Navigating with Narratives:

Using a Story-Telling Approach to Connect Climate Change Implications and Adaptation Actions in the *Adapt-action* Tool

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Executive Summary

As the climate changes, Alberta's communities will be required to make decisions that encourage adaptation to the new climate conditions. Under the *Local Adaptations* sub-project of the *Biodiversity Management and Climate Change Adaptation* project, the Miistakis Institute has been developing a decision support tool to help communities identify adaptation strategies that satisfy their goals while maintaining the benefits of biodiversity-related ecosystem services.

The *Adapt-action* tool is a web-based decision-support tool for municipalities seeking guidance in taking action regarding climate change adaptation. To respond to the challenge of ensuring the tool is sensitive to how people are likely move through it, *Adapt-action* will use *Narratives*. These are stories built around specific climate change adaptation issues, used to guide the user from information on the projected changes in their area all the way to strategies they can use to create a climate-change-resilient community.

Narratives support the four themes outlined in the Local Adaptation's communications strategy (Change, Impacts, Resilience, Effectiveness/Efficacy), and are presented in this report both in terms of their ability to illustrate complex concepts, and as a navigation device.

The *Adapt-action* tool's 'front end' interface guides users through four issue-related questions ('What does this look like in my area?', 'How is this an issue for my community?', 'What strategies can my municipality use?', and 'Are there people and resources that can help?'), then draws on a 'back end' set of queriable databases. The ultimate utility of the *Adapt-action* tool is the ability for users to create customized reports on the climate change-induced impacts, implications, and potential adaptation strategies that are relevant to their area.

The provisional list of Narratives includes: Adapting to Water Scarcity, Adapting to Flood, Adapting to Extreme Storm Events, and Adapting to Invasives and Pests. "Implications" will be the entry point to the Narratives, knowing that people become attentive when they see the implications of changes and effects within their own sphere. Users can click on relevant and dynamic information as they move through a given narrative, gathering information specific to the four issue-related questions.

Short introductory videos for each Narrative are being considered as a 'travelogue' for the *Adapt-action* tool, using the visual summary to encourage users to understand and undertake the journey through the tool. Though unclear as of yet whether capacity exists to create them, a draft script outline is provided describing the sequence which each video would follow through introduction, implications, change/effect, and potential actions.

Next steps in developing the Narratives are tied into creation of the *Adapt-action* tool, and include drafting storylines for each Narrative, final decisions on how they will function as a navigation mechanism, establishment of the *Adapt-action* tool structure, and population of the

databases such that they support the Narratives. Both the draft narratives and the draft structure of the *Adapt-action* tool will be tested with municipal and climate change adaptation action planning stakeholders.

Biodiversity Management and Climate Change Adaptation Project

The Biodiversity and Climate Change Adaptation Project was conceived by the Alberta Biodiversity Monitoring Institute (ABMI) in response to the need to define the scope of change required to effectively manage biodiversity under a changing climatic regime, and to support Alberta's biodiversity management system with essential knowledge and tools for successful adaptation to a changing future climate.

The rationale for this initiative rests on the importance of biodiversity to Albertans, and the complex relationship between climate and biodiversity. Biodiversity, which includes species and their ecosystems, supports the delivery of numerous ecosystem services. These include provisioning services (e.g., food, fibre, fuel, water), regulating services (e.g. water and air filtration, flood regulation), cultural services (e.g., nature recreation, wildlife viewing) and supporting services such as soil formation and wildlife habitat. Because these biodiversity related services are impacted by a changing climate, and because the relationship between climate and biodiversity is uncertain, knowledge gaps constrain effective adaptation. Proactive investments in the knowledge and tools for effective biodiversity management under a changing climate regime will deliver significant benefits to people and avoid crisis-driven interventions that are by their nature reactive, costly and often ineffective.

The goal of the *Biodiversity Management and Climate Change Adaptation* project is to develop essential knowledge and tools to support the management of Alberta's biodiversity and promote successful adaptation to a changing climate. The project is comprised of four objectives:

1. Predicting the impacts of climate change on Alberta's native species and ecosystems

2. Predicting invasive species responses to climate change

3. Assessing strategies to support climate sensitive species-at-risk

4. Developing and evaluating adaptation policy and tools to manage biodiversity in a changing climate

The *Local adaptations for biodiversity-related ecosystem services* sub-project (concisely, the *Local Adaptations* sub-project) lead by the Miistakis Institute directly supports objective 4.

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INTRODUCTION

Local governments are not charged with protecting planets, species, nor life systems. The efforts that occupy their daily lives, and their budget deliberations are necessarily much more pragmatic. The paradox, of course, is that sum of their actions with regard to land use planning, transportation maintenance, development approval, water and waste management, economic development, etc. have a tremendous collective impact on the species and systems on which humans depend. A further irony is that action to defend biodiversity can circle back to defend the very things that are part of a local government's daily life. This last point provides a key opportunity for catalyzing climate change adaptation actions that are ecosystem-based.

The *Adapt-action* tool is a web-based decision-support tool for municipalities seeking guidance in taking action regarding climate change adaptation. It is critically import not to assume that the simple existence of information on a web site makes it truly accessible to the intended user. The challenge arising from that is ensuring the tool is sensitive to how people are likely move through such a tool, and uses mechanisms to make that easier.

Navigating with Narratives: Using a Narrative Approach to Connect Climate Change Implications and Adaptation Actions builds on a navigation concept introduce in a previous Miistakis report (Lee et al 2014). The Narrative approach uses stories built around specific climate change adaptation issues to guide the user from information on the projected changes in their area all the way to the potential strategies they can use to create a climate-change-resilient community.

Project Background

As the climate changes, Alberta's communities will be required to make decisions that encourage adaptation to the new climate conditions. To make appropriate decisions, communities will need to understand how the ecosystem services they rely on might be affected by climate change, and what are the potential strategies for adaptation. A first step in enabling local community adaptation to climate change is the development of community-based climate change adaptation (CCA) action plans.

Alberta currently lacks a framework for local governments to address climate change; filling this gap will enable communities to plot a path forward. To this end, Miistakis (under the *Local Adaptations* sub-project) has been developing a community decision support toolkit that will help communities identify adaptation strategies that satisfy their goals while maintaining the benefits of biodiversity-related ecosystem services.

This toolkit is envisioned to support Alberta-based climate change adaptation (CCA) action planning processes with tools that allow local managers to visualize the impacts a changing climate has on their community's economy, infrastructure, and natural systems, and to identify resilience-based strategies for proactively adapting to those impacts.

Structure and Role of this Report

The primary role of this report is to further explain the *Narrative* device first introduced in Lee et al (2014). Narratives are first described in terms of their ability to illustrate complex concepts, and secondly as a navigation device, helping intended users find their way to the information they need within the *Adapt-action* tool. Finally, this report lays out a draft script structure for a potential communication device, a video introduction to each Narrative.

Secondary roles of this report include explaining the interface between the *Narrative* device and the information gathered in the two previous Miistakis reports (Lee et al 2014, Lee and Sanderson 2014), as well as placing both the narrative device and the *Adapt-action* tool in the context of this sub-project's communications strategy (Greenaway 2013).

LOCAL ADAPTATIONS COMMUNICATIONS STRATEGY

Several aspects of both the operation and desired outcomes of the *Local Adaptations* sub-project are dependent on communications activities and products. In the fall of 2013, a communications strategy, *Making Resilience Matter* (Greenaway 2013), was developed to guide the creation of communication products and the execution of communication activities. This strategy was developed concurrently with the research needed to inform it, and was thus framed as a living document. This report can be considered an extension of that strategy.

Communication Goals

Understanding and measuring the changes in our climate and the resultant impacts on ecological and human systems is a natural-science-based task. The task of rendering that information useful in the context of local-community decision making, however, is primarily a communications and engagement task. The Communications Strategy was drafted to map out the creation of materials that transfer information from the realm of climate and ecological sciences to the realm of local policy and decision making. The main function of the Communication Strategy was therefore to:

> *"Facilitate the creation of story-based, solution-oriented communication materials that help local decision-makers to embrace a proactive, resilience-based approach to climate change adaptation."*

Three communication goals were articulated in the *Local Adaptations* sub-project's communications strategy (which are linked to, but distinct from, the overall *Biodiversity Management and Climate Change Adaptation* project's communication goals). These were:

- Create awareness within target municipalities, their decision makers, and the communities they represent regarding:

    - Environmental changes likely to occur due to climate change in the grasslands natural region;
    - Implications of climate change to the ecosystem services on which a rural community depends;
    - Resilience-based climate change adaptation strategies applicable in the Alberta context; and
    - The fiscal implications of adapting/not adapting to climate change.
- Empower target Alberta municipalities and their decision makers to adapt to climate change locally by:
    - Representing climate change adaptation as a viable management approach; and
    - Demonstrating effective use of climate change adaptation DSS tools.
- Contribute to the protection and enhancement of Alberta biodiversity by:
    - Raising local awareness of biodiverse landscapes as a keystone to climate change resilience and adaptation; and
    - Illustrating the synergies between local biodiversity management strategies and local climate change adaptation strategies.

Operationally, these goals imply developing climate change adaptation communication materials that:

- Visually demonstrate the connections between complex climate data and local imperatives;
- Have specific appeal to municipal decision makers and the communities they represent, while still maintaining more general appeal/utility; and
- Empower other organizations and players to support municipalities in their climate change adaptation efforts.

Communication Themes

The communications strategy also described four "*Stories*" that would function as a coordinating mechanism, with all communication efforts associated with one or more of these four themes. Each *Story* will be pursued with a variety of communication initiatives and products, and individual products may support multiple Stories. Each project task areas is to be supported by materials created under at least one of the Story lines. No communication medium or audience is presumed in a given Story, though some may lend themselves better to one versus another.

Taken in sequence, these *Stories* represent the desired transition from awareness to action. These stories are:

Story of Change

This story line represents activities, messaging and products that are intended to raise awareness that the status quo is one of climate change-induced transformation. The goal of these communication efforts is to help target audiences accept that local conditions will change

due to climate change, and further to understand that there will be visible alterations to local landscapes and communities.

Story of Impacts

This story line represents activities, messaging and products that are intended to illustrate what climate change-induced transformation means locally. The goal of these communication efforts is to help target audiences understand, in their own terms, what climate change impacts on their local landscapes and ecosystem services will mean to their local economy, culture and infrastructure.

Story of Resilience

This story line represents activities, messaging and products that are intended to make the case that a proactive, resilience-based approach to climate change adaptation is most desirable. The goal of these communication efforts is to demonstrate for target audiences the role of biodiverse, resilient landscapes in preparing communities for upcoming climate change impacts.

Story of Effectiveness/Efficacy

This story line represents activities, messaging and products that are intended to show where and how resilience-based climate change adaptation strategies have been effective. The goal of these communication efforts is to demonstrate for target audiences that effective strategies of these types exist, and that they have applicability for local landscapes and local decision makers.

Communication Media Characteristics

Communication Media refers to the various forms communication materials could take[1]. The Communications Strategy recognized that then, as now, it was premature to explicitly identify all types and instances of communications media. However, several necessary characteristics were identified, namely that, regardless of their form, the communication media collectively would:

- Draw from / support the evolving understanding of the needs within each Story line identified above;
- Be informed by the needs expressed through the engagement strategy, and tested back with those stakeholders;
- Represent and animate the information gathered in the *Future Climate*, *Environmental Changes*, *Implications*, and *Strategies* tasks of this sub-project;
- Be visual, recognizing that the primary audiences are political and popular (not scientific), and are more likely to absorb messaging from graphic and visual media vs. text-based or numeric media;

[1] NB: News and Social Media will be handled through the larger ABMI project, though it may be informed and supported by the materials created within this sub-project.

- Seek to tell "stories" (not simply anecdotal descriptions, but strategic selection of those stories that provide a compelling picture of the circumstance, the impact, the need, and potential solutions); and
- Be web delivered to the greatest extent possible, as this will increase accessibility, options for animation, and cost efficiency.

"ADAPT-ACTION" TOOL

As noted above, the centre-piece of the *Local Adaptations'* sub-project is a decision-support tool for Alberta municipalities grappling with adapting to a changing climate regime. This web-based tool will allow local managers to visualize the impacts a changing climate has on their community's economy, infrastructure, and natural systems, and to identify resilience-based strategies for proactively adapting to those impacts.

Commencing in April 2014, the Miistakis Institute team will begin construction of the tool, with a design based on the information gathered in the first two years of the project, and subject to testing with the intended users. The working name for this tool is "Adapt-action."

Tool Concept

In the simplest sense, the *Adapt-action* tool is designed around two questions expected to be posed by an intended user: 1) "How is this an issue for my municipality?", and 2) "What can my municipality do about the issue?" As Figure 1, *Adapt-action Base Concept*, illustrates, each of these breaks down further into two (still general) questions that would emerge from a municipal consideration of climate change adaptation: "What does it look like?", "What does it mean?", "What can be done?", and "Is support available?"

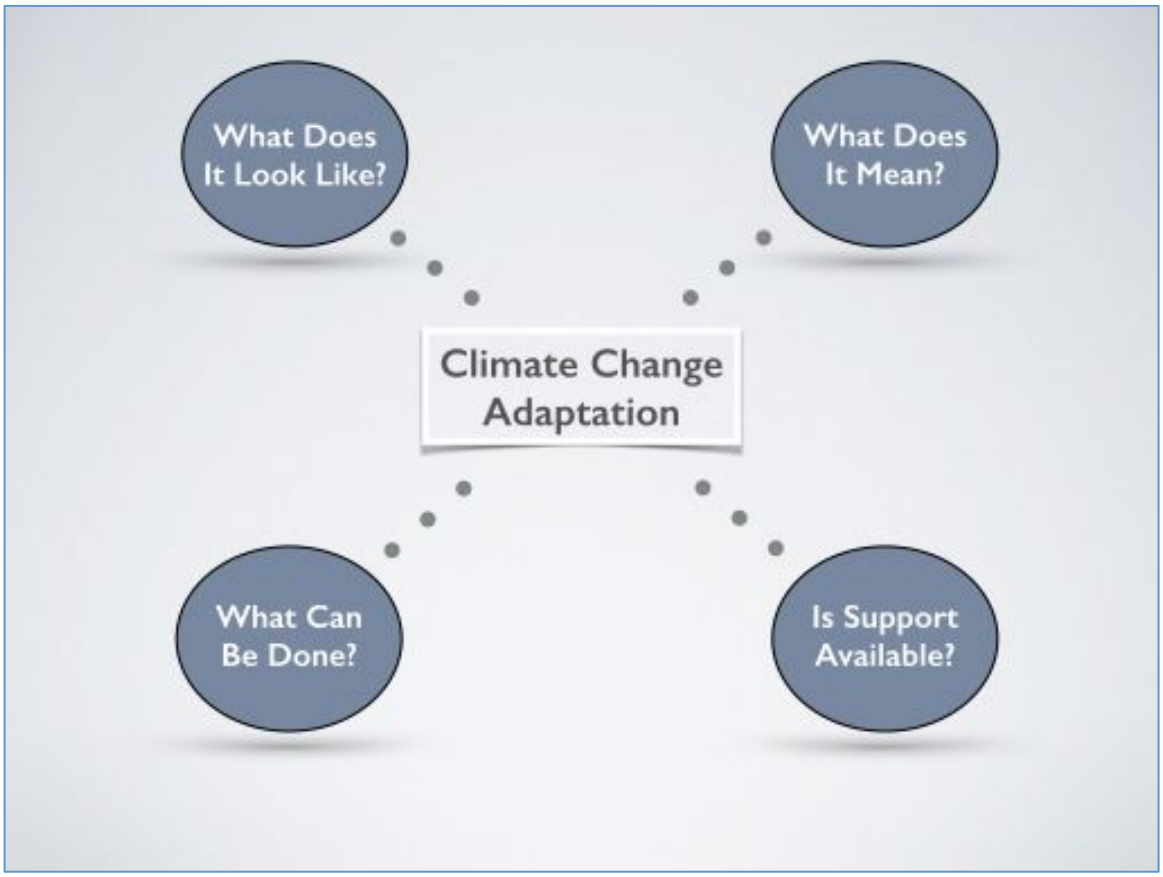

Figure 1: *Adapt-action* Base Concept

In terms of the architecture of the tool, refined versions of these questions are the basis for the underlying information. More specifically, these questions are:

- What does this look like in my area?
- How is this an issue for my community?
- What strategies can my municipality use?
- Are there people and resources that can help?

(see Figure 2, *Adapt-action Base Concept (Detail)*)

These are directly related to the logic stream described in detail below (see Respecting User-Chosen Entry Points, at page 14) where an understanding of *Changes/Impacts* informs an understanding of *Implications*, which in turn informs an understanding of *Actions*.

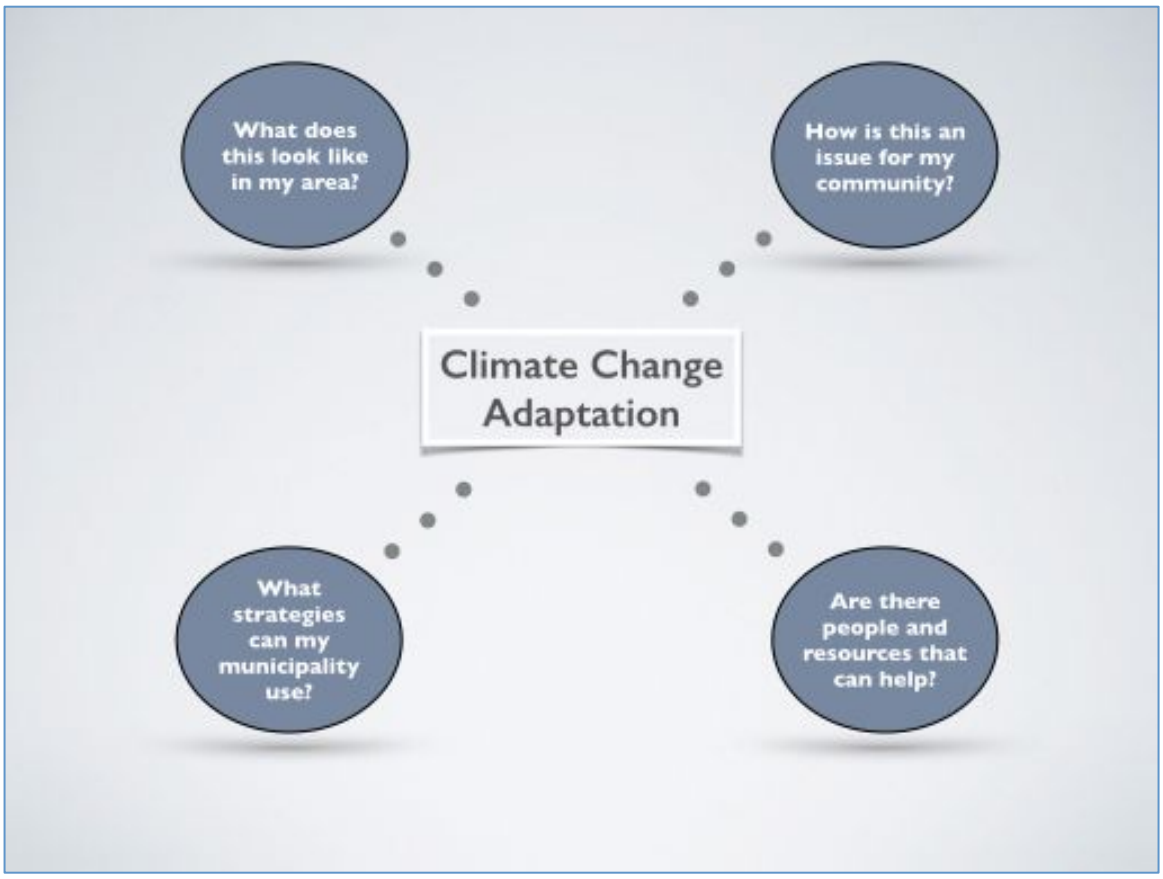

Figure 2: *Adapt-action* Base Concept (Detail)

The *Adapt-action* tool guides the user through a consideration of each of these questions, then draws on the underlying databases to provide information that is context-specific and relevant. The ultimate utility of the *Adapt-action* tool is the ability for users to create customized reports on the climate change-induced impacts, implications, and potential adaptation strategies that are relevant to their area.

Provisional Tool Architecture

The *Adapt-action* tool can be considered to have two main elements. First is the 'front end' user interface guides users through the tool, allows them to access information in a variety of ways, and provides a mechanism for outputting the gathered information (which is described in greater detail below, see Navigating with Narratives, at page 16). Second is a 'back end' set of databases that store information which the user can query.

Although invisible to the user, the tool's architecture is based on an internal set of databases of maps, tables, strategies, cases studies, and adaptation actions. When a user selects an issue or a region or a strategy (making sub-choices choices as they do), the toolkit queries these databases, choosing relevant strategies, case studies, etc. Those resultant pieces are all included, in summarized form, in a downloadable report.

The technical key to the toolkit is a coding system, whereby each strategy, map, case, table and action is coded when it is uploaded into the toolkit (like tags or keywords). The toolkit uses these codes to search the databases. Coding would be categorized under such headings as municipality, narrative, natural region, issue, etc.

As described below, the default would be to generate a report based on the *Narrative* chosen, and refined by subsequent choices of location, municipal issue, policy parameters, etc. However, additional tools would allow the user to generate a 'report' based on other criteria. For example, they might seek to see only the pictures of predicted impacts for a given region (Generate Map Suite), only a strategy list by issue or by region (Generate Strategy List), only a listing of implications by region or by municipal sector (Generate Implications List), or only a list of policies related to an issue (Generate Policy Connections Report), etc. The final determination of which of these sub-tools would be included in the tool would be based on consultation with the municipal stakeholders and action planning stakeholders, the technical limitations of the web-based platform, and the limitations of time and budget.

ILLUSTRATING WITH NARRATIVES

A narrative is an account of connected events, presented to a listener or reader in a sequence of written or spoken words, or a sequence of pictures. In the context of the *Adapt-action* tool, a *Narrative* is a story-based structure that comprehensively describes all facets of a climate change adaptation issue from background information to the resultant implications to the potential strategies and actions. This structure provides an effective method for encapsulating complex issues, as well as for creating a more flexible consideration of where people are most compelled to engage with an issue.

Representing Complex Decision Systems

In Miistakis' previous report, *Environmental Changes and Implications of Climate Change for Rural Communities in the Grassland Region of Alberta*, Lee et al (2014) identified this project faces challenges in presenting climate change adaptation to local communities in a way that does not overwhelm them, and which gives them an entry to point to an otherwise opaque and confusing subject area. The challenges include understanding the role for municipalities, confusion around levels of uncertainty in the science, complexity of projections due to system complexity and unknown responses to emissions targets, and the framing of the issue as a global environmental problem.

Lee et al (2014) suggest that one of the challenges in framing this complex decision system is that it is more than an 'environmental' problem, but this may have the seeds for a solution, as well. Framing climate change adaptation as an environmental, economic and social issue, can help

local communities understand the implications of projected impacts, and develop a localized picture, helping them plan effectively to adapt to these changes.

To assist local communities to better understand the importance of developing climate change adaptation strategies, Lee et al (2014) proposed the development of a series of storylines highlighting the implications of climate change that matter to a rural municipality in the grasslands natural region. Each of these "Narratives" would focus on the economic, social and environmental implications most concerning for a rural municipality by linking climate variables, environmental changes, implications to human well- being and strategies for building a climate resilient community. These narratives would also be framed to draw attention to the potential for adaptation as much as to the need for concern.

Although the final list of narratives is yet to be created, the Miistakis team has developed the following provisional list:

- Adapting to Water Scarcity
- Adapting to Flood
- Adapting to Extreme Storm Events
- Adapting to Invasives and Pests

Respecting User-Chosen Entry Points

There is a vey clear logic stream connecting understanding of a changing climate to action on the part of people seeking to adapt to it: Change => Impacts => Implications => Actions. More specifically:

1. *Change* – an understanding that the climate is changing, and how;
2. *Impacts* – an understanding that that change in climatic conditions has ramifications for the natural systems on which we depend;
3. *Implications* – an understanding of what those effects mean for a person's life; and
4. *Actions* – an understanding of what can be done to adapt or become better resilient to those changes.

Given this, the execution of the *Adapt-action* tool could be expected to guide a user through these narrative elements in a linear fashion (see Figure 3: *Logic stream of climate 'changes' to adaptation 'strategies'*).

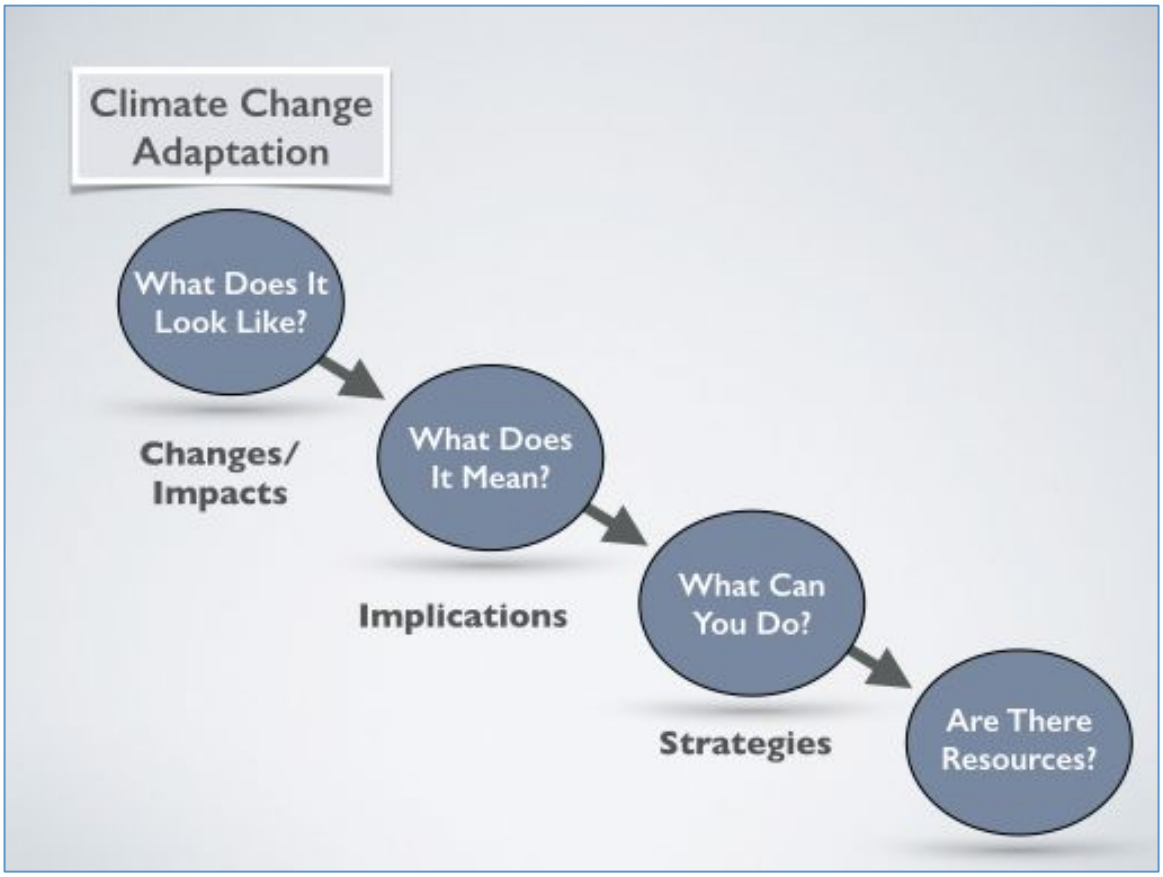

Figure 3: Logic stream of climate 'changes' to adaptation 'strategies.'

However, people rarely start at the beginning of this story. Miistakis' experience has been that the entry point tends to be at the *Implications* stage. When a person (or local government) sees the implications of changes and effects within their sphere of operation, influence or authority, they become attentive. That person may then seek to backtrack to understand the environmental change and resultant effects, or cast forward to understand what can be done about it, but that does not change their entry point.

Figure 4 (*User-defined climate 'changes' to adaptation 'strategies' stream*) highlights this by replacing the more generic "Climate change adaptation" with the more focused and compelling "Adapting to water scarcity." When the narrative is focused on the implications of an issue (e.g., water scarcity), it becomes clearer why a user would seek to enter the narrative at this point.

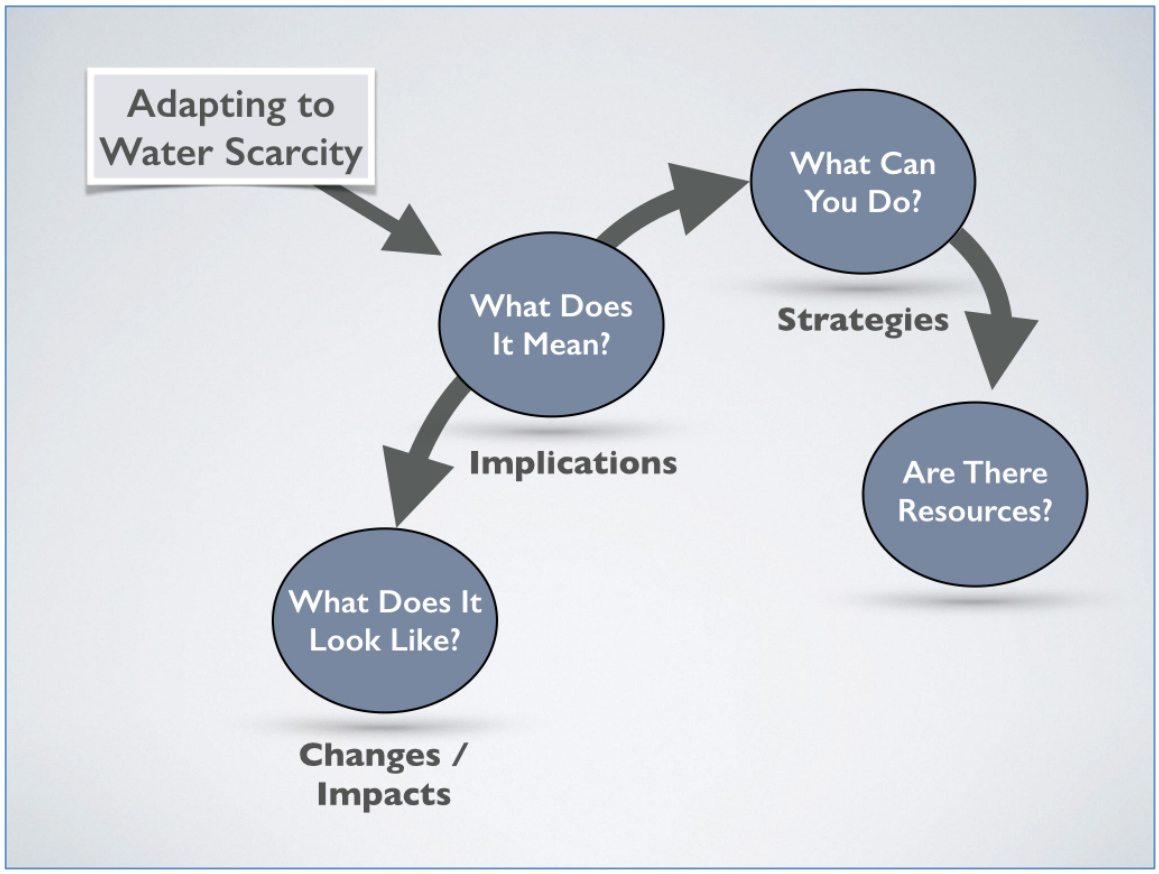

Figure 4: User-defined climate 'changes' to adaptation 'strategies' stream

This consideration of how people are drawn into the logic stream of climate-change-to-adaptation guides the Miistakis team's approach to designing how people will interface with the municipal climate change adaptation tool.

NAVIGATING WITH NARRATIVES

In the same way a climate change adaptation *Narrative* can conceptually represent a complex decision system (providing a mechanism to navigate through that concept), these *Narratives* can also be the basis of the user's interaction with the web-based adaptation tool, providing a map that explicitly links information about climate change information and adaptation strategies.

Narratives as a Decision-support Tool Interface

In *Environmental Changes and Implications of Climate Change for Rural Communities in the Grassland Region of Alberta* (Lee et al 2014), the Miistakis team introduced the concept of 'clickable' narratives. The idea is that a user of the *Adapt-action* tool can click on relevant and dynamic information as they move through a given narrative, touching on each component of that

logic stream (changes/impacts, implications, and strategies). At each stage, the user can access maps, stories, and/or facts/figures that animate that portion of the narrative.

The *Adapt-action* tool will use three to four *Narratives* (see provisional Narrative list, above). Each will start with a video introduction (see Sample Narrative Video, below at page 23) which summarizes the adaptation issue from changes to strategies. The user will then be able to explore more deeply the four critical questions for municipalities identified above (see Tool Concept, at page 10). That exploration provides opportunities for the user to mine the underlying databases in a directed fashion, gathering information relevant to their municipality and to the subject issue of the *Narrative*.

It is also important to reiterate that there will be other 'entry points' that allow users to gather information more directly from the databases in cases where they are looking for specific outputs, or have become familiar with the tool, and are seeking more direct access to certain known resources (see Provisional Tool Architecture, above at page 12).

Generating Narrative-Specific Information

This section describes in more detail the types of information specific to the *Narrative* that the user will gather as they navigate the tool. Each 'question area' identified above is really a collection of questions. Although each Narrative will contain different information, the types of information and the structure for accessing that information will be the same. More specific examples will be provided throughout based on the "Adapting to Water Scarcity" Narrative.

WHAT DOES THIS LOOK LIKE IN MY AREA?

This question area connects the user with information specific to the ecological changes in the relevant systems, illustrating what (e.g.) water scarcity looks like in the chosen area (see Figure 5: *Adapt-action "What does it look like" schematic*). The information is specific to the chosen municipality, and would be largely empirical, and heavily map-based.

What does my system look like? – this would provide maps, data, images, etc. that describe the current structure and function of the relevant systems (e.g., wetland function, function of glaciers, permeability, etc.).

What's causing the issue? – this would provide maps, data, images, etc. empirically demonstrating the causal factors leading to (e.g.) water scarcity, regardless of whether climate change were an issue.

What's the role of climate change? – this would provide maps, data, images, etc. empirically demonstrating the changes in foundational systems due to climate change that are affecting the relevant systems, such as (e.g.) projected changes in temperature, seasonal precipitation, growing days, etc.

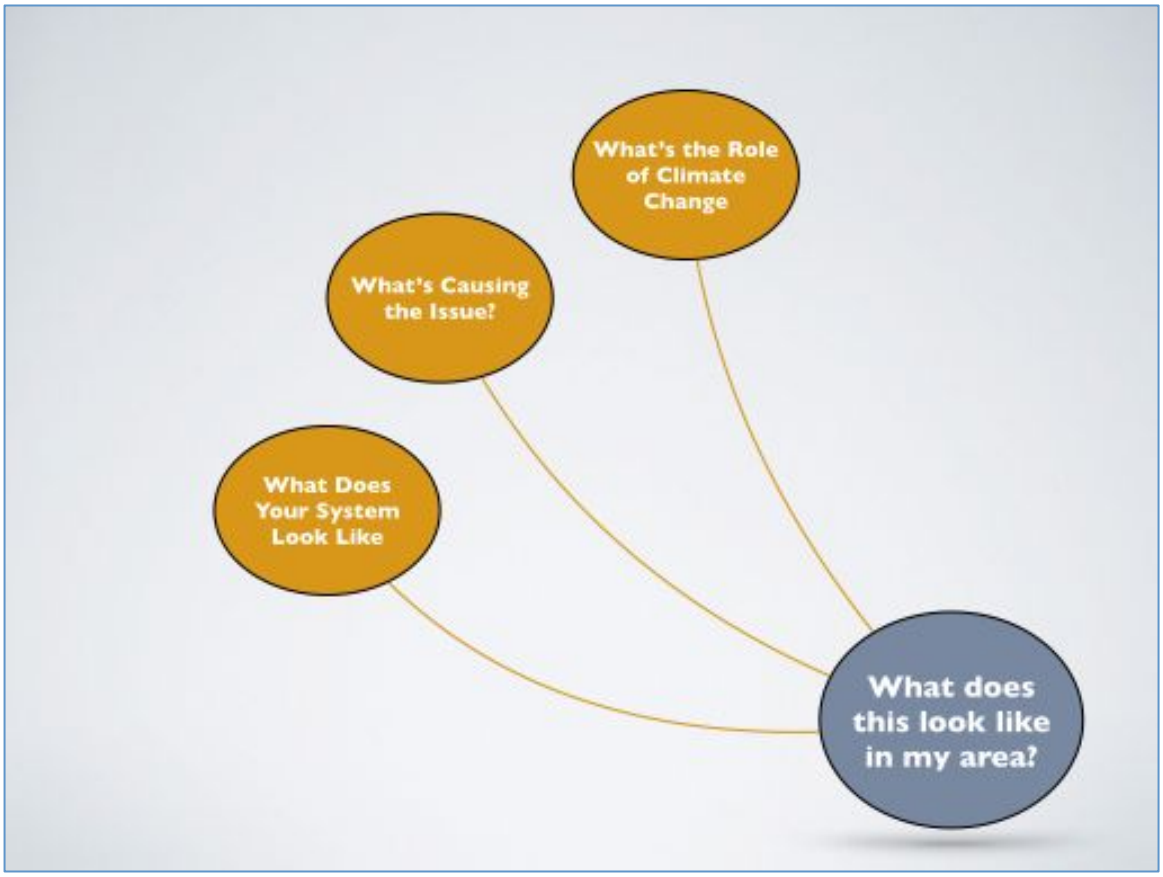

Figure 5: *Adapt-action* "What does this look like?" schematic

How is this an issue for my community?

This question area connects the user with information specific to the implications for a local community arising from the environmental changes due to climate change (see Figure 6: *Adapt-action "What does it mean" schematic*). Where available, information specific to the municipality would be provided; otherwise resources would be well-supported information relevant to the area of municipal authority or interest.

Implications for Biodiversity – this would provide information on the changes to species populations and ecological systems due to (e.g.) water scarcity.

Implications for Health – this would provide information on known health threats related to (e.g.) water scarcity, such as threats to drinking water supplies, increases in certain diseases, contamination of recreational waters, etc.

Implications for Infrastructure – this would provide information regarding the threats to physical infrastructure due to (e.g.) water scarcity, such as water increases in water demand, management of reservoirs, irrigation infrastructure, and water allocation.

Implications for Recreation – this would provide information regarding the ramifications for recreational activity due to (e.g.) water scarcity, such as impacts on waterfowl hunting, boating, and swimming.

Implications for Agriculture – this would provide information regarding the implications for agricultural practices and the industry due to (e.g.) water scarcity, including changes in growing seasons, changes in stocking rates, irrigation potential, grassland productivity, and crop productivity.

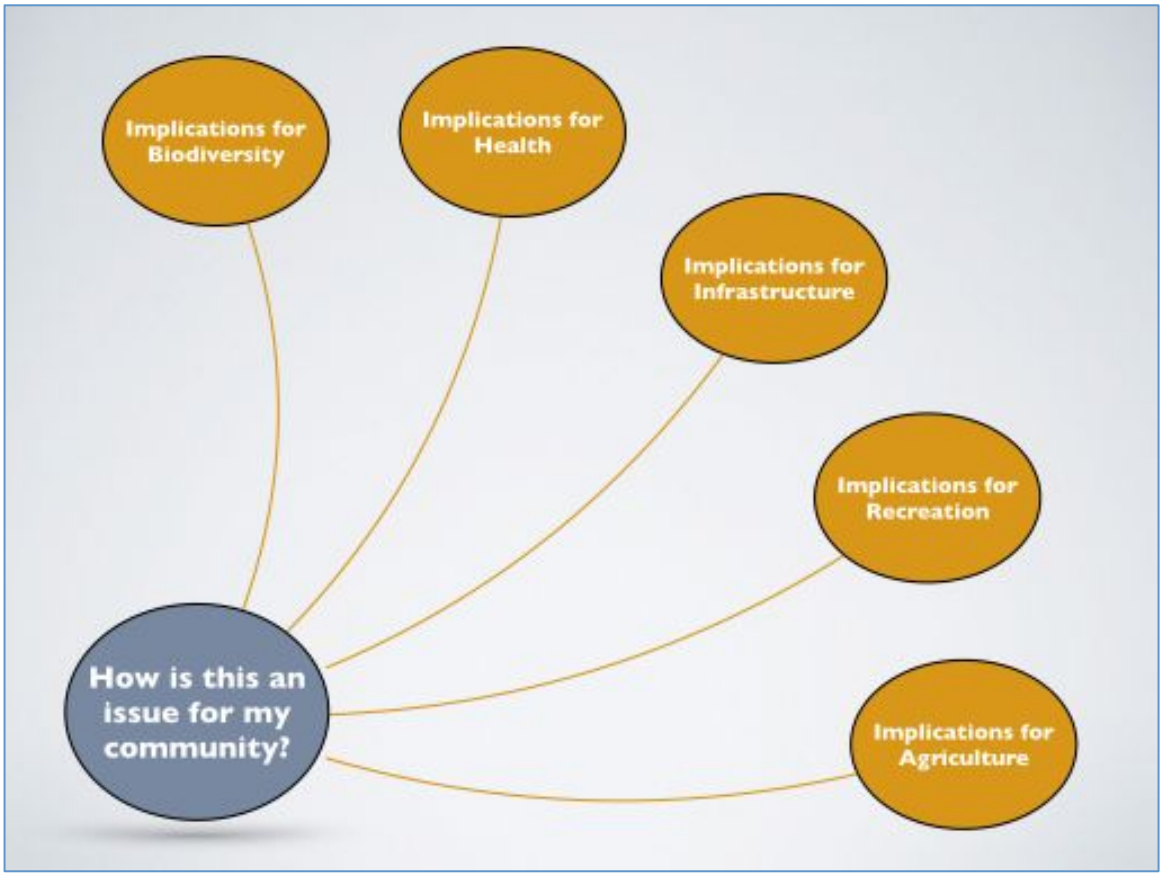

Figure 6: *Adapt-action* "What does it mean?" schematic

WHAT STRATEGIES CAN MY MUNICIPALITY USE?

This question area connects the user with information regarding actions that can be (and have been) taken by local communities to become more climate change resilient (see Figure 7: *Adapt-action "What does this look like" schematic*). This information ranges from inspirational examples from other locations, to municipality-specific information pertaining to application.

Potential Strategies – this would provide the most direct connection to one of the most important databases in the *Adapt-action* tool, the climate change adaptation strategies. The user would be able to scan strategies applicable to the underlying issue associated with the Narrative.

Resilience (EbA) Approaches – this would highlight the strategies that are resilience- or ecosystem-based, showcasing the role they play in cost-effective, multiple-benefit, risk-managed approaches, such as protection of wetlands, soil conservation, promotion of permeability, maintenance of riparian areas, etc.

Sample Cases – this would provide examples of the successful application of climate change adaptation strategies at the municipality level, highlighting cases that are achievable, locally in existence, and where EbA strategies were ably integrated with grey infrastructure approaches.

Funding Options – though funding options are limited, this would provide as much information as possible regarding where funding for implementation of strategies could be found, or how strategies could be integrated with existing initiatives.

Policy Connections – this would provide municipally-specific information regarding the policy and planning dynamics of implementing climate change adaptation strategies, highlighting which policies should be considered, and how strategies could be successfully included in existing plans.

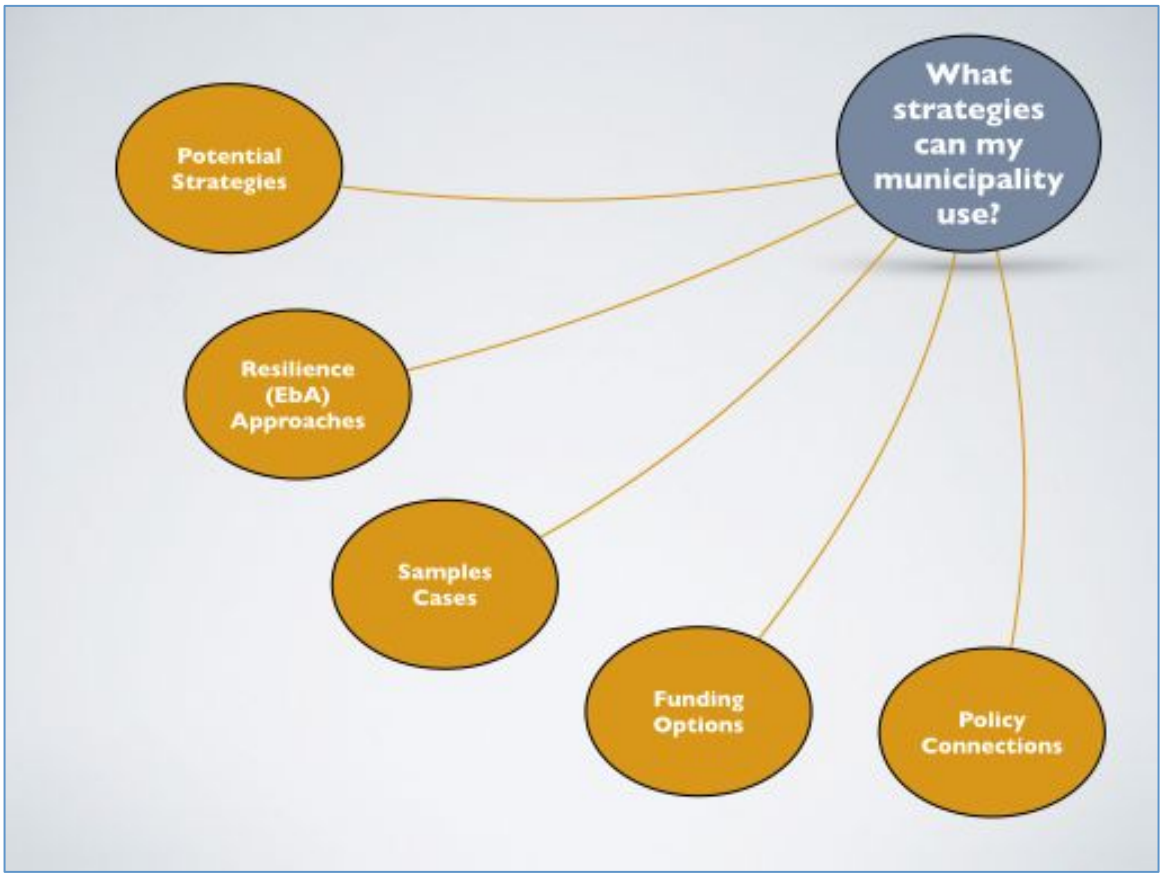

Figure 7: *Adapt-action* "What can be done?" schematic

ARE THERE PEOPLE AND RESOURCES THAT CAN HELP?

This question area connects the user with information regarding where guidance, resources, and support can be found that is applicable to southern Alberta municipalities (see Figure 8: *Adapt-action "Is support available" schematic*). This information ranges from applicable tools used in other locations, to Alberta-based support organizations.

Action Planning – this would provide information on the realm of climate change adaptation action planning, highlighting organizations and processes available in Alberta to help municipalities navigate the adaptation maze. These would include C3 and ICLEI.

Research / Data – this would provide direction to additional information and data not available on the *Adapt-action* tool, recognizing that a web-based scanning tool will ultimately not provide the detailed information that may be sought by municipalities as they get more invested in climate change adaptation actions.

Tools / Websites – this would provide direction and guidance to the numerous web sites, management reports, planning tools, and other easily- and freely-available resources on climate change adaptation at the local level.

Organizations / Agencies – this would provide details on the contact information and bios of the numerous groups, individuals, and agencies that have expertise and capacity to provide to municipalities seeking to implement climate change adaptation strategies.

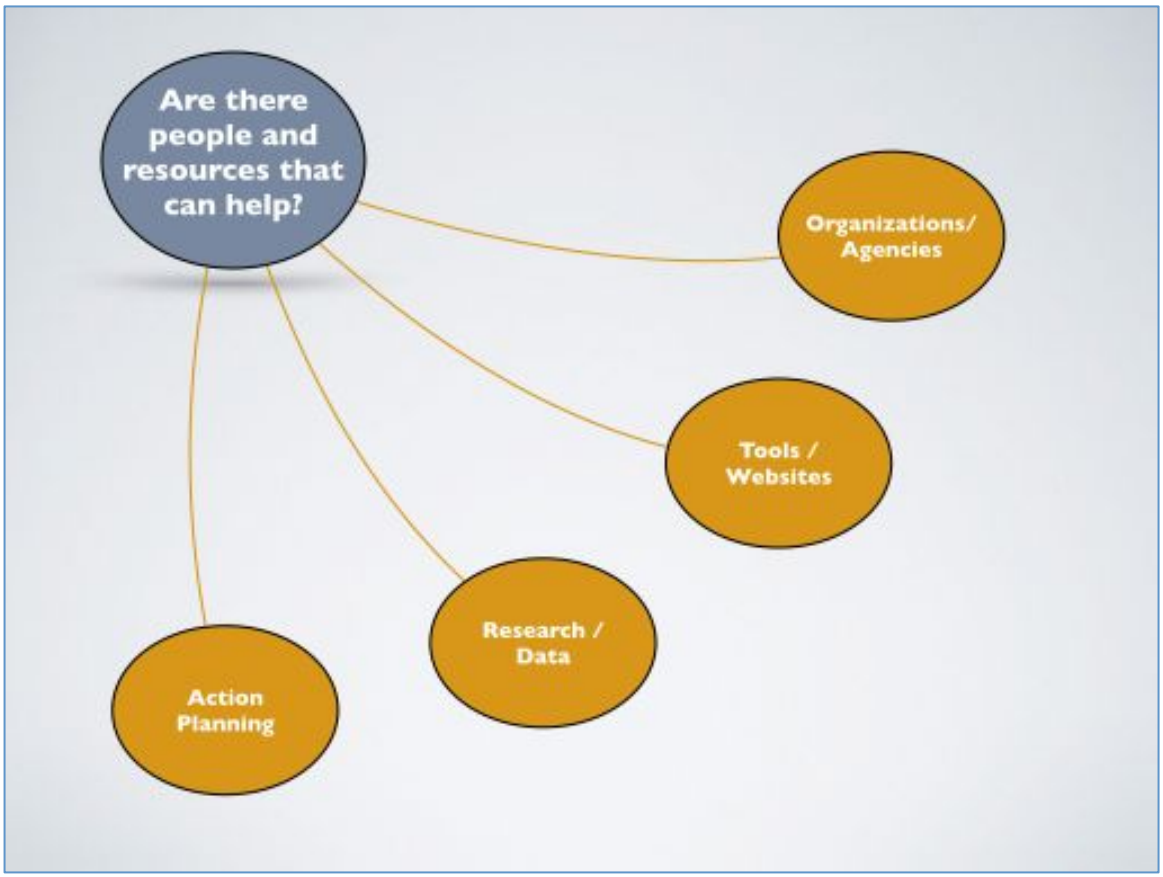

Figure 8: *Adapt-action* "Is support available?" schematic

As they navigate through the *Adapt-action* tool using a given Narrative, the user will have the opportunity to travel through each of these four information areas (see Figure 9: *Adapt-action* summary schematic). Taken collectively, the information the user gathers will tell a story from beginning to end. However, it is important to recognize that the user will need to gather more detail for that story in order to pursue implementation of strategies. There are numerous other factors that a municipality must weigh, and a considerable job to be undertaken in getting their entire organization on side with moving forward on any strategy. The goal of the *Adapt-action* tool, and the Narrative guides, is to give those users a usable overview that plots out a workable path toward a community's climate resiliency.

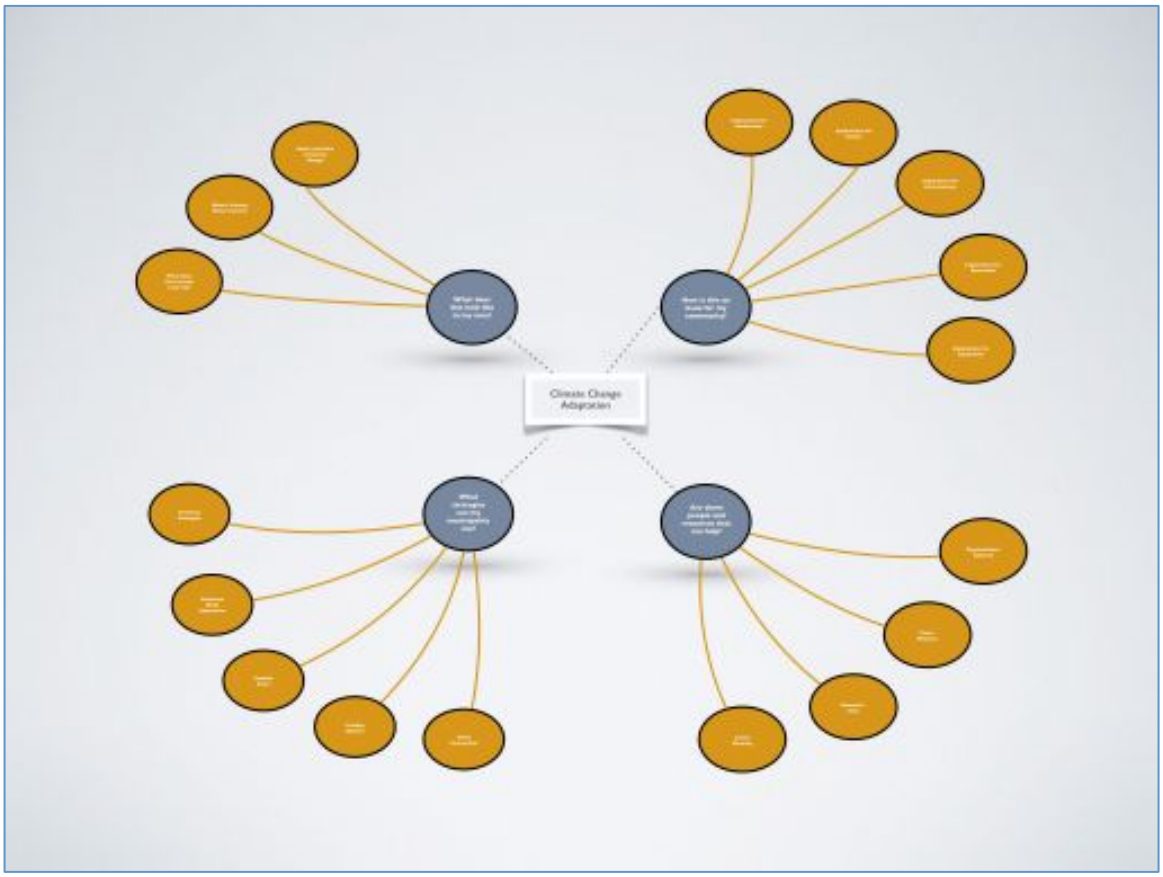

Figure 9: *Adapt-action* summary schematic

SAMPLE NARRATIVE VIDEO

One of the communication devices strongly being considered for use in the *Adapt-action* tool is short videos based on the narratives. Each clip would be based on one narrative storyline, and would be approximately five minutes long. The videos would include landscape scenes from the area, spoken words from local stakeholders, and graphical representations drawn from the clickable narratives in the Adapt Action tool.

Each video would showcase one climate change adaptation issue from changes to impacts to implications to strategies/actions. However, as noted above, people rarely enter the story at the beginning. The video platform provides as excellent opportunity to start at the *implications* that are compelling, and loop back through the causal *changes* and forward to the potential adaptation *strategies*.

The role of the video is almost like a travelogue, using the visual, shortened summary to encourage users to understand and undertake the journey through the tool. The video personalizes the issue, uses people to engage people, and illustrates the journey from climate change knowledge to adaptation action. Armed with this familiarization tour, the user can then

more confidently engage with the Adapt Action tool. The video also becomes an instrument one user (e.g., a municipal staff person) can use to engage other users (e.g., municipal councilors).

At this time, it is unclear whether videos can be created for each narrative within the constrains of the current project mandate and budget. However, active consideration of them is important at this stage, as, even if they are not created as envisioned in this report, it is possible that a modified version of what is proposed, or other devices could be used to accomplish similar goals.

Draft Video Script Outline

Each video would be different as they are based on a different narrative. However, each video would follow the same formula, and use the same basic approach. The following outline shows the draft framework on which all videos would be based.

Introduction

The introduction would drop the viewer directly into the implications, then move quickly into the strategies, summarizing the entire journey with an emphasis on the achievability of action. Potential approaches include starting with panoramas of affected landscapes and voice over descriptions of the climate-change-induced change and impact that has led/will lead to the demonstrated implications, then including clips of successfully-implemented adaptation strategies.

In the case of the 'Adapting to Water Scarcity' narrative, this could include images of drought-impacted landscapes, impacts to the agriculture industry, and protected wetlands.

Implications

The second part circles back to focus on the implications again, building a greater opportunity for the viewer to understand the implications, and visualize themselves in the narrative. Potential approaches include interviews with landowners or municipal staff regarding their personal view on impacts, well-chosen compelling statistics around economic implications, or interviews with ecology researchers regarding impacts to hunting/fishing from the issue.

In the case of the 'Adapting to Water Scarcity' narrative, this could include interviews with ranchers or municipal water services staff talking about what existing/increased water scarcity means to them.

Change / Effect

The third part makes that case that the implications spoken of are likely to exist or increase, and that there is clear evidence for that. This could involve maps, tables, graphs, charts and

associated interpretation explaining what the issue looks like on the ground, and the role of climate change in exacerbating it.

In the case of the 'Adapting to Water Scarcity' narrative, this could include regional maps of precipitation decreases and timing changes, data or images on glacier retreat, or interpreted information on the change in seasonal precipitation.

What Can Be Done About It

A critical challenge in catalyzing action around climate change adaptation is ensuring the information about the expected/existing changes is sufficiently blunt to be compelling, while not a inducing a suicidal laissez faire perspective where it all seems hopeless. The role of the last part is, therefore, critical. The introductory 'teaser' promises potential strategies to adapting to water scarcity, and the final section needs to deliver an equally-compelling picture of potential – and effective – activity on the part of municipalities and their communities.

The final part will emphasize that the 'how' is as or more important than the 'what'; that is, how a municipality approaches climate change adaptation is as important as the specific strategies chosen. This section will emphasize resilience-based approaches, and will use ecosystem-based approaches as keystone examples. As much as possible examples will be drawn from the local area, but Alberta has a dearth of material to draw from. Visuals will emphasize action-oriented strategies, with voice-overs explaining their efficacy and the role that municipalities play in the activity.

In the case of the 'Adapting to Water Scarcity' narrative, this could include agri-municipal water conservation initiatives, hydrologists explaining the role of wetlands in drought prevention, and associated descriptions of the "no-regrets" benefits, such biodiversity maintenance and recreation opportunities.

Conclusion

The final step in the video will be a brief statement/description of the potential for the Adapt Action tool to help municipalities understand and plan for action around this issue.

NEXT STEPS

The next steps in developing the Narratives are tied in with the physical creation of the *Adapt-action* tool. Year 3 of the *Local Adaptations* sub-project is centred around the creation, testing and population of the *Adapt-action* tool.

Early in Year 3, draft storylines will be created for each of the provisional Narratives, and final decisions on how they will function as a navigation mechanism will be made. The structure of the *Adapt-action* tool will be established in the first part of Year 3, with a clear conception of the programmatic links between the Narratives and the tool. The central task in Year 3 is the population of the databases that underlie the *Adapt-action* web tool, and this will be done such that they can capably support the Narratives as a navigation tool.

Both the draft narratives and the draft structure of the *Adapt-action* tool will be tested with municipal and climate change adaptation action planning stakeholders. This will occur at a point after the Narratives have been drafted (i.e., there is something to test), but before design of the *Adapt-action* tool has been finalized and programming undertaken (i.e., redesign based on feedback is possible).

The work plan for Year 3 is ambitious, and currently there is not funding for the video productions. A key next step will then involve designing the Narratives so they function well without the video introductions, while at the same time seeking funding for the videos.

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