather, accommodations or adaptations may be made).

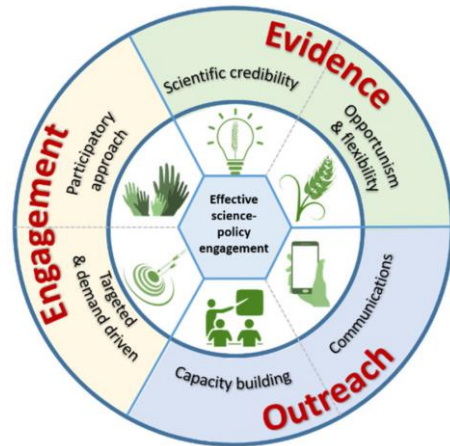
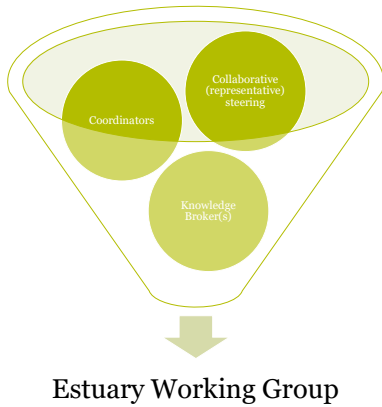


Figure and more information [here](#).

Built-in mechanisms that are often lacking or out of scope



- Collaborative, shared leadership
- Knowledge translation/mobilization
- Coordination activities
- Community programs to increase community reach through community champions
- Shared access to equipment, tools, services (e.g., lab)
- Reciprocity for engagement built in
- Connecting monitoring to decisions being made

IN CLOSING...

Resources and November Workshop

- Research website: www.GrandErieStudy.ca
- Publications
 - Exploratory study – reporting review ([closed access](#))
 - Monitoring review – 5 recommendations ([free read-only](#))
 - Criteria-based ranking process ([open access](#))
 - Summary reports on the research website (under “Resources”)
- Final workshop in November (also via MS Teams): indicators that may be used in cumulative effects assessment of a particular issue – seeking 8-12 participants!



UNIVERSITY OF
WATERLOO



FACULTY OF ENVIRONMENT

THANK YOU FOR REVIEWING – SEE YOU ON OCTOBER 5!