

Preparing for Climate Change in the Prairie Provinces:

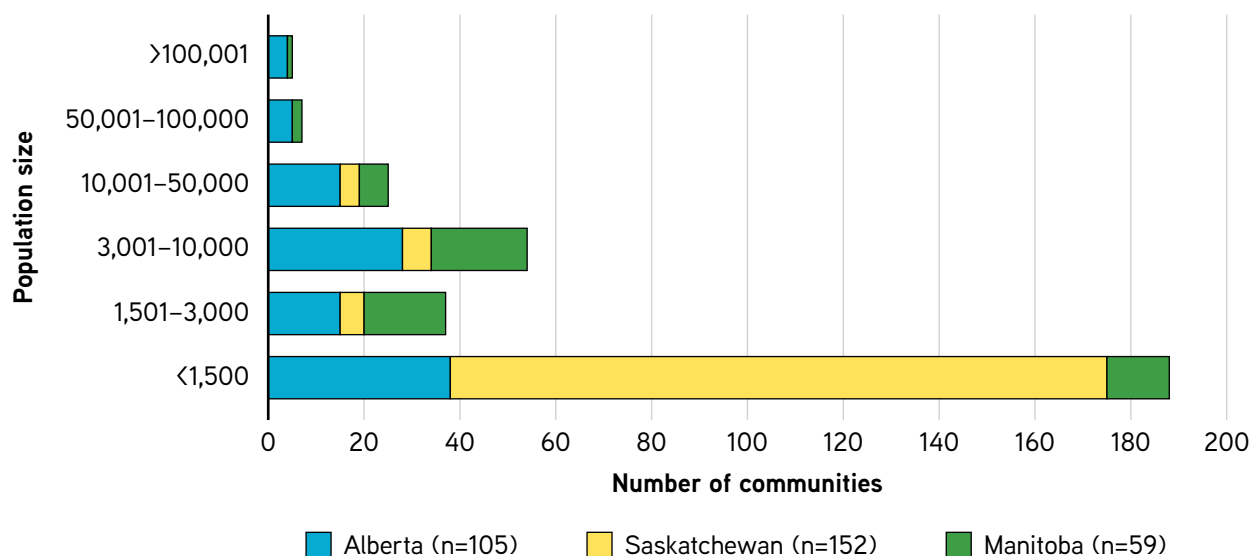
Regional survey outcomes on the climate adaptation priorities and progress of communities

Over the fall and winter of 2020–2021, the Prairies Regional Adaptation Collaborative (PRAC) reached out to municipalities and Indigenous communities throughout Alberta, Saskatchewan, and Manitoba to better understand the current extent of their climate change adaptation needs, planning, and implementation. Through the survey, the PRAC sought to increase its knowledge of the adaptation priorities, challenges, and barriers faced by municipalities and Indigenous communities to inform future adaptation planning efforts in the Prairie provinces. The survey was administered by the All One Sky Foundation on behalf of the PRAC.

The survey received a strong response rate, with nearly 300 municipalities sharing their progress and perspectives. This number represents 22% of all municipalities in the Prairie provinces. Responses were received from large cities to small hamlets and rural municipalities.

Response rates from Indigenous communities differed significantly between the Prairie provinces. Of the 22 responses received, 91% were from First Nations and Métis communities based in Alberta, representing approximately one third of First Nations and Métis Settlements in that province. The low response rate from Indigenous

Figure 1. Population size of municipalities and Indigenous communities that responded to the survey



communities in Saskatchewan and Manitoba precluded a separate analysis of their climate preparedness, needs, and concerns.

As illustrated in Figure 1, the bulk of the responses—more than 85%—were from municipalities and Indigenous communities with a population of fewer than 10,000 people. While the largest number of responding communities in Manitoba had a population of between 3,001 and 10,000 people, in Alberta and Saskatchewan, the largest cohort was from communities with a population of fewer than 1,500 people. This trend was particularly strong in Saskatchewan; 90% of Saskatchewan respondents were from communities with a population of fewer than 1,500 people. In part, this response rate reflects the large number of small communities in Saskatchewan, each of which received the survey.¹

Here are six key messages from the survey respondents.

1 Most municipalities and Indigenous communities report having experienced unusual extreme weather or weather-related events in the past 10 years.

More than 80% of the survey respondents indicated that their community had experienced one or more unusual events in the past decade. The most common events—observed by more than a third of all responding Prairie communities—were flooding, extreme winds, and/or extreme rainfall events (see Figure 2). More than half of the responding communities in Alberta and Manitoba indicated that they had been impacted by flooding, and nearly as many had been affected by extreme rainfall events.

Several risks were experienced to a greater degree in one province compared to the others:

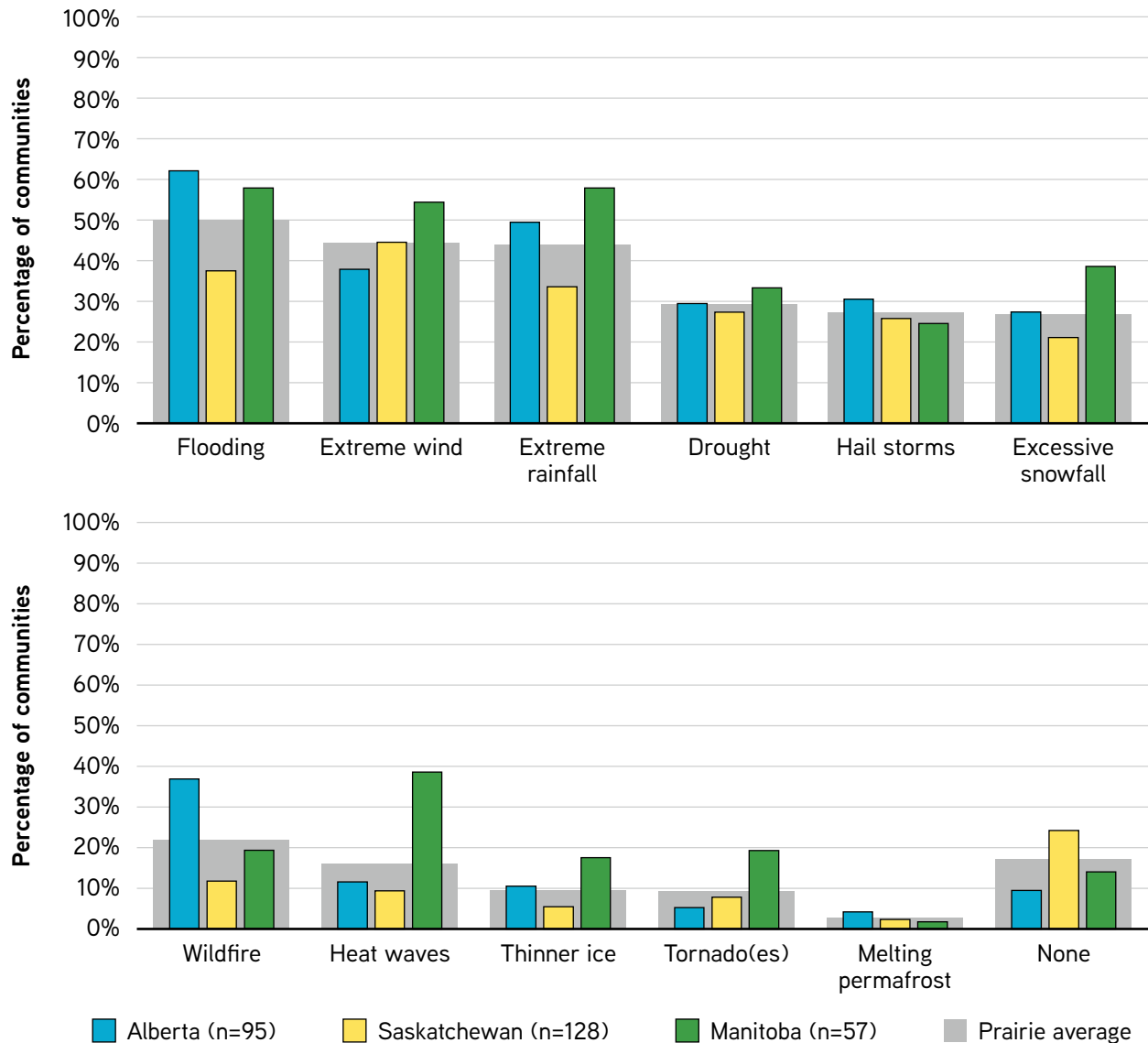
- Manitoba respondents were 2.4 times more likely to report a change in the number of heat

¹ Of the municipalities in Saskatchewan contacted to undertake the survey, just over 80% were from villages; resort villages; northern towns, villages, hamlets, and settlements; rural municipalities; or organized hamlets.

waves experienced in the past 10 years. They also were more likely to have experienced a change in the number of excessive snowfall events and tornados.

- Alberta respondents were the most likely to have observed a change in the occurrence of extreme weather or weather-related events compared to the past. In particular, they were more likely to note changes in the number of wildfires.
- Saskatchewan respondents were less likely to report experiencing unusual weather-related events in the previous decade. Nearly 25% of all Saskatchewan respondents indicated that their community had no experience with unusual weather-related events in the previous decade—compared to less than 15% of respondents in Alberta and Manitoba.

Figure 2. Number of communities reporting that their community experienced extreme weather or weather-related events that seem different from normal in the past 10 years



2 Communities shared significant concern about changing climate risks and the associated impacts on their infrastructure, community members, and local industries.

The survey respondents indicated that they expect to be impacted by a wide range of climatic changes over the next 20 years. In particular, at least 75% of the respondents expressed concern that they would be significantly impacted by:

- More intense rainfall and storms
- More frequent extreme wind events
- An increase in the frequency and severity of droughts
- More frequent and severe floods
- Less predictable weather patterns.

Changes in lake and water levels, a greater likelihood of heat waves and wildfires, and changing freeze-thaw patterns were also identified as key concerns by more than half of the respondents.

Respondents were also asked how significant the consequences of these anticipated climatic changes would be for their community's infrastructure, people, and local industries. As noted in Figure 3, a range of concerns was expressed:

- The greatest concern was expressed about negative impacts on built infrastructure, including buildings, stormwater management, energy systems, and transportation infrastructure.
- Both mental and physical health-related issues emerged most strongly in terms of potential consequences for community members. How climate change will impact cultural practices was identified as a concern by respondents

from nearly all Indigenous communities and about 30% of municipalities.

- For local industry, potential changes in the cost of heating and cooling were the most commonly identified issue, along with the implications for the agriculture sector as the growing season lengthens and the suitability for growing different crops changes.

3 About one in three Prairie communities is preparing for climate change—but there are significant differences between provinces and among large and small communities.

At a regional level, 34% of respondents indicated that their community is currently preparing for the local impacts of climate change (see Figure 4). Of these communities, the most common approaches being used were:

- Considering climate change in emergency management and/or asset management
- Awareness raising within local governments
- Developing or implementing individual projects to build back better after a recent climate event.

Significant differences, though, were observed between the provinces. For example, while more than 50% of municipalities in Alberta indicated that they are preparing for local climate change impacts, fewer than 20% of communities in Saskatchewan are making preparations.

As well, there were noticeable differences between communities of different sizes. While 70% of larger communities (those with a population of 10,000 or more) said they are preparing for climate change, less than 30% of smaller communities—those that are home to fewer than 10,000 people—are taking similar actions.

Figure 3. Perceived significance of the potential consequences of climate change on the infrastructure, people, and local industry in the respondents' communities

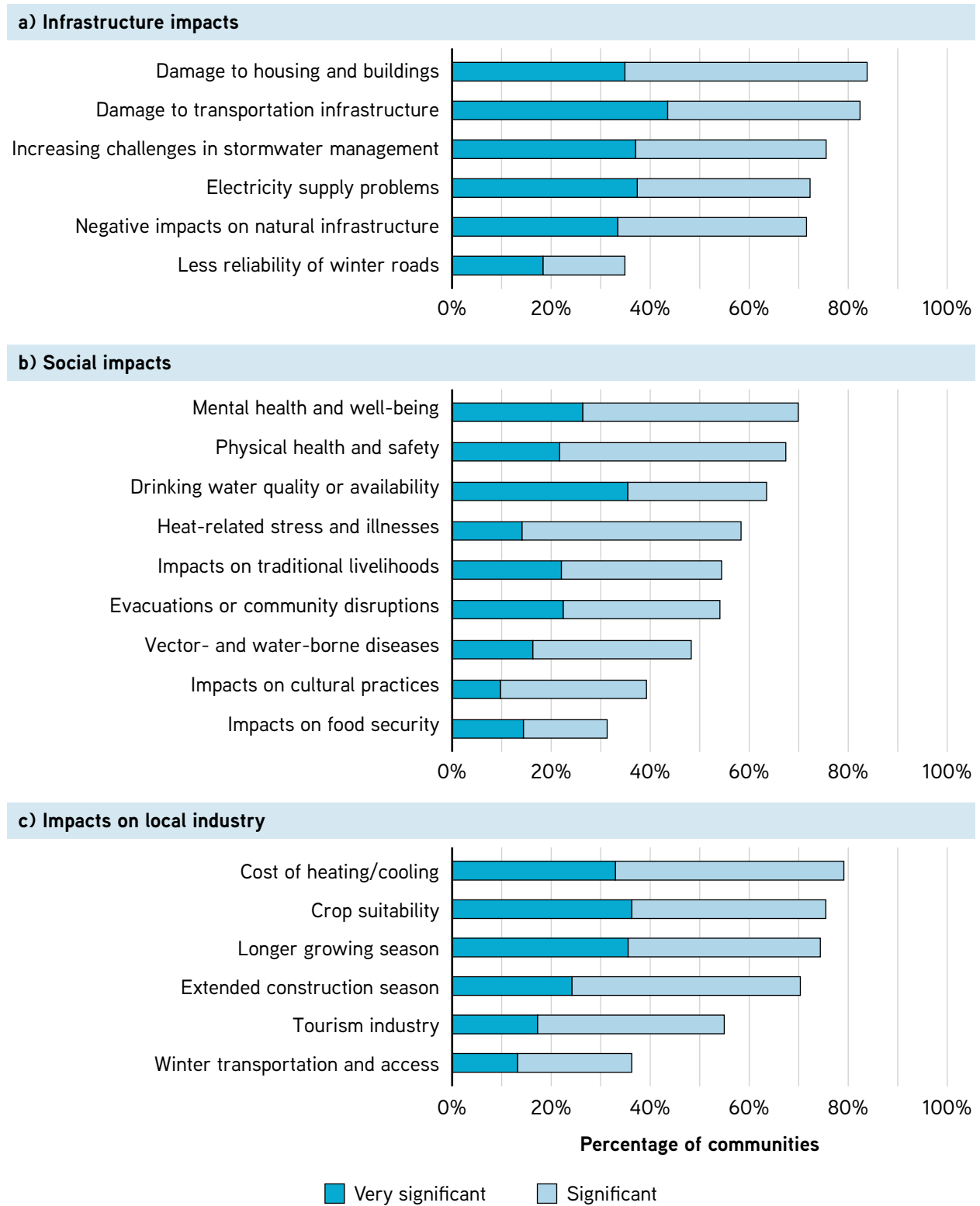
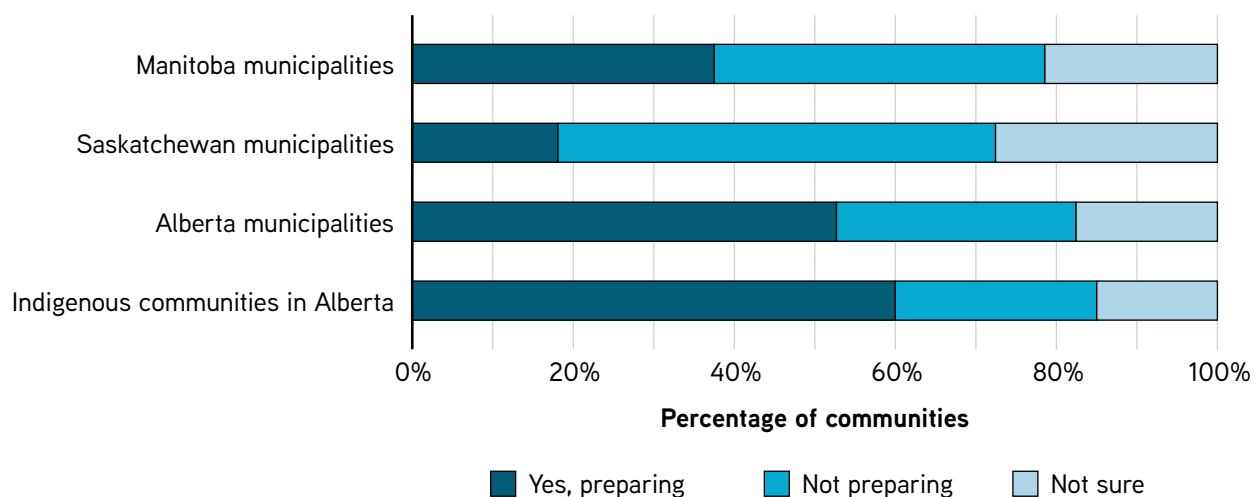


Figure 4. Communities reporting preparations for local climate change impacts by province



Notably, of the survey respondents, Indigenous communities in Alberta emerged as leaders in climate change preparations. While most of these communities have a population of fewer than 10,000 people, 60% stated that they are taking action to prepare for climate change. Sources such as Canada's climate action map² indicate that a number of Indigenous communities in Saskatchewan and Manitoba are also engaged in preparing for climate change.

4 Across the Prairies, few communities have completed formal adaptation planning processes.

Undertaking a climate risk assessment and engaging in an adaptation planning process help communities prepare for anticipated climate change impacts. Of the total survey respondents, about 8% stated that their community had completed a climate change risk and vulnerability

assessment, and about 5% had completed a climate adaptation plan or strategy.

As well, significant differences were found among the three Prairie provinces. While 14% and 15% of respondent communities in Manitoba and Alberta, respectively, stated that they had completed a climate risk and vulnerability assessment, no responding communities in Saskatchewan had taken this step. A higher percentage of Manitoban communities (14%) also reported that they had completed a climate adaptation plan or strategy compared to communities in Alberta (9%) and Saskatchewan (2%).

Once communities have prepared an adaptation plan or strategy, 70% have or are taking steps to implement them. Respondents provided examples of these actions, such as integrating adaptation into city processes, developing tools and resources for use by their community, establishing working groups to coordinate implementation, and completing a tree inventory.

² The climate action map visualizes the federal government's support for climate change action in Indigenous and non-Indigenous communities, including support for climate change adaptation. See the map here: https://climate-change.canada.ca/climate-action-map/App/index?GOCTemplateCulture=en-CA&zoom=3&filter_query=VVBQRVloQ2F0ZWdvcnkplExJS0UgJyVJTklJw%3D%3D&lat=55.322974396572896&long=-105.37371273077682

5 Communities identified common barriers to initiating and undertaking preparations for climate change.

Of the respondents who indicated that their communities have not yet begun to prepare for climate change—about two thirds of respondents—more than half identified the following as being barriers to initiating this action:

- Limited staff time
- Limited staff skills
- Lack of financial resources
- Other issues being more pressing (see Figure 5).

Within this group, some differences in barriers between communities emerged. Smaller communities, particularly Indigenous communities in Alberta, were more likely to identify limited staff skills and a lack of accessible information as key constraints. The absence of support from senior staff was more frequently identified as a barrier by larger communities compared to smaller communities.

More than half of the communities that have begun to prepare for climate change but have not yet completed a formal climate risk assessment or climate adaptation plan also identified limited staff time, limited staff skills, and a lack of financial resources as their principal barriers (see Figure 5). A lack of accessible funding was also a primary concern. Communities in Saskatchewan were significantly more likely than those in Alberta and Manitoba to also identify a lack of examples from other communities as a significant barrier to preparing for climate change.

6 Communities identified the need for greater technical and financial support to advance their efforts to better understand and prepare for climate change.

When asked what technical data or information they need to better understand climate change and its potential impacts, survey respondents expressed strong interest in gaining greater knowledge of how local infrastructure will be impacted by climate change (see Figure 6). Nearly seven out of 10 respondents requested access to this information.

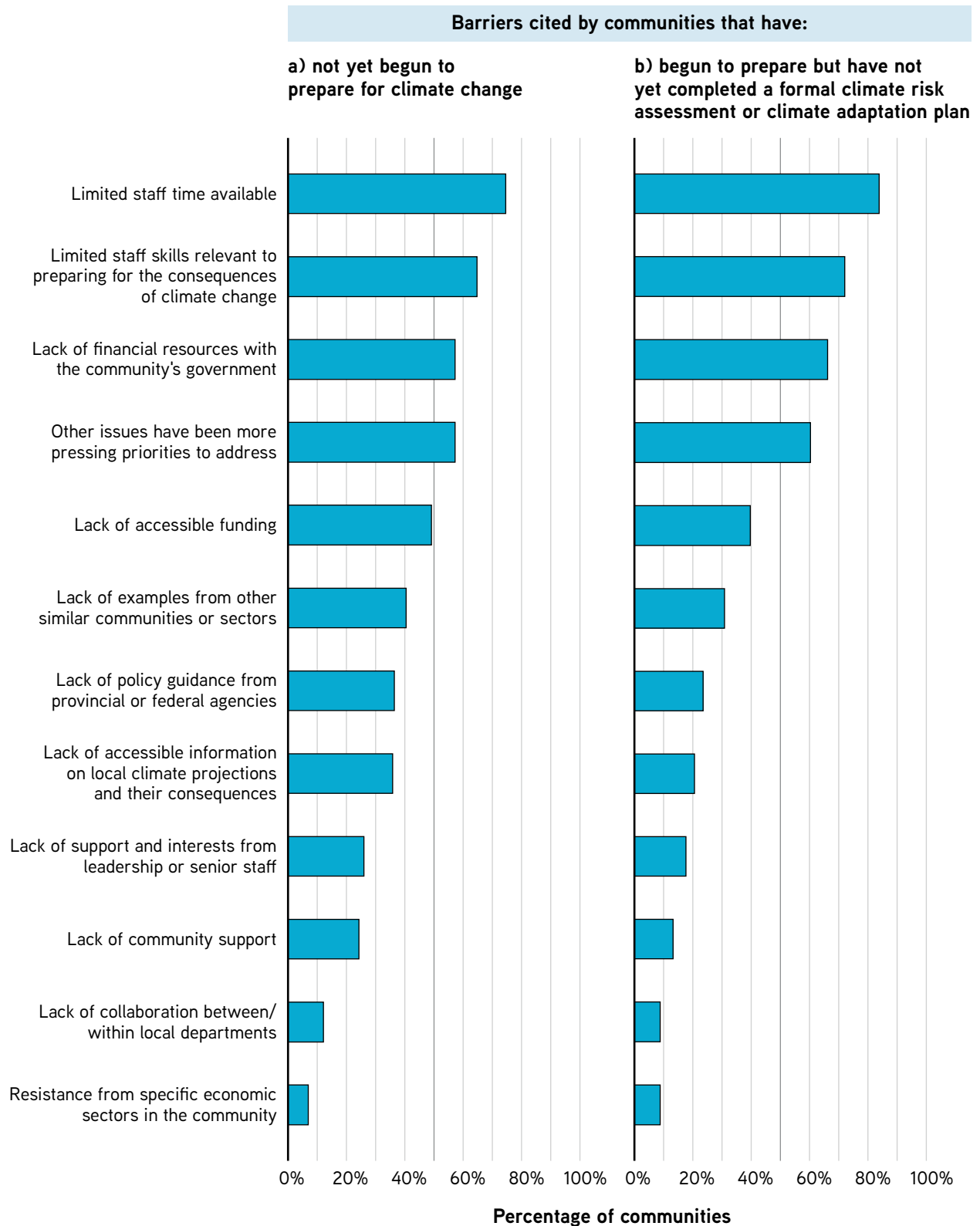
More than half of all respondents in every province also expressed interest in greater access to:

- General climate trend data specific to their area
- Information about projected changes in climatic extremes
- Analysis of how economic sectors will be affected
- Assessments of the consequences for human health and wellness.

While all communities expressed interest in this type of technical information, stronger interest was expressed by larger communities compared to smaller communities and by communities engaged in preparing for the impacts of climate change compared to those that are not.

When asked about the most useful ways to support their community's efforts to prepare for climate change, funding was identified by nearly 75% of respondents. More than one third of community respondents also indicated that the following options would be useful ways to help their community prepare for climate change:

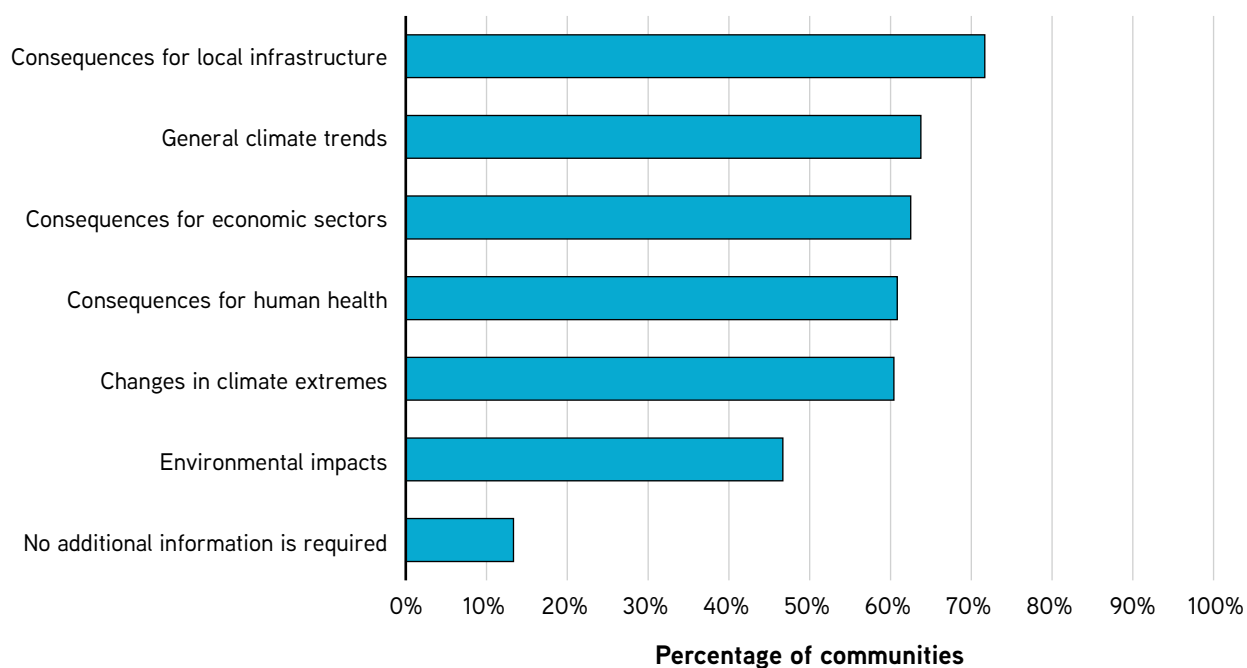
Figure 5. The most significant barriers to preparing for a changing climate, as identified by surveyed communities



- Provide guidance with best practices and examples from other similar local governments.
- Communicate how climate change could potentially affect (positively or negatively) local businesses and economic sectors.
- Support networking and knowledge sharing between communities.
- Provide training on topics related to climate change preparedness.
- Clarify existing government policies, strategies, and/or plans regarding climate change preparedness.
- Share information on how to assess community risk or vulnerability to climate change.

Respondents from larger communities were more likely than those from smaller communities to feel that one of the options given to support their community's efforts to prepare for climate change would be useful. Similarly, Indigenous communities also expressed greater interest in the options presented compared to municipal respondents, particularly with respect to access to funding and support for the application of Indigenous and local knowledge in understanding and planning for climate change.

Figure 6. Technical data or information desired by respondents to better understand climate change and impacts in their communities



Emerging Story

Overall, the survey responses demonstrated that Prairie municipalities and Indigenous communities are increasingly observing changes in their local climate and share significant concerns about the implications of these changes for their infrastructure, people, and economies. While there are leading communities in all provinces, a significant proportion of communities—particularly smaller municipalities—have not yet started to understand how climate change could affect them and taken steps to reduce these risks. Survey respondents also clearly identified significant barriers that will need to be overcome if their

communities are to become more prepared for climate change—as well as what information and support they would find most useful.

As ClimateWest builds on the legacy of the PRAC, these survey findings will help guide its planning and support for communities throughout the Prairie provinces.

For further information about the survey and its findings, please contact ClimateWest at info@climatewest.ca



The PRAC was a partnership of the governments of Alberta, Saskatchewan, and Manitoba with the federal government that worked between 2009 and 2021 to increase capacity within the Prairie provinces to prepare for the impacts of climate change.

prairiesrac.com



ClimateWest is the central hub for climate services in Alberta, Saskatchewan, and Manitoba. Launched in 2021 with provincial and federal support, it provides access to regionally relevant climate information and the support to use it effectively in planning and decision making.

climatewest.ca

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