

Environmental Research Organizations and Climate Change Policy Analytical Capacity: An Assessment of the Canadian Case

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Abstract

The term 'policy analytical capacity' is used within the policy analysis literature to describe the ability of organizations to produce valuable research and analysis on topics of their choosing. As the scientific evidence becomes clearer, and various actors in society continue to point out that governments around the world will need to play a lead role in climate change mitigation and adaptation, there is good reason to believe that environmental policy makers and civil society stakeholders require a high level of policy analytical capacity in order to create effective policies. Assessing this capability, however, is difficult. Surveying the literature, this article sets out a seven criteria model of policy analytical capacity and applies it to three prominent Canadian environmental policy research organizations - two governmental organizations and one NGO. Using interview data, it provides information on the status of each organization's current research capacity and the effect this has on overall government policy-making capability in the face of climate change challenges.

Introduction - Climate Change Adaptation and Policy Analytical Capacity

One issue of increasing interest to contemporary decision makers is global warming, or climate change. During the 1980's many of the world's scientists began to draw attention to global warming, and since then the global scientific community has made it clear that human actions are at least partly responsible for dangerous changes happening in the earth's climate (Flannery 2005, 64-66). As the scientific evidence becomes clearer, various actors in society continue to argue that governments around the world will need to play a lead role in climate change mitigation and adaptation efforts (Simpson et al. 2007, 34).

In order to do so, however, both environmental policy makers in government as well as civil society stakeholders require strong research and analytical capabilities in order to design and implement effective policies to deal with such a wide-ranging and complex policy issue.

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This article begins the process of assessing the policy analytical capacity (PAC) of key actors involved in climate change policy-making through the comparative examination of three organizations involved in environmental policy-making in Canada: the key central government agency, the federal department Environment Canada (EC); a leading provincial environment ministry, the British Columbia Ministry of the Environment (MOE); and a leading environmental non-governmental organization, the David Suzuki Foundation (DSF).ⁱ Through the use of on-the-ground interviews with central figures in each organization, both the current nature and potential future status of each organization's policy analytical capacity is assessed against criteria drawn from a survey of the literature on government policy analytical capacity.

While not definitive in itself in terms of the overall operation of a complex policy advice system composed of fourteen federal, provincial and territorial governments, as well as hundreds of interest groups and business associations affected by climate change issues, by examining representative cases of some major types of organizations expected to exhibit the highest levels of capacity, the findings of this study provide a significant indicator of the overall ability of the Canadian climate change advice system to face up to the challenges posed by climate change and to create alternatives to what experts deem to be the current inventory of ineffective or misplaced public policies in this area (Simpson et al. 2007, 34).

The Nature of Policy Advice Systems and Policy Analytical Capacity

An important area of study in the policy sciences focuses on the ability of public policy organizations to produce sound analysis to inform their policy-making activities (Dobuzinskis et al. 2007, 4-5).ⁱⁱ Policy research organizations, in general, are grouped together in different national and sectoral configurations or *policy advice systems* (Halligan, 1995). These feature both state and non-state actors in various types of arrangements developed over periods of years between state actors such as ministries, departments and central agencies, and non-governmental actors such as think tanks, the media, consultants, labour and business associations, interest groups, and others (Dobuzinskis et al, 2007). These actors are typically arrayed in a form of market-type arrangement whereby some supply basic data and research and others broker this research in order to meet the demands of policy-makers for policy-relevant evidence and information (Howlett and Lindquist 2007).

The configuration of such advisory systems is a critical determinant of the policy analytical capacity found in a specific issue area (State Services Commission 1991). Regardless of its particular configuration, however, strong policy capacity, in general, requires an advice system composed of organizations with the ability to articulate medium to long term goals and put together policies that can withstand rigorous professional and empirical challenge, exhibiting an organizational culture in which openness and risk taking is encouraged in the thinking and research carried out by analysts.

The term 'policy analytical capacity' has been developed within this literature to describe the ability of an organization to produce valuable policy-relevant research and analysis on topics of their choosing (Howlett 2009).ⁱⁱⁱ Observers of policy research organizations have suggested that an organization's analytical capacity is composed of its ability to "articulate its medium and long term priorities, test the robustness of its policy options by building alternative scenarios, attach both qualitative and quantitative assessments to different policy options...communicate and defend policy thrusts to its operational arms as well as to its major stakeholders and to the

public, [and] formulate policies that can withstand rigorous professional challenge” (Fellegi Report 1996, 14-15). Attaining a high level of PAC requires: “a recognized requirement or demand for research (a market), a supply of qualified researchers, ready availability of quality data, policies and procedures to facilitate productive interactions with other researchers, and a culture in which openness is encouraged and risk taking is acceptable” (Riddell 1998, 5).

All other things being equal, organizations with higher levels of policy analytical capacity are expected to be more likely to be successful in impacting policy not only in the short-term, but also in the longer-term. And an advice system composed of organizations with strong policy analytical capacities is thus more likely to have more impact on outcomes than an advice system whose principle components lack such a capacity (State Services Commission 1999). Thus a preliminary assessment of the capacity of an existing advice system, such as in the area of climate change, can be made through examination of the capacities of its major organizational elements.

Operationalizing Policy Analytical Capacity

Of course, there are many types and sizes of organizations that conduct public policy analysis on a wide range of topics and issues, and techniques of analysis range from more formal methods such as cost benefit analysis (Pal 2001, 291) to less formal methods such as public consultations (Pal 2001, 256-257). Measuring PAC thus first requires its clarification and operationalization.

The first factor cited in the literature pertaining to the measurement and assessment of PAC is one of two related to organizational culture and structure affecting where and how new ideas originate within an organization. Riddell (1998), for example, has argued that “a culture in which openness is encouraged and risk taking is acceptable” strengthens the capacity of an organization’s policy research and analysis. Rigidly hierarchical decision making structures or organizational cultures that require analysts to conform to specific behaviours or intellectual methods are therefore assumed to have lower capacity, whereas organizations that encourage analysts to think about problems in new and innovative ways, and allow individual analysts the freedom to make suggestions on new and existing problems, are likely to have stronger capacity.

A second important structural aspect of PAC is whether or not innovative thinking is encouraged at all levels of the organization. This is important because research suggests that PAC is strengthened when individual analysts have the freedom to take risks and create new and innovative programs or policies (Fellegi Report 1996, 14-15).

Next on the list of important factors is the nature and source of demand for an organization’s research output and analyses. There are two important aspects of demand identified in the literature. Riddell (1998) argued that “a recognized requirement or demand for research (a market)” (1998, 5) is an important part of PAC. This suggests that organizations that do not have a high demand for their research will have lower capacity, as this lack of demand is likely to negatively impact the quality of final product. The second aspect of capacity in this respect has to do with the quality of the research demanded. The Fellegi Report suggests that organizations that “formulate policies that can withstand rigorous professional challenge” (1996, 14-15) are likely to have higher capacity, not simply because there is a demand for *any* research, but

because those who are interested in the research and analysis are seeking a strong final product. Both aspects are important to determining the PAC of an organization.

A fifth factor helpful in determining the PAC of an organization, as Riddell suggested, is found in the educational background of that organization's employees which affects their ability to carry out sophisticated analyses of complex subjects in a timely and comprehensive way.

This is directly related to the sixth factor which concerns the organization's ability to combine the use of different styles of analysis; cited as a good indicator of analysis that is capable of being strong and versatile, adding to the organization's overall capacity. The Fellegi Report, for example, having argued that PAC is strengthened when an organizations' research and analysis can "attach both qualitative and quantitative assessments to different policy options" (1996, 14-15).

A final, seventh, factor identified in the literature is that capacity is increased with a "ready availability of quality data" (Riddell 1998, 5). There are various ways that information can be collected, ranging from internal collecting to external (contracting the collecting of information out to consultants or purchasing already collected information from sources such as a national or state-level statistics agency). Regardless of how this is done, however, the presence of timely and appropriate information on a subject under consideration enhances the quality of the policy analysis provided.

Case Selection and Methodology:

The range and types actors found in policy advice systems varies widely by jurisdiction and issue area. But, as Halligan (1995) has argued, the "conventional wisdom" in many modern states is that

...a good advice system should consist of at least three basic elements within government: a stable and reliable in-house advisory service provided by professional public servants; political advice for the minister from a specialized political unit (generally the minister's office); and the availability of at least one third-opinion option from a specialized or central policy unit, which might be one of the main central agencies (p. 162)

Hence, not surprisingly, government policy organizations play a key role in such systems. However, as Howlett and Lindquist (2007) also noted, non-governmental organizations are also significant actors in their own right, and join together with governmental ones to provide the basic elements of any advisory system.

Thus, in a federal country such as Canada, the set of organizations involved in most policy areas includes the federal government, but also provincial governments and the NGO community. At minimum, an assessment of the policy analytical capacity of at least one of each of these bodies is required in order to assess the capacity of the system as a whole.

For this purpose, in-depth assessments of the PAC of the three organizations mentioned above - EC, MOE and DSF - were undertaken in 2008 through a series of semi-structured interviews conducted with senior members of these organizations as well as working analysts.

Environment Canada was selected since it is the primary federal government agency responsible for research and analysis in the area of environmental public policy. The organization was created in 1971 to bring together a gamut of “existing agencies having responsibility for environmental protection and renewable resource management” (Brown 1992, 25) and employs around 6000 people with a budget of nearly half a billion dollars (EC Website - 1). EC is an important actor because of its close organizational proximity to central Federal decision makers, such as the Prime Minister and the Cabinet. Moreover, EC is responsible for environmental public policy throughout Canada, and as such the scope of its analyses and research is more widespread and relevant to Canada as a whole than most other members of the Canadian climate change advice system.

The second case selected was the BC MOE. The fact that in Canada most “environmental laws and regulations are implemented under provincial authority” (Hessing et al. 2005, 84), provides good reason to include a provincial environmental research organization in this analysis. Moreover, the government of British Columbia has also undertaken ambitious environmental and climate change plans recently (Penner),^{iv} and gaining a more comprehensive understanding of the research and analysis informing these policies is helpful for the overall analysis of Canadian PAC in this area.

The third case examined in this study was the David Suzuki Foundation (DSF). The DSF is a relatively new NGO, having been created in 1990 (DFS Website - 1), but its highly visible media presence in Canada (largely due to its eponymous, high profile founder^v) makes it an important player in conducting what is traditionally perceived as independent research on environmental public policy issues (Abelson 2007, 551). The Foundation was created to “work towards balancing human needs with the Earth’s ability to sustain all life...[and]...to find and communicate practical ways to achieve that balance” (DSF Website - 2). The DSF employs around 50 individuals, and claims on their website to have around 40,000 supporters (DSF Website - 2). The DSF has five main areas of interest; solving global warming, protecting human health, conserving the earths oceans, promoting global conservation, and building a sustainable economy (DSF Website - 1).^{vi}

Following the seven principles set out by Riddell and Fellegi cited above, each case study examined the education/training of the organization’s employees; the types and mix of policy analysis techniques used by the organization; the culture and structure of decision making in the organization (including the encouragement of innovative thinking and the inclusiveness of the decision making environment); the nature and source of demand for the organization’s research (including the nature of demand from within the organization and the nature of the demand from outside of the organization); and the organization’s access to necessary data and information to conduct its work at a high level of competence.

Three criteria were used to determine which employees to interview in each organization: first, they should be policy analysts or be working in the field of policy analysis (such as manager’s, or director’s); second, their work should be focused on (broadly) the area of policy analysis on climate change issues; and third, they should have worked with their current organization for over three years, when possible, in order to provide an opportunity to assess the overall evolution of capacity in the organization.

Five interviews with employees at EC were conducted for the purpose of this study. Two members of the Air Emissions Priorities group, one member from the Strategic Policy group, one member from the Current Analysis and Modeling Division, and one member of the Environmental Policy Analysis and Valuation Division participated. Again, five individuals from the BC MOE were interviewed. Two worked directly in the BC MOE's Climate Change Branch, while another worked in the Air Protection Section, and the last two worked for the Strategic Policy Division. The DSF's Climate Change team has 10 members, four of which are policy analysts (DSF Website - 3). All four of the policy analysts at the DSF were interviewed for this study. Each of the four was engaged in policy analysis on climate change issues, together covering work on international climate change initiatives, as well as both federal and provincial initiatives in Canada.

Three Case Studies

Environment Canada

Environment Canada (EC) conducts basic research into climate change science and policy, and also consumes information in the form of studies, papers, hard data, and input from different actors and organizations within Canada and abroad. EC is also responsible for "information provision programs", for educating the general public on climate change issues, and for "providing an interface for discussion" where different actors including the government can come together and discuss climate change policy. These actions suggest that EC is a participant at many stages of the policy process, from the beginning of the process until the very end, and reinforces the idea that it has a much broader role in the entire environmental policy process than an NGO, or a smaller government ministry such as the BC MOE.

Of the five individuals interviewed, four had Masters degrees (International Affairs, Natural Resource Management, Economics, Public Administration) and one had a PhD in Conservation Biology. Also, each of these interviewees had received training in formal policy analysis techniques, either through their educational degrees, or through courses offered through the public service. Four of the interviewees had degrees in management of natural resources, environmental change, public administration, or economics, each of which offered courses on forms of policy analysis relevant to climate change. This information suggests that the individual analysts at EC have educational backgrounds that support their ability to perform a variety of policy analysis techniques relevant to climate change issues.

The nature of the techniques used varies by work unit, however. EC has different groups and divisions that are assigned different tasks requiring the use of different tools for policy analysis. One interviewee from EC's Air Emissions Priorities (AEP) division reported that the tools and techniques of analysis used within his or her division tended to be informal. This person described the work of the AEP division as a "coordinating group" that engages in activities such as consultations with different stakeholders in the policy process (business, industry, NGO's). Part of their work involves looking into research that has been conducted by other groups in the relevant subject area and deciding if it is strong enough to include in policy recommendations. More formal, internal, styles of analysis are carried out in other divisions at EC, such as the Environmental Policy Analysis and Valuation division, and the Strategic Policy branch. Within the Strategic Policy branch tools such as Cost-Benefit Analysis (CBA), statistical analysis, decision

theory, cost effectiveness, and consultations with stakeholders such as the public are all used in performing policy analysis.

In this respect, different groups within EC are assigned different tasks, and rely on different styles of policy analysis (Mayer, van Daalen and Bots, 2004). The rational style^{vii} based on quantitative analysis of inputs is clearly present in the divisions or branches that perform CBA, cost effectiveness, and statistical analysis. Other divisions and branches, such as Strategic Policy and AEP, however, use other styles of analysis such as more interactive or process styles built upon activities that aim to facilitate consultations and manage different networks of divisions within EC, “steering” them towards a “preferred outcome” (Howlett and Lindquist 2004, 227-228). The AEP, for example, acts as a “coordinating group” where different views from actors inside and outside of EC can be brought closer together.

Information gathered from the interviews also demonstrates that a very hierarchical decision making structure exists at EC. One interviewee, an advisor to the director of the AEP, stated that upper level management and policy advisors have a greater chance of having their advice and analysis included in recommendations and policy directions. This interviewee was quick to point out that this was not to suggest that the work of the lower level analysts was not necessary but, as could be expected, that it had less influence over broader policy decisions. Another interviewee echoed this sentiment suggesting that higher-level ideas are more likely to be accepted because they have less organizational obstacles to hurdle. Thus the process is best conceived as a split between two different tasks, where general policy directions are generated in a top down manner, while deciding “how to get there” involves a much more bottom up idea generation approach. However, once ideas have made their way through the EC ranks, one interviewee also suggested that Cabinet level deliberations and decision-making sometimes take place on “flimsy” details, which would indicate that there still may be a lack of demand for EC’s research and analysis from decision-making bodies, something that should serve to limit EC’s PAC (Riddell 1998, 5).

Staying with the subject of the openness of decision-making, however, two of the interviewees suggested that innovative thinking was strongly encouraged at EC. For example, one interviewee reported that shortly after the election of a new President in the United States, the AEP division had placed new emphasis on everyone in the group thinking of innovative methods to find common ground with the incoming American administration. Another interviewee stated that some issues that had been managed for years are evaluated periodically to see if new technologies or statistical methods could be applied to offer new information for analysis. However, other interviewees said that EC’s work is “hedged in to some extent by the political realities”. In this respect, new problems offer some more freedom for innovative thinking than old ones that had already been decided upon.

When asked about the existence and quality of demand for research and analysis from within EC, each of the three lower level analysts suggested there was a strong demand from their management for street-level research and analysis. This is a positive indicator for EC’s PAC, suggesting that at least within the organization itself the decision-making structure and culture welcomes the input of different levels. However, as for the existence and orientation of demands external to EC, the interviewees suggested that this depends largely on what division within the Ministry is considered. For example, the work of the AEP division tends to be more for “internal purposes only”, whereas the groups or divisions conducting strategic policy,

economic analysis, or verification of technologies have more demand for their work external to the organization (other government bodies, other governments, NGO's, industry). While this may be true, two interviewees suggested that occasionally higher up external decision makers would make decisions without the input of analysts at lower levels.

The information gathered from the interviews indicates that a lack of relevant or comprehensive data is also at times a constraint on the work of EC. One issue that was identified from the interviews was that the time it takes and the ease of acquiring some information and data has been a problem. One interviewee said that management was, at times, reluctant to pay for certain information that may be helpful but expensive. All of these constraints combined would suggest that a lack of available data, more so than the quality, is of particular concern.

Ultimately, when asked if they thought EC's ability to perform research and analysis had gotten stronger or weaker since the interviewee began work, three of the five interviewees suggested that the PAC had strengthened. One interviewee reported that after a significant restructuring at EC in 2005, the organization as a whole had been better able to deliver necessary research and analysis. The reorganization allowed EC to be more focused on necessary tasks, for example, bringing policy functions on climate change issues into a single unit.

The British Columbia Ministry of the Environment

It is important to note that, like EC, the BC MOE is a large organization with many groups, divisions, and branches dedicated to performing different tasks for the larger organization as a whole. Information gathered from the interviewees identified two specific roles within the larger policy process that the BC MOE most often undertakes; first, as a producer of information, and second, as a broker (or distributor) of information.

Each interviewee stressed that the BC MOE was a producer of information, conducting its own research, then compiling and analyzing the necessary data primarily for use of the BC MOE and the BC Government in general. Sometimes, when necessary data is not available within the BC MOE, other steps are taken to either purchase it or enter into data sharing agreements with other organizations like BC Stats, Statscan, or EC, or to contract the collecting of that information out to consultants. This means that the BC MOE, despite being primarily a producer and distributor of information, must at times also be a consumer of information to conduct effective policy analysis – although this role as a consumer is a secondary one, it is still clearly necessary.

Another important role, however, identified by each of the five interviewees, is that the BC MOE is heavily involved in distributing, or acting as a broker of information, to relevant government bodies (Cabinet, other Ministries), the general public, and NGO's. It is a priority of the BC MOE to take information it has either produced directly, purchased from other sources, or collected from external consultants, and then distribute that information to interested recipients. For example, both interviewees from the BC MOE's Climate Change Branch noted that the BC MOE is responsible for producing a "greenhouse gas inventory" or "index" under the Greenhouse Gas Reduction Target Act which is used by many other governmental and non-governmental agencies.

Four interviewees held at least a Masters degree from a Canadian university with a focus on environmental issues such as natural resources or agriculture, with one other interviewee

having a degree in law. Moreover, four of the five interviewees had received, through their schooling or through their workplace, specific training in methods of policy analysis. Two of the interviewees held Masters degrees in Public Administration, which included full courses on techniques of policy analysis.

From the interviews it was clear that, like at EC, the various divisions of the BC MOE together use a variety of tools or techniques of policy analysis that range from quantitative methods like CBA to more qualitative methods such as consultations with the public or other stakeholders. Like at EC, the styles of analysis used inside the BC MOE depend on the division in question. One interviewee reported that the methods used by the Strategic Policy Division tended to be less quantitative, relying less on economic analysis and the rational style than those in other areas of the BC MOE. Both interviewees from Strategic Policy Division stressed that serving as a link between decision makers, NGO's, and academics was an important part of their division's policy analysis, suggesting that a more interactive analytical style may be dominant in that particular division. The interviewees inside the Climate Change Branch reported that more formal or quantitative oriented methods like CBA were important tools in their policy analysis, suggesting that while the rational model may not be a predominant style of analysis in the Strategic Policy Division, it is used in other areas.

Another important tool used by different divisions of the BC MOE identified through the interviews was that of consultations. The BC MOE makes use of consultations to provide and receive information about their work from various stakeholders such as the general public, experts in relevant fields, and other actors within the policy process. The interviewees reported that, at times, stakeholders were given opportunities to include input on developing new ideas, which would suggest that the BC MOE maintains an open decision making environment.

Lower level analysts interviewed at the BC MOE suggested that the decision making process within the Ministry is fairly open and inclusive. For example, one interviewee reported that the Climate Change branch of the BC MOE features a great deal of "bottom up" idea generation, referring to the willingness, ability, and freedom of individual analysts to be a part of making decisions, proposing ideas, or developing alternatives. In general, each interviewee was inclined to say that innovative thinking on new and existing problems was definitely encouraged, and that idea generation within the BC MOE was more or less inclusive (coming from many levels within the Ministry, top and bottom).

Each interviewee suggested that, broadly, there was a demand for high quality research from inside the BC MOE, as well as outside of the BC MOE from various sources. From inside of the BC MOE, one interviewee suggested that pride within the organization was partly responsible for the demand of high quality research. Apart from that, however, the answers received from all four interviewees were thin on substantive examples to demonstrate the quality of research and analysis demanded.

On the subject of the availability of data, each interviewee suggested that the lack of readily available data could be a problem, but was usually not a "primary concern" in relation to capacity. One interviewee suggested that various "data sharing agreements" between the BC MOE and organizations like Stats Canada, BC Stats, and EC helped to deal with data shortages, and in other circumstances the collecting of data was outsourced to consultants. The role of consultants in this situation is particularly interesting because the nature of the relationship

between the BC MOE and their consultants could heavily influence the organizations PAC, therefore, more research on this topic would be helpful to better understand the capacity of the BC MOE to collect information. Nevertheless, acquiring relevant data does not seem to be a problem for the BC MOE, whose capacity is strengthened by relying on internal as well as external sources for data collection.

There was consensus amongst the interviewees that the priority of climate change issues in the direction of the BC Government, and within the opinion of the general public, has led to an increase in capacity over the recent years. As the issue of climate change has gained more importance within British Columbia, an expected increase in capacity due to greater demand for research and analysis has taken place. One interviewee reported that over the past eight years working inside the BC MOE Climate Change Branch, the demand for research and analysis on climate change issues has increased dramatically, allowing the branch to “drive the agenda”.

David Suzuki Foundation

What is most important to note about the nature of policy analysis in think tanks is that such organizations tend to favor medium to short-term analysis with an emphasis on “quick response policy research” and marketing ideas (as opposed to developing them) (Abelson 2007, 555). One interviewee suggested that this is the case because members of the media look to the DSF to provide quick and immediate responses to government policy announcements. This requires the DSF to spend a great deal of time and energy keeping up to date on the latest climate science and policy prescriptions from other organizations, academics, and governments inside and outside of Canada. In this respect, one of the most important activities carried out by the DSF is that of a knowledge broker. Knowledge brokers “search out knowledge, synthesize research and scan for best practices, useful experiences, and research outside their organization...[t]hey may also act as advocates for research-based evidence in decision making and have a role in supporting and evaluating changes they have helped put in place” (CHSRF 2003, iii).

As one interviewee at the DSF suggested, the organization does not do very much “primary research”, but relies more heavily on such techniques as analyzing cross-jurisdictional practices to inform their policy advocacy. Another interviewee stressed the importance of analyzing peer-reviewed literature as a method or technique of analysis, which fits well with the activities carried out by knowledge brokers. The second aspect of the CHSRF’s definition of knowledge brokerage highlights what one interviewee from the DSF described as their “campaigning” role. This “campaigning” role is a way to pressure governments and to bring attention from the general public to support the organization’s policy prescriptions. The role played by the DSF is unlike the governmental organizations because the DSF focuses more time, energy and resources on the informal methods of policy analysis (methods such as campaigning, advocacy, and knowledge brokering) that are integral to the policy process. This is a role that cannot easily be played by larger, more hierarchical governmental agencies like EC and the BC MOE burdened with formal, legal reporting requirements and data gathering and collection activities.

Each of the four interviewees held graduate degrees in fields related to environmental planning and management, with one part time analyst also having a PhD. Moreover, the organization’s website shows that one of the nine members of the DSF’s Management Team holds a PhD (DSF, Management Team). Abelson notes that think tanks tend to place less emphasis on hiring

analysts with higher levels of educational attainment such as PhD's (2007, 555). Think tanks generally place less emphasis on producing strong and original publications, which can diminish their capacity in performing research and analysis because they do not have many policy experts "who have been trained to produce rigorous academic research" (563). Instead, organizations such as the DSF tend to place a greater emphasis on hiring the types of personnel who could be described as "policy generalists" (Fellegi Report 1996, 24-25) who are able to perform other tasks (such as making links with decision makers or educating the general public on issues important to the organization). In this respect, where some think tanks may lose capacity in one area (ability to produce research that can withstand rigorous professional challenge) they tend to pick up capacity in other areas (ability to communicate policy thrusts to major stakeholders and to the public). However, DSF analysts seem to share quite similar levels of education with analysts at EC and the BC MOE. This could be a result of the small sample size of analysts interviewed at EC and the BC MOE, or it could be that the DSF's personnel exhibit higher levels of education than Abelson's think tank research suggests they should.

On the whole, the tools of analysis used by the DSF tend to be more informal, relying less on quantitative tools such as CBA and more on qualitative tools associated with knowledge brokerage such as promoting the use of research-based evidence in decision making (CHSRF 2003, 1-2). Therefore, where the tools of analysis used by the DSF help to articulate the organization's interests to various actors in the policy process, the lack of emphasis on a more rational style of policy analysis may diminish their capacity. Borrowing again from the Mayer, Bots, and Van Daalen study of styles of policy analysis (2001), this evidence would suggest that the DSF focuses on the argumentative or participative style to influence the policy process.^{viii} In these styles of analysis "the researcher/analyst is an advocate...aggregating and articulating the interests of silent players in the policy process" (Howlett and Lindquist 2004, 227-228).

The interviewees did not report the use of tools associated with the formal or rational style of policy analysis, such as CBA, effectiveness analysis, or economic impact analysis (Vining and Boardman 2007, 56-61). However, there is a potential for this deficit to be misleading because, as one interviewee reported, when this type of work is done by the DSF it is often carried out by private consultants. Consultants are often employed by both governments and think tanks such as the DSF to share "knowledge, experiences, processes, models, behaviours, technologies, or other assets" (Speers 2007, 399-400). Therefore, it is difficult to truly assess the capacity of the DSF's more quantitative policy analysis techniques without more information about their relationships with private consultants. At the same time, however, the information provided from the interviewees did not suggest that the use of consultants was a frequent or important step in the organization's research and analysis, which would indicate there is some deficiency in the area of rational/quantitative analysis.

Information gathered from the interviews conducted with DSF policy analysts suggest that the structure of decision making is conducive to an open process. Each interviewee reported that idea generation within the organization often took place at different levels of the organization, from the top (management, directors) to the bottom (individual analysts, program staff). There appears to be much more inclusion of lower level analysts in setting policy direction at the DSF in comparison with larger organizations such as the BC MOE and EC.

Each interviewee suggested that they felt encouraged by their managers and organization to think about new and existing problems in innovative ways. One interviewee reported that upon

joining the organization, a new Director placed a strong emphasis on getting the entire group to brainstorm new ideas and techniques for approaching policy problems. The analysts also suggested that innovative thinking was most encouraged on new problems or existing problems where the context had changed, as there was, as one analyst put it, “a certain amount of stasis” in the approach to old problems where the organization had been successful in the past. All of this evidence considered, it seems that the DSF has a culture and structure of decision-making that is largely consistent with the positive environment for producing research and analysis described by Riddell, and that street-level analysts have more freedom at the DSF than at EC or the BC MOE.

On the subject of demand for research carried out by the DSF, each interviewee suggested, broadly, that there is a recognized demand for their organization’s research from within their organization as well as from outside organizations and governments. As an example, one analyst suggested that work done by the DSF was influential in the carbon tax and carbon pricing policies of the Government of British Columbia. While there is no reason to outright reject this claim, a skeptical stance is justified (Abelson 2007, 568-571), especially considering that there is a fair amount of analysis available from sources around the world with regard to carbon taxes. The answers from the interviewees, nevertheless, at the very least suggests that the DSF’s analysts believe that there is a demand for their research from governments and other organizations, which is perhaps all that concerns the organization’s PAC.

On the subject of data availability, the interviewees reported that this area of capacity was perhaps a weak point for the DSF. Three of the interviewees stated that government sources, mostly federal, would often not share or make data and information available, with one interviewee saying the federal government would not part with data “that they [were] not required to”. Another added that the DSF was required to fill out “FOI requests with some regularity” (referring to information retrieved through Freedom of Information requests). This evidence demonstrates that a lack of necessary and relevant data is a limitation on the PAC of the DSF.

The analysts who had been with the DSF for over three years reported that the organization’s capacity to perform research and analysis had become stronger since they began working for the DSF. One of the interviewees reported that the climate change team itself had become bigger, from about 5-6 personnel to a current level of ten people. Another interviewee who had been with the DSF for over three years suggested that since he or she began working with the organization they had hired more staff, gained more resources, and benefited from more interest from the public which “widened [their] ability to research on various issues”.

Conclusion

Each of these three cases has provided information about the dynamics involved in PAC of prominent governmental and non-governmental organizations working in the policy advice system dealing with climate change mitigation and adaptation policies. The case studies provide important information both into the nature of the climate change policy advice system in Canada that can be applied to the governance of environmental policies in the area and also into the nature and development of PAC in policy research organizations and policy advice systems more generally.

EC appears to have satisfactory PAC in four areas - employee background, data accessibility, internal demand and encouragement of innovative thinking; strong PAC in the variety of types or tools of analysis used; and weak PAC in the areas of inclusive decision-making and external demand for the organization's research and analysis. Other impediments identified by interviewees at EC were strict timeframes and deadlines, often precluding necessary research and analysis. However, there should be no doubt that EC's organizational resource-based as a lead federal government agency and its ability to develop and access high quality data is a point of strength especially when compared with smaller organizations like the DSF.

The BC MOE appears to have a satisfactory level of PAC in each of the seven areas. However, impediments to strong PAC were identified by some interviewees, such as the large size of the organization making it difficult to make and implement decisions quickly, and a lack of supply of qualified researchers and analysts available to meet new demands for evidence and advice.

Finally, the DSF has satisfactory PAC in four areas - the educational background of employees, innovativeness, internal and external demand - and strong PAC through their open and inclusive decision making environment, but weak PAC in the areas of tools of analysis, and access to necessary data.

Thus in the Canadian case, at least in so far as these organizations can be considered representative of the entire policy advice community, there appears to be a relatively high level of PAC, which is to say, each organization appears to meet many of the seven criteria identified in earlier studies as integral to strong PAC. This is true of both levels of government and in the NGO community, but to different degrees in each, depending at least in part on the style(s) of policy analysis they conduct. While further studies of smaller provincial and territorial governments and less prominent NGOs is required to assure the robustness of these conclusions, this study provides some reason to be optimistic that the Canadian environmental policy research community is in a position to be able to provide the high levels of quality policy advice required to develop and implement effective policies in complex areas such as climate change. Whether or not these policies will be adopted, of course, remains another issue related not so much to the quality of advice public officials receive, but to their willingness to follow it, and is a subject beyond the purview of this article.

The article also tells us something about the nature of PAC and its measurement in policy organizations. As the interviews revealed, the seven criteria set out by Riddell and Fellegi served well to capture the essential components of PAC not only in governments operating at different levels in the complex multi-level governance system which is Canada (Howlett and Newman 2010), but also in both the government and NGO sectors - where the concept has never before been applied. Although some nuances and permutations were discovered in each organization, the seven factors proved to be equally adept at explicating the situations in otherwise very different kinds of policy organizations.

More generally, however, the article also suggests that more comparative research into the level and type of policy advice provided by organizations like the three studied for this project is required to inform similar judgments about the likely outcome of environmental and climate change policy decision-making processes within other governments worldwide attempting to deal with this global issue. If the research carried out for this study has uncovered a sufficient level of PAC in both the governmental and non-governmental elements of the Canadian national

climate change policy advice system to provide the basis for the creation of sound public policies to adapt to issues like climate change, whether this same condition applies in less well-off, or even in similarly endowed nations, remains a critically important subject area for future research.

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Endnotes

- ⁱ The first organization examined, Environment Canada, is the major federal agency charged with environmental protection and the lead agency for climate change adaptation across the nation in areas of federal jurisdiction. The second, the British Columbia Ministry of the Environment, is a typical example of the provincial lead environmental agencies which are very significant players in climate change adaptation given the key role played by the provinces in Canada's federal system of government. The third, the David Suzuki Foundation, is a fairly new but very high profile environmental NGO operating in the climate change sphere.
- ⁱⁱ Some of the earliest work done in this area can be traced back to scholars from New Zealand and Australia (Waller 1992; Weller 1989; Uhr 1987). Waller's article, *Evaluating Policy Advice* (1992), is particularly helpful in laying the foundation of the importance of policy advice.
- ⁱⁱⁱ Policy capacity, policy research capacity, and PAC are all roughly interchangeable terms used to describe the ability of organizations to perform policy analysis. However, while policy capacity is a general term that includes a "government's arrangements to review, formulate and *implement* policies within its jurisdiction" (Fellegi Report 1996, 1) (emphasis ours), policy research capacity and PAC are more specific terms that focus on the ability of organizations to perform research and policy analysis on public issues (Howlett 2009). The study of policy capacity in Canada gained considerable attention at the federal level in 1995 with the establishment of the Deputy Minister Task Force on Strengthening Our Policy Capacity. The task force's subsequent report, commonly called the Fellegi Report, named after the author Ivan P. Fellegi (then Chief Statistician at Stats Canada), produced a series of recommendations for strengthening policy capacity in the federal government (1996, 38-40).
- ^{iv} The BC MOE has recently undertaken considerable efforts to adapt to the problems associated with climate change in British Columbia. In February of 2007, The Government of British Columbia set a goal of cutting current greenhouse gas emissions by 33% by the year 2020. To help facilitate and coordinate the new policy direction, the Government of British Columbia created the Climate Action Secretariat in May of 2007. Finally, in November of 2007, the Government of British Columbia passed the Greenhouse Gas Reduction Target Act, putting the aforementioned 33% cut by 2020 into law (LiveSmart BC Website). These policies and legislative acts encompass the most significant movements of the BC Government on climate change. Their efforts are arguably the most comprehensive of any Canadian government, Federal or Provincial, to date.

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- v Suzuki's fame is quite extraordinary; in fact, in 2004 the general public voted him fifth in a contest to name the 'Greatest Canadian' (CBC Website - 1).
- vi There are many types of non-profit organizations and ENGO's (Phillips 2007, 497-499), but the David Suzuki Foundation best fits as a type of think tank. Abelson identifies five types of think tanks, each placing a different emphasis on certain sets of policy analysis priorities. The categories are, universities without students, government contractors, advocacy think tanks, policy clubs, and government councils (2007, 555). The DSF shares most common ground with the type Abelson calls an *advocacy think tank*. Advocacy think tanks focus on medium and short-term research with an emphasis on marketing ideas in a "quick response" nature (555). This is consistent with information provided on its website, and the responses gathered from the interviewees. One interviewee stated that policy development and advocacy were the main roles of the DSF, going further to note that the DSF acted as a "validator or critiquer [*sic*]" of government policy announcements. This role of critiquing public policy is certainly in line with the more medium and short-term analysis that characterizes advocacy think tanks. McGann and Johnson (2005, 12) describe think tanks as "policy research, engagement and formulation organizations that have significant autonomy from government and from societal interests such as business firms, interest groups and political parties". This definition fits closely with the work and structure of the David Suzuki Foundation. The DSF is an independent non-profit registered charity with the stated purpose of seeking the "best research to provide innovative solutions that will help build a clean, competitive economy" (DSF Website – 1, 2 and 4). Moreover, the DSF is unaffiliated with any level or branch of Canadian government, and in order to further guarantee their independence, the DSF does not accept funding from any government sources (DSF Website - 4).
- vii On policy analytical styles see Mayer, van Daalen and Bots, 2004.
- viii The activities carried out by knowledge brokers can vary quite significantly (CHSRF 2004, 1), therefore, it would be a mistake to suggest that all brokerage institutes participate in all of the same activities, with the same amount of diligence as others. Knowledge brokerage is perhaps best conceptualized as a range of activities on a spectrum from more active to less active. More active brokers, "[link] decision makers and researchers, facilitating their interaction so that they are better able to understand each others goals and professional culture, influence each others work, forge new partnerships, and use research-based evidence" (CHSRF 2004, 1). Less active knowledge brokerage is more focused on aspects of knowledge transfer, "where existing knowledge is captured, stored and then shared under the direction of brokers for reuse and new applications" (CHSRF 2003, 1-2). While some brokerage institutes are much more engaged in linking researchers and decision makers, acting as advocates for evidence-based decision making in general, other brokers participate more in analyzing and synthesizing existing information to share with decision makers. Both roles inevitably contribute to the overall scope of the discipline. The knowledge brokerage of the DSF tends to be much more active through advocating for the adoption of specific policies.