



Adapting to Climate Change: The Case of Multi-Level Governance and Municipal Adaptation Planning in Nova Scotia, Canada



Nova Scotia is the only province in Canada to mandatorily require municipalities to complete 'Municipal Climate Change Action Plans' (MCCAP) using the federal Gas Tax as a multi-level governance policy mechanism and incentive to initiate municipal adaptation planning (SNSMR, 2011). Under the supervision of Dr. Gordon McBean (Geography, UWO), and through partnership development and research funding from NCE-MEOPAR, this PhD research study developed and operationalized a functional, thematic case study methodology (*Vogel and Henstra, 2015 in Global Environmental Change 31: 110-120*) for exploring and describing the social factors impacting municipal climate change adaptation planning processes in Nova Scotia and its municipalities. Adaptation governance is defined as ‘the sets of decisions, actors, processes, institutional structures and mechanisms, including the division of authority and underlying norms, involved in determining a course of action [for adaptation]’ (Moser, 2009:315). The MCCAP case study provides an ideal, applied research environment to investigate the impactful social factors that enable and constrain adaptation planning and policy-making at both the provincial scale, and in different municipal contexts. Research methods utilized included preliminary content analysis of municipal adaptation plans; followed by four regional adaptation stakeholder focus groups (4 locations; 23 municipal stakeholders from 14 municipalities; 12 non-municipal stakeholders), targeted municipal adaptation stakeholder interviews (6 stakeholders from 3 municipalities; 4 non-municipal stakeholders); and an iterative online survey with municipal stakeholders (26 municipal stakeholders from 19 municipalities). The iterative survey results represented a 36% sample of Nova Scotia municipalities.

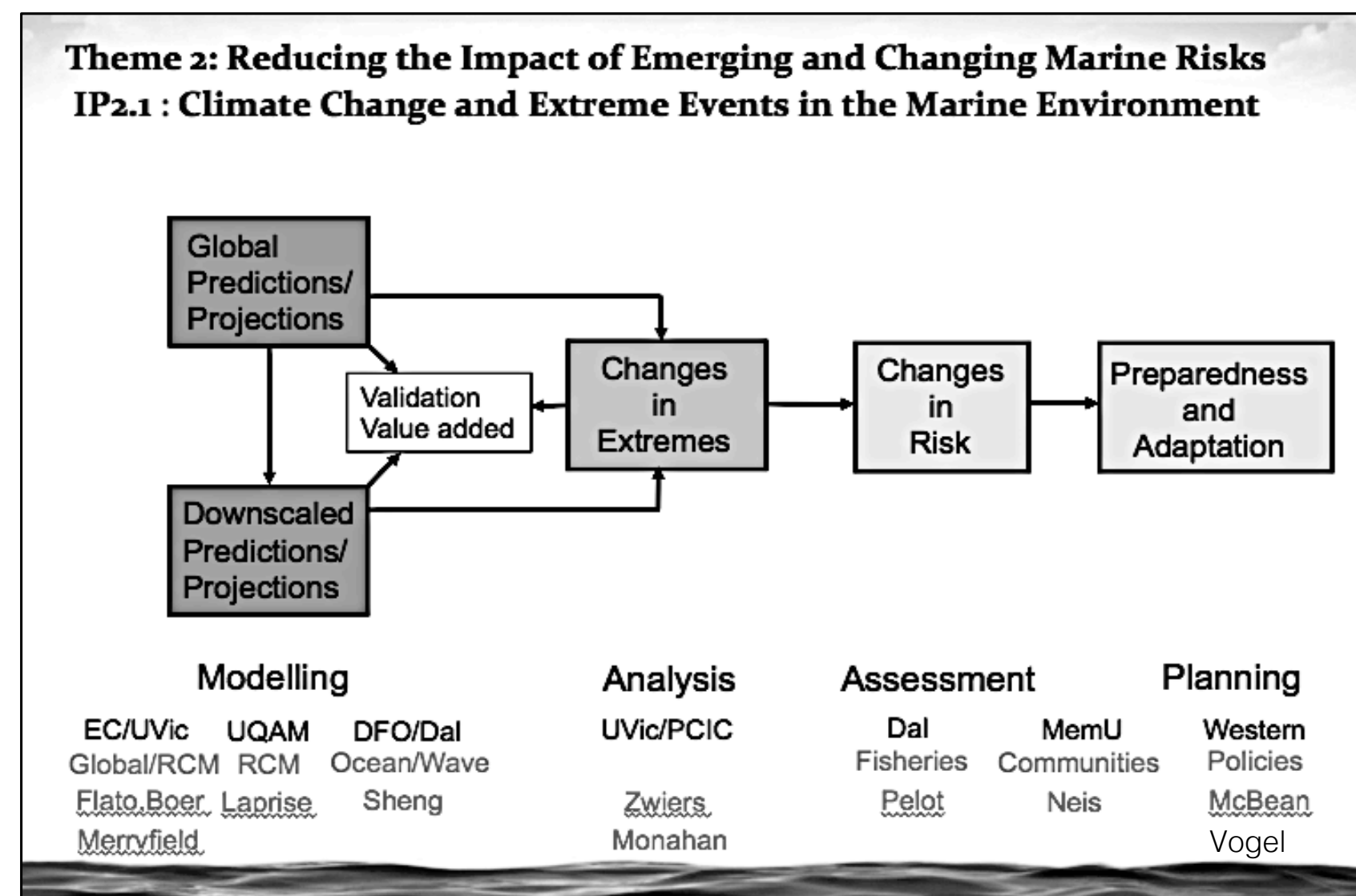


Figure 1: MEOPAR Theme 2.1 - Adaptation policy and planning for reducing the impacts of climate change extremes in the coastal zone (2012 - 2017)

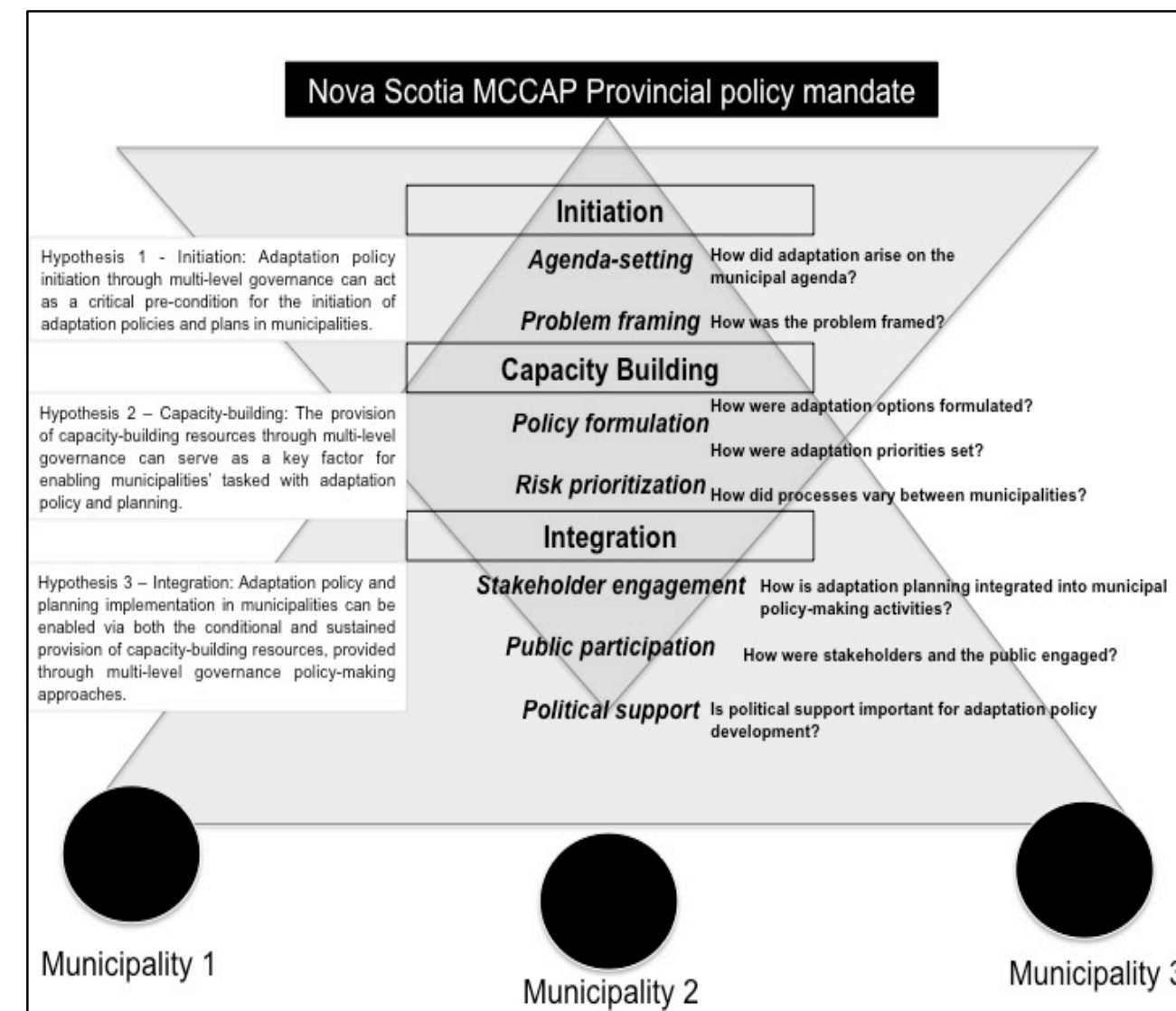


Figure 2: Conceptual framework for MCCAP case study analysis

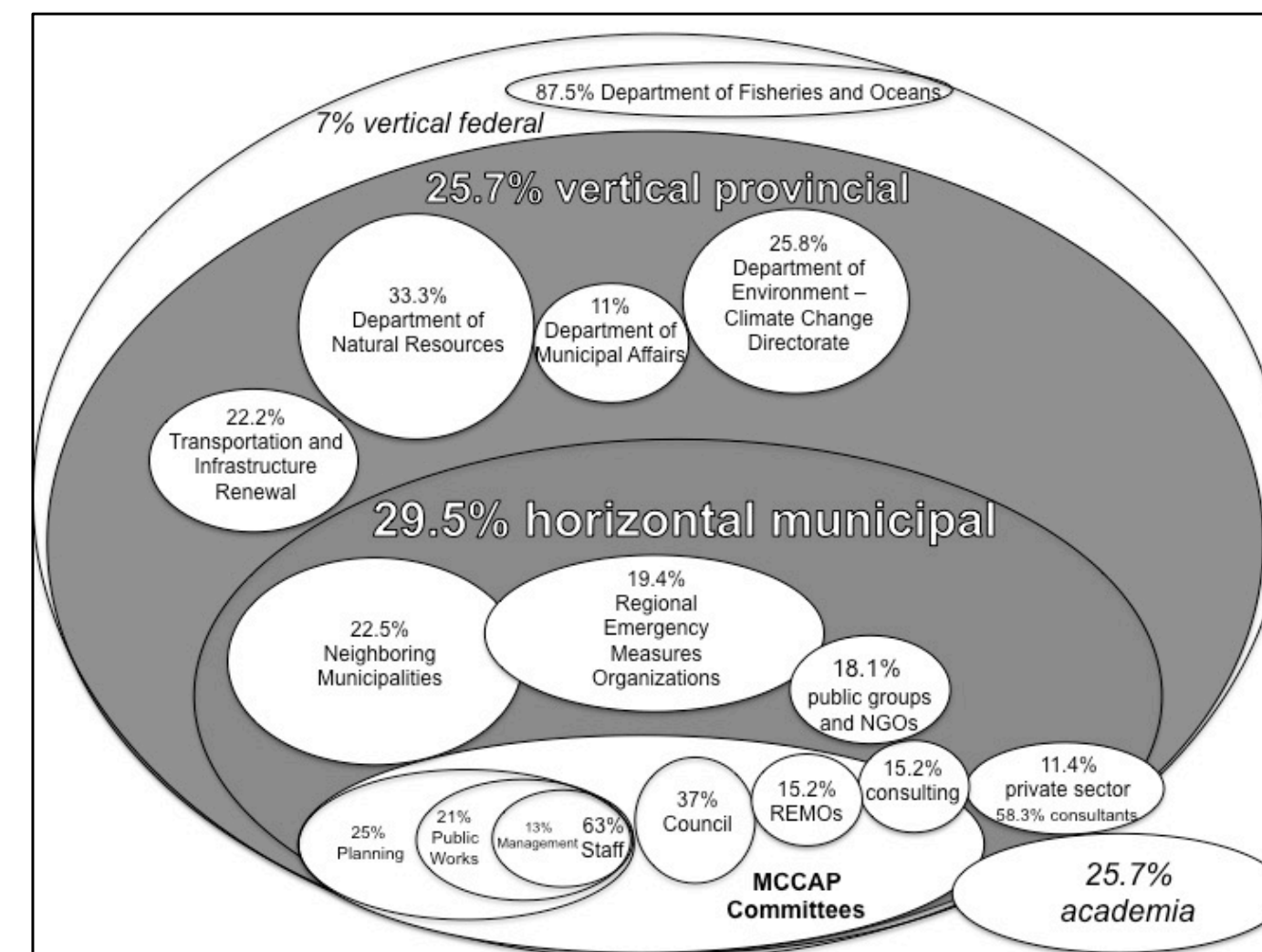


Figure 3: MCCAP stakeholder collaborations - conceptual diagram of multi-level adaptation governance in Nova Scotia (Based on content analysis of 22 municipalities in 4 regions selected for focus groups) NOTE: Shading denotes bounded scope of case inquiry

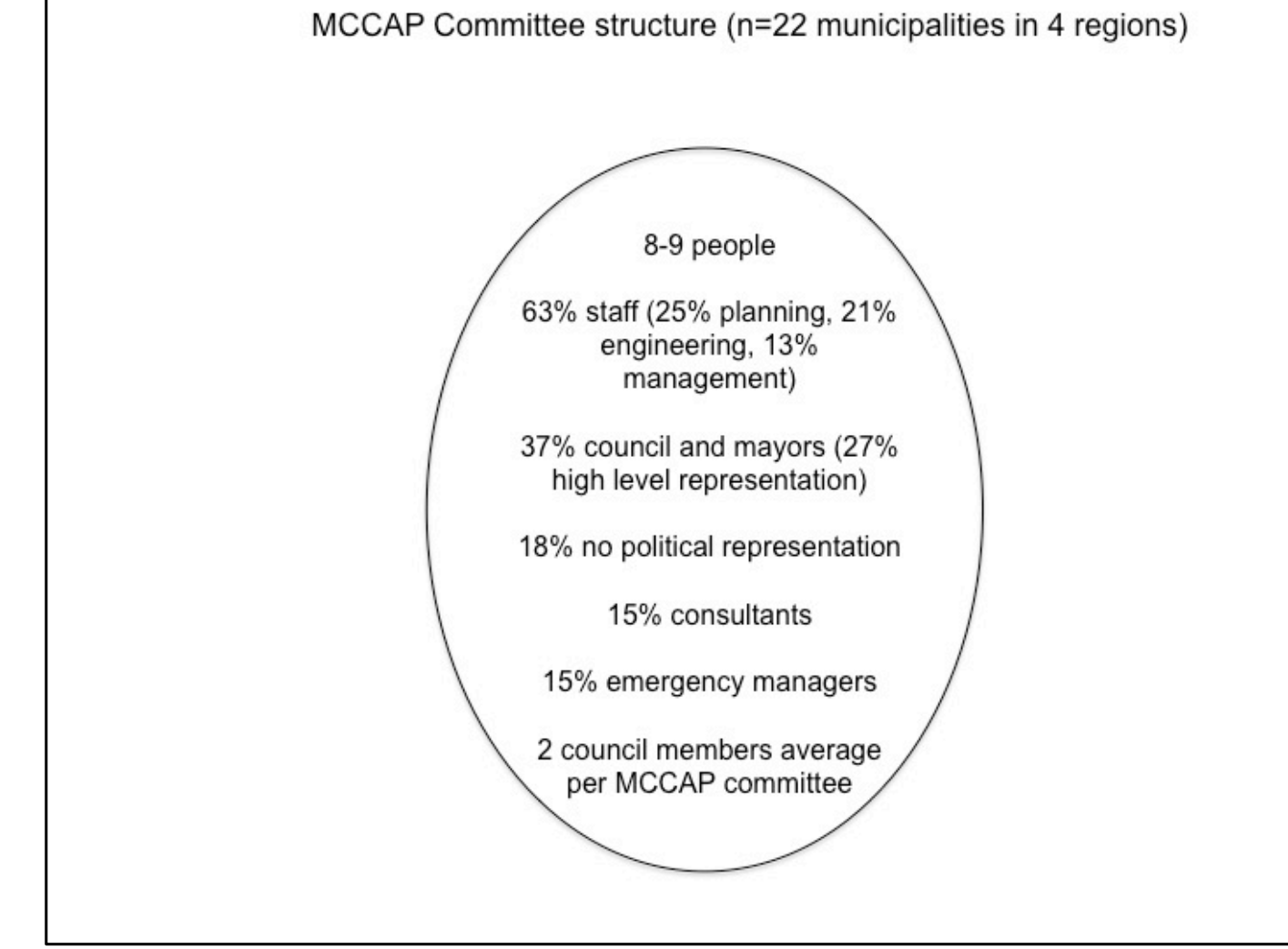


Figure 4: Descriptive, illustrative demographic statistics of MCCAP committee structures based on content analysis of 22 MCCAPs in 4 regions selected for focus groups

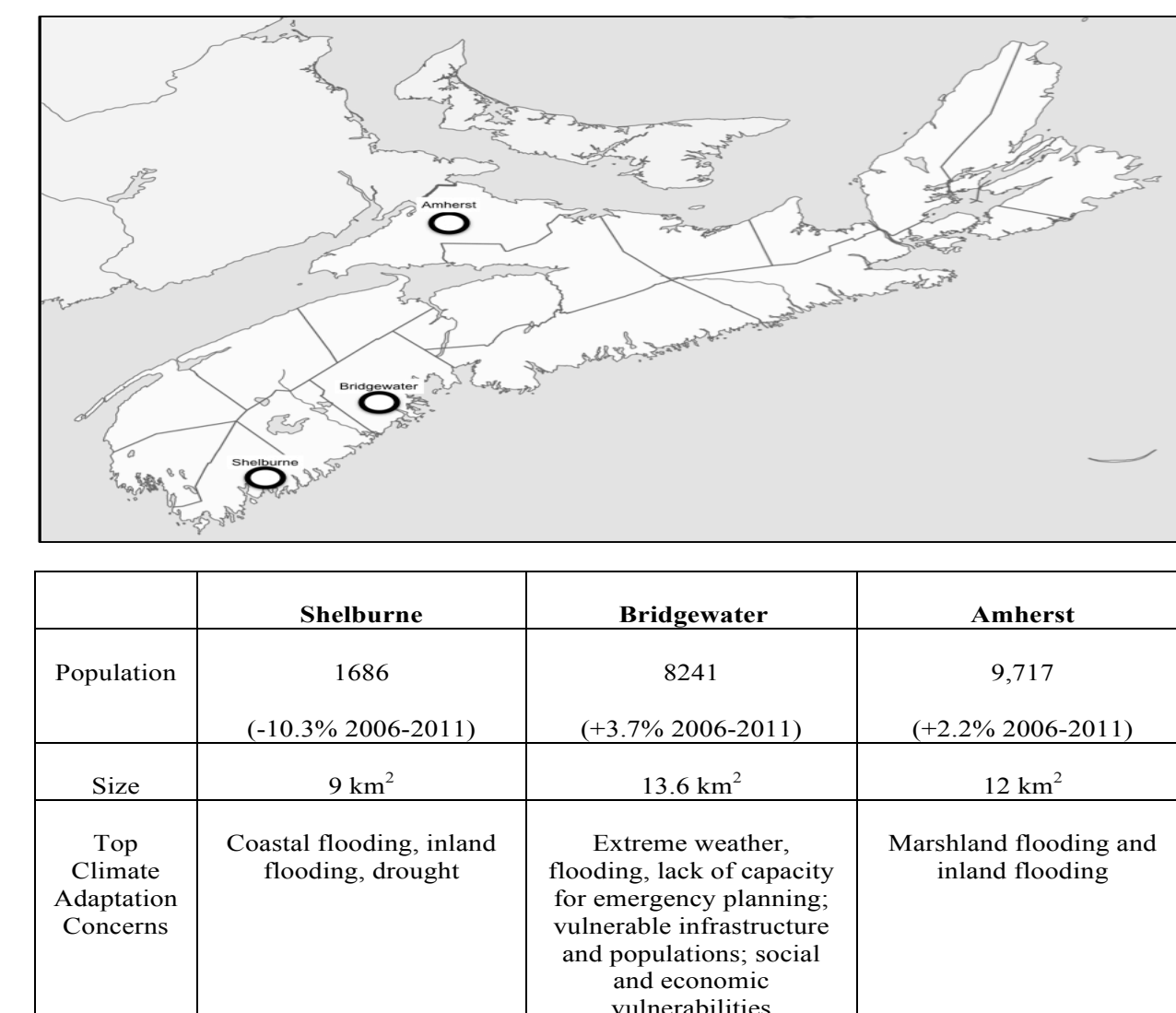


Figure 5: Three purposively selected municipalities for exploratory, descriptive 'across individual case' analysis of social factors impacting municipal planning and policy making in multi-level governance contexts: Amherst, Bridgewater and Shelburne, Nova Scotia, Canada

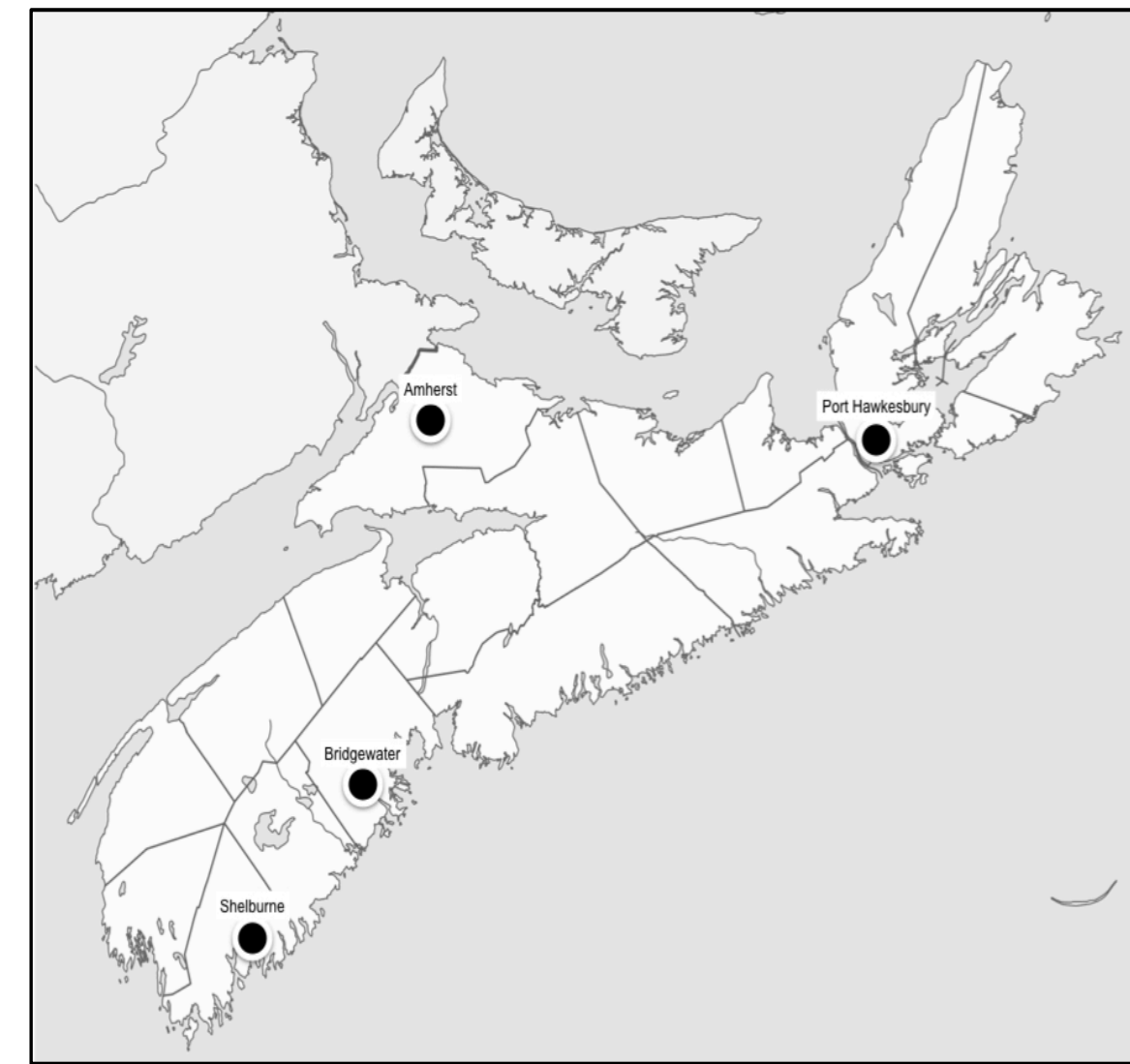


Figure 6: Regional sample areas for targeted MCCAP content analysis & site locations of regional focus groups (Amherst, Port Hawkesbury, Bridgewater and Shelburne, Nova Scotia: September 2014)

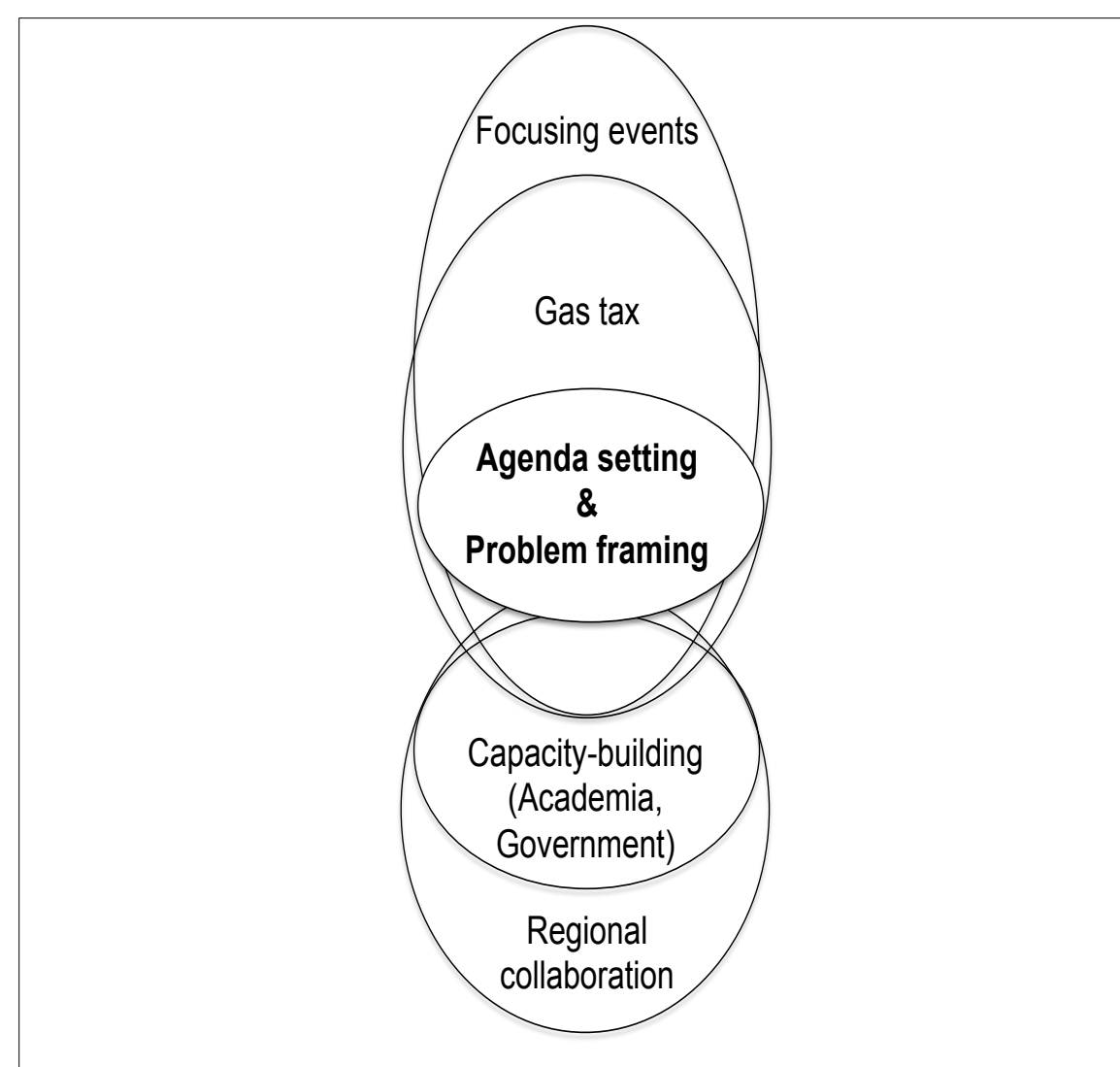


Figure 7: Conceptual illustration of factors impacting municipal adaptation initiation, agenda-setting, problem-framing in Nova Scotia, Canada
Exploratory, descriptive case study results based on triangular analysis of iterative online survey results in excess of +75% participant agreement and corroborative assessment of municipal stakeholder interviews, focus group results and content analysis findings. In contrast to the conceptual framework and thematic, functional heuristic devices (Vogel & Henstra, 2019)

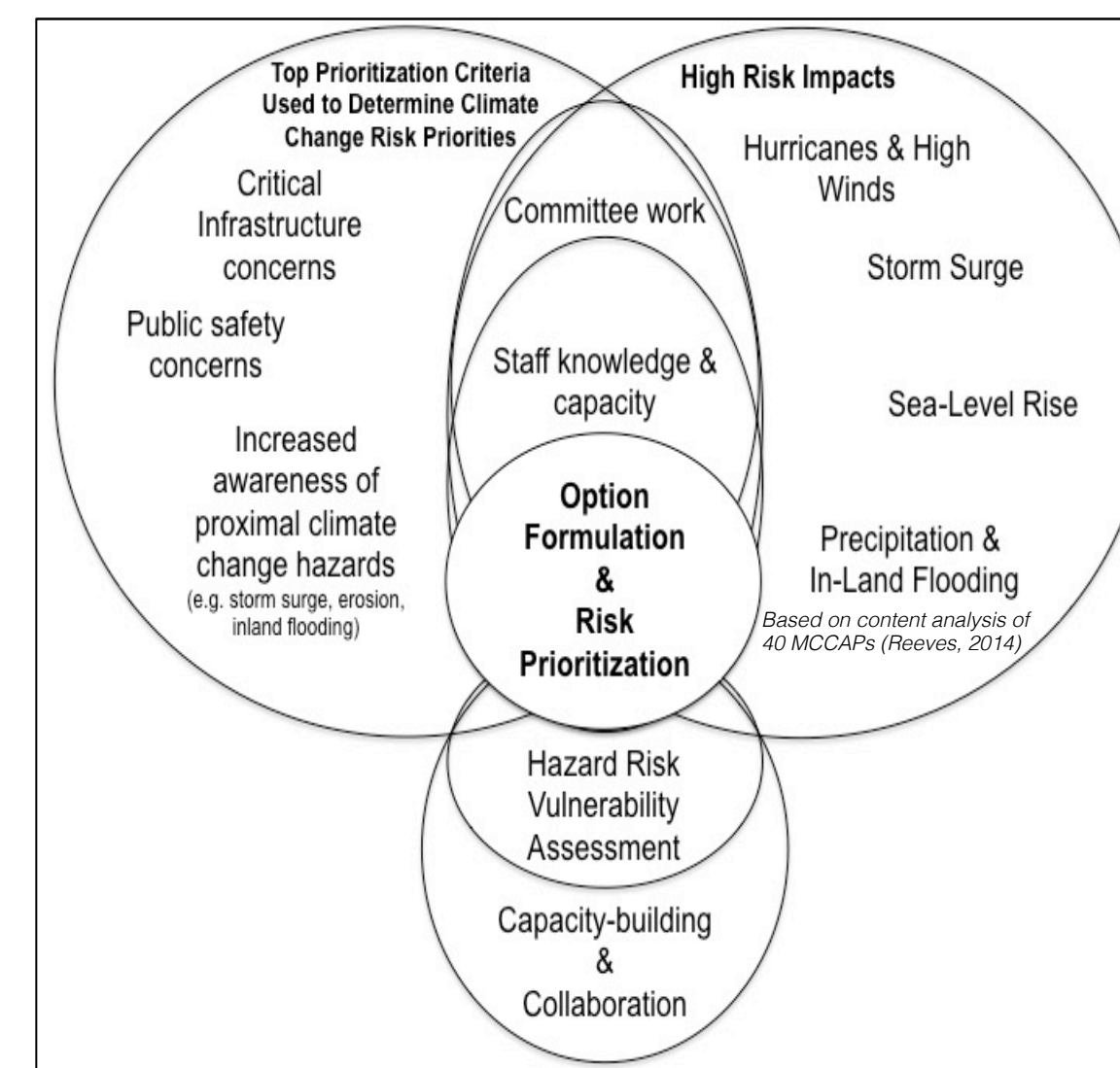


Figure 8: Conceptual illustration of factors impacting municipal adaptation capacity building, policy formulation and risk prioritization in Nova Scotia, Canada

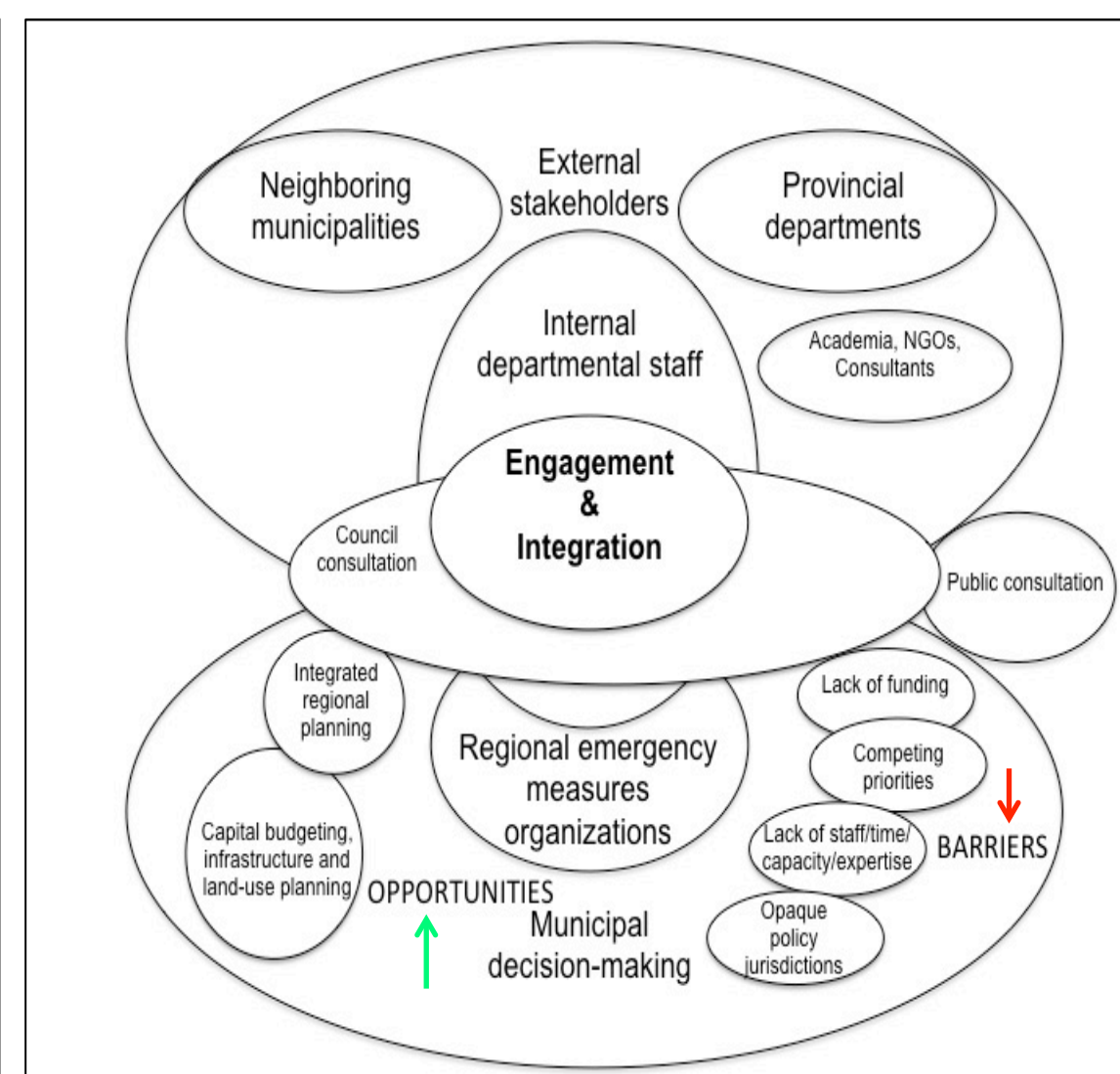


Figure 9: Conceptual illustration of factors impacting MCCAP stakeholder engagement and adaptation policy integration barriers and opportunities

Findings Summary: The study finds the monetization of adaptation planning using the Gas Tax exemplifies a powerful and enabling multi-level governance mechanism to initiate and support local adaptive capacity building in the form of adaptation planning for local climate risks and vulnerabilities in Nova Scotia municipalities. The study finds that significant resource and capacity gaps, lack of political leadership, low levels of public demand and poor inter-governmental coordination hinder the integration of MCCAPs into municipal policies and practices. These social barriers may undermine the longer term sustainability of adaptation governance efforts to address climate change risks and vulnerabilities at the local scale in Nova Scotia municipalities.

Study Recommendations: Significant policy-making opportunities exist for improving municipal adaptation efforts through multi-level governance. A key policy opportunity is to allow municipalities greater flexibility in the capacity-building activities deemed to be eligible for funding under the federal-provincial Gas Tax funding agreement. This notably includes opportunities for allowing municipalities to increase staff and human resources to capacitate the integration of climate change adaptation planning and policy-making into municipal governance. Creating staff positions to facilitate regional collaboration, internal collaboration, bylaws and strategic planning and municipal climate decision support, over time, can support municipal capacity-building and integration to sustainably adapt to climate change risks impacting Nova Scotia municipalities at the local scale, providing a model for advancing adaptation through multi-level governance to support local stakeholders.

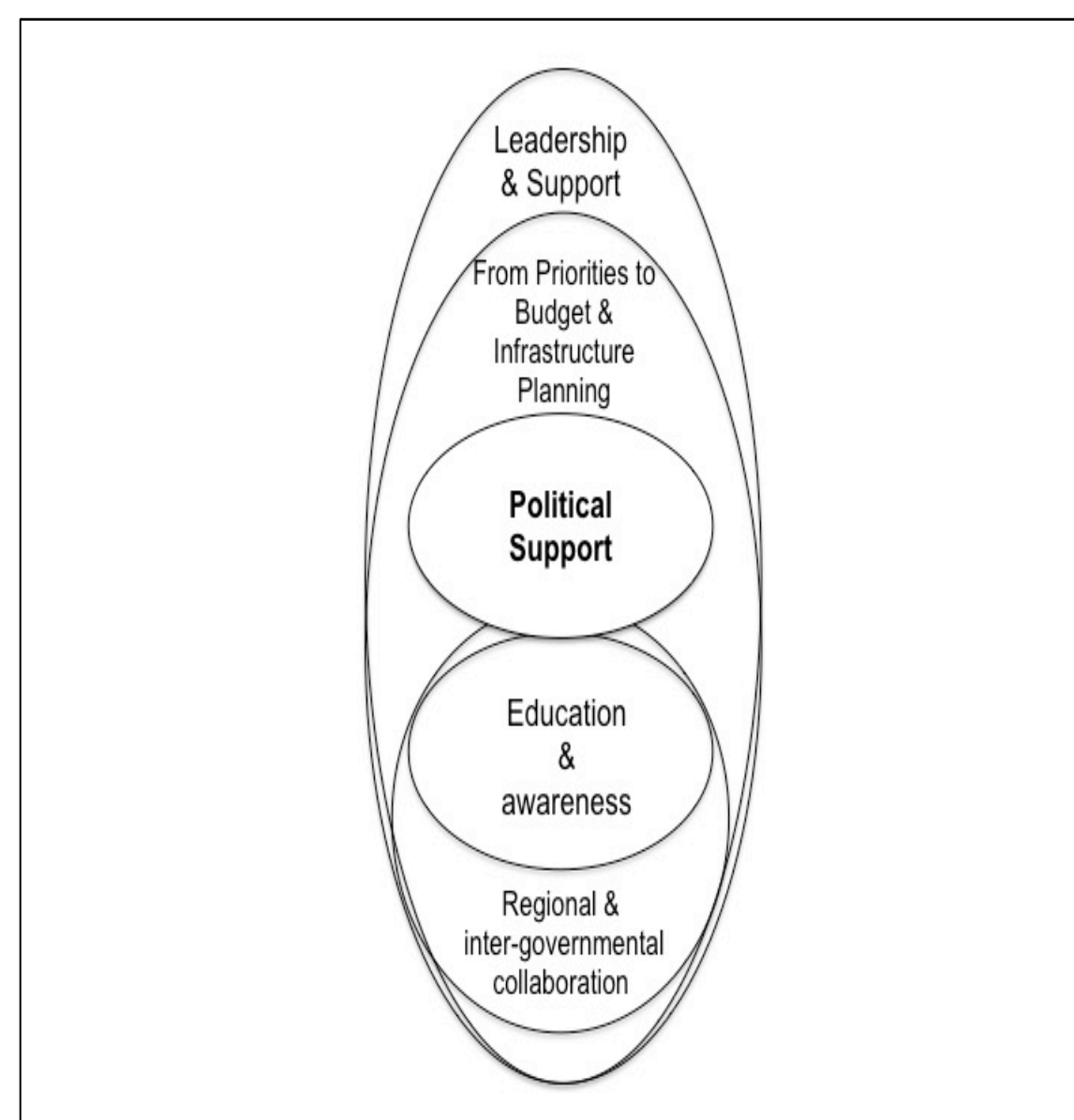


Figure 10: Conceptual illustration of political factors impacting adaptation integration

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