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CROSS BORDER INNOVATION ECONOMIES

The Cascadia Innovation Corridor Case

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EXECUTIVE SUMMARY

In the recent literature on economic geography, cross-border regions have been highly heralded as potential sources for reaping the benefits of innovation (OECD, 2013). In fact, those regions have gained a reputation as being endowed with comparative advantages to compete in global markets (Vance, 2012). However, the types of processes that are occurring in the region, which act as hindrances (or barriers) to cross-border knowledge flows, have remained a significant but understudied topic in the academic literature. The same lack of understanding is widespread among the policy makers engaged in cross-border issues, specifically in terms of improved Cross Border Cooperation (CBC) management.

This research project addresses this timely topic by evaluating the effects of the international border between Washington State, U.S. and British Columbia, Canada. This cross-border region, also known as “Cascadia,” possesses a unique combination of assets, including human capital, universities, investments, and financial capital, that enable the cross-border region’s innovation economy to compete globally (Andersen & Wenstrup, 2016). These assets have been supported by local public and private actors (Brunet-Jailly, 2008) and targeted innovation policies aimed at promoting the region as a world-class innovation hub. The object of this study is the Cascadia Innovation Corridor, a current innovation initiative in the region.

I adopt a multidisciplinary approach to this case study, combining an economic geography perspective (different forms of proximity have been evaluated in the region), the border policy standpoint (governance implemented in the region) and a regional planning viewpoint (legacy of the Corridor and improvements to the overall strategy to strengthen the collaboration across the border). The research focuses on how tech economies are driving local economic development in Cascadia. This in-depth analysis pursues two goals, both of which are timely contributions to regional efforts: first, identifying the main drivers and hindrances affecting cross-border innovation linkages in the region; and second, developing policy recommendations that will support tighter cross-border economic cooperation.

This project is based on primary data collected through a survey and interviews as well as secondary data gathered by official documents (e.g. Memorandum of Understanding further recalled), local newspapers and organizations’ reports. The work empirically gauges the ongoing degree of economic interactions in Cascadia on both sides of the border, examining the networks that exist between organizations and actors involved in the cross-border ecosystem, as well as the missing links that impede stronger collaboration. The final part of the analysis digs into the regional planning practices in the cross-border context and establishes a set of policy recommendations targeted at the cross-border cooperation process in Cascadia.

This analysis confirms that the Cascadia innovation ecosystem possesses the key assets needed to ensure long-term growth. Moreover, it sheds light on the role of multinational companies which play a pivotal role in the Cascadia innovation ecosystem, which in turn still appears very

fragmented. The analysis of the hindrances confirms that transportation infrastructure represents a shortcoming for regional development. From a policy standpoint, the federal-level U.S. political climate does create a burden impacting the economic linkages across the border in Cascadia. Finally, the analysis suggests that the role of local (city) governments is advocated to be more efficient in creating “horizontal” relationships across the border.

AUTHOR

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1. INTRODUCTION: THE MYTH OF CASCADIA

The concept of Cascadia is an evolving geographical entity that spans along the Pacific Coast from Oregon to Alaska, which can best be described as a “vision, an idea, a discourse, a dream image, a space-myth and a state of mind” (Sparke, 2002: 213). Cascadia is geographically centered on the cross-border region between British Columbia, Canada and Washington State, U.S., and has been embedded in several socio-ecological discourses based on the “concept of sustainable development, shared by all political parties and promoting a sort of ecological positivism” (Dupeyron, 2008: 98). Cascadia, as a unique region and concept, has been increasingly focused on by academic scholars in the fields of regional sciences, environmental sciences, social sciences, and geography, as reflected by the number of books utilizing the concept (see Fig. 1). Over time, this region has changed its geographical definition as it is infused by different narratives, which will be discussed below.

FIG. 1: PERCENTAGE OF BOOKS FEATURING THE WORD "CASCADIA"



SOURCE: GOOGLE N-GRAM

The name “Cascadia” is derived from the Cascade mountain range that marks the region's eastern boundary. This cross-border region does not possess a clear geographical distinction (Smith, 2004), since definitions are made according to different agendas set by different cross-border actors or organizations (Dupeyron, 2008). In fact, the geographical definition of Cascadia is still evolving, and has varied with time. According to Smith (2008: 61):

The initial notion of Cascadia emerged in the 1970's and 1980's. It was environmentally conceived and referred to that portion of Pacific Northwest North America between the Cascade Mountains and the Pacific Ocean; its initial name was taken from the waters which 'cascaded' down from the Cascade mountain range to the ocean. This initial ecological branding was introduced and popularized by David McCloskey, and by Joel Garreau.

Smith refers also to the “place-branding” work of Garreau who drew a map of nine North American states, placing Cascadia within the “Ecotopia” as the land of “individualism and environment”. In 1988, David McCloskey, a professor at Seattle University, released a map of the region along with a manifesto:

Cascadia is a land rooted in the very bones of the earth, and animated by the turnings of sea and sky, the mid-latitude wash of winds and waters. As a distinct region, Cascadia arises from both a natural integrity (e.g. landforms and earth-plates, weather patterns and ocean currents, flora, fauna, watersheds, etc.) and a sociocultural unity (e.g. native cultures, a shared history and destiny (McCloskey in Abbott 2015: 118).

This definition positioned Cascadia to be a “bio-regionalism movement” defined as “a positive and inclusive, place-based movement focused on building autonomous and equitable local infrastructure that is both resilient and sustainable. The movement is based on the idea of transcending arbitrary state borders and shifting our actions and impacts locally” (CascadiaNow!, 2019). A Cascadia independence movement started more recently in the late 1990s but the legacies are nuanced. There is a flag which has been promoting the concept and identity of Cascadia as a movement (see Fig. 2).

FIG. 2: CASCADIA MAP AND FLAG



MAP SOURCE: <https://www.deviantart.com/kristberinn/art/Map-of-Cascadia-490005055>

FLAG SOURCE: https://commons.wikimedia.org/wiki/File:Flag_of_Cascadia.png

This strong relationship with the surrounding natural landscape, along with a high political engagement, distinguishes communities on the Pacific Coast of Cascadia. This has been incorporated in the vision of “Ecotopia”: there is a “strong emphasis on everyone sharing the same ethos of an open and spiritually aware group of people dedicated to living in harmony with oneself, the community and the environment at large” (Richardson, 2017: 70).

Communities in Cascadia distinguish themselves from the rest of their country; for instance, there is large support for soccer culture in Portland, Seattle, and Vancouver – despite the fact that soccer is not considered a sport imbedded in the two nations’ culture – which mobilizes regional identity and places branding narratives during the soccer matches (Shobe & Gibson, 2017). Sport culture is just one facet of a broad set of values shared by the two sides of the border in Cascadia.

There is no question that most of us who live in Cascadia, even more than our eastern seaboard counterparts, have certain qualities and attitudes in common. We have a love for the outdoors and a relatively high level of concern for the environment. The Native American regard for nature in Cascadia is a clearer influence than in the East. (Schell & Hamer, 1995:142)

Recently, the region has moved away from the “bioregional narrative” (Shobe & Gibson, 2017) – where the eco-geological past informed the myth of Cascadia (Cold-Ravnkilde, Singh, & Lee, 2004) – and toward “neoliberal experimentation” (Zimmerbauer, 2018). During the 1990s, Cascadia was the site for a new economically-driven effort to create a “free-trade region” following the idea that globalization would lead to a “borderless world” (Ohmae, 1990). In this ethos, the idea of “Main Street Cascadia” began to develop throughout the region. It was based on a vision of connecting the “megapolis along the Highway 99 / I-5 corridor from the Whistler ski resort, just North of Vancouver, through Seattle, Tacoma and Olympia in Washington to Portland, Salem and Eugene in Oregon’s Willamette Valley” (Smith, 2008: 68). The term “Cascadia Corridor” has started to surface with the dream of connecting the main urban poles through a high-speed rail service.

1.1 EMERGENCE OF A CASCADIA TECH HUB

Since the 1980s, the two main cities in the Cascadia region – Vancouver and Seattle – have anchored the economic prosperity of the region and have recently been identified as a tech hub on the global stage. On the Canadian side, Vancouver has built a strong reputation concerning its emerging world-class biotechnology research and development cluster (Richardson K. , 2016). On the U.S. side of the border, Seattle has been growing in high-tech sectors since the mid-1990s (Sommers, Carlson, Stanger, Xue, & Miyasato, 2000) thanks to world-class multinational companies in the field of computer sciences, logistics, aviation, and high-tech (for instance Microsoft, Amazon, and Boeing).

The two cities also share the same economic cluster portfolio (Fig. 3). This alignment simultaneously drives collaboration and high-skilled labor mobility (Richardson, 2017), while also boosting competition, which will be discussed in the results section.

FIG. 3: THE MOST IMPORTANT ECONOMIC SECTORS IN SEATTLE AND VANCOUVER, BC

	SEATTLE	VANCOUVER, BC
1	Business Services	Business Services
2	Aerospace Vehicles and Defense	Distribution and Electronic Commerce
3	Distribution and Electronic Commerce	Education and Knowledge Creation
4	Information Technology and Analytical Instruments	Hospitality and Tourism
5	Hospitality and Tourism	Financial Services
6	Education and Knowledge Creation	Transportation and Logistics
7	Transportation and Logistics	Marketing Design and Publishing
8	Marketing, Design, and Publishing	Wood Products
9	Financial Services	Information Technology and Analytical Instruments
10	Insurance Services	Communications Equipment and Services

TABLE IS BASED ON EMPLOYMENT DATA. SOURCES: CLUSTERMAPPING.US; COMPETEPROSPER.CA

Recently, these two main cities in the Cascadia region have been accruing a remarkable combination of assets including a talented workforce, large research and development (R&D) endowment, multinational companies, and financial capital which enable the region’s innovation economy to compete globally (Andersen & Wenstrup, 2016). Since 2016, public authorities supported by Microsoft coined a new initiative termed the “Cascadia Innovation Corridor”: a plan which reflects a strong commitment from public and private actors to make the Cascadia region a world-class tech hub. This report focuses on the Cascadia Innovation Corridor from the economic and cross-border cooperation standpoints.

In this study, the Cascadia region is defined as the area straddling the U.S.-Canada border which includes Washington State (U.S.) and the province of British Columbia (Canada), essentially covering the major transportation corridor which runs along Interstate 5 and Highway 99, connecting Seattle and Vancouver (BC).

1.2 CASCADIA INNOVATION CORRIDOR

The Cascadia Innovation Corridor (CIC) initiative originated in 2016, spurred primarily by Microsoft. It is largely recognized that Microsoft’s impetus in developing the CIC was a consequence of the opening of their Global Excellence Center in Vancouver in 2016 — a direct result of their challenges accessing high-skilled workers in the U.S. The effort initially began as an annual conference, rotating each year between Seattle and Vancouver. The city of Portland, Oregon, has been involved to some degree (i.e., the high-speed rail study), and was recently added to the logo that represents the CIC. However, their engagement remains limited. To date, the Corridor has been supported by two powerful business organizations (e.g. the Business Council of British Columbia and Challenge Seattle) which lured both private partners (e.g. Microsoft) and public authorities at the state and provincial levels. In 2016, Washington State and British Columbia signed a Memorandum of Understanding (MoU) on advancing the cross-border innovation economy. While the document does not represent any legal binding obligation, it does set a vision to “develop [the] Cascadia Innovation Corridor, that would connect and enhance both regions and create exciting new opportunities for young people and underserved populations.” The Governor and Premier updated this MoU and symbolically signed it at the 2018 Cascadia Innovation Corridor Conference.

The Cascadia Innovation Corridor promotes the vision to maximize the region’s competitive advantages and position the region as a global hub for innovation. This vision is rooted in a number of pillars (see list below), including transportation infrastructure and the establishment of the first high

CASCADIA HIGH-SPEED RAIL

A better-connected megaregion resulting from faster journeys, increased capacity, and reduced congestion

- Travel times between each of the three major cities would be less than an hour for each segment, with connections to other transportation modes at all stations.
- Forecasted initial ridership volumes could exceed 3 million annual trips soon after opening and farebox revenues could exceed \$250 million per year.

A stronger, more productive megaregion as more businesses/jobs locate in Cascadia due to the dramatically improved access to housing, jobs, schools, and other destinations, as well as the creation of new regional industry clusters.

A more affordable megaregion as residents benefit from easier access to more affordable housing as well as wider access to higher-paying jobs and opportunities.

A better environment by shifting trips to more sustainable modes, reducing carbon emissions and environmental impacts.

A better value infrastructure investment than possible alternative projects, whether they be interstate highways or airport expansion.

speed rail system in North America, which ultimately would reduce the travel times between the main cities along the corridor and deliver new opportunities for regional economic growth. Local public authorities are committed to the CIC, since both the British Columbia provincial government and the Washington State government funded a feasibility study on the high-speed train project.

In July 2019, the Washington State Department of Transportation released the business case analysis concerning the Ultra-High-Speed Ground Transportation (UHS GT). This study envisions eight potential station areas served by a new UHS GT spine, along the corridor from Vancouver, BC- Seattle, WA - Portland, OR. This infrastructure would address the demands on transportation within the Cascadia region, estimated between 3.5 and 4 million passengers commuting daily. The study emphasizes a multi-faceted array of advantages the UHS GT is likely to deliver (see above box). Despite these advantages, the estimated cost of this infrastructure – varying between 24 and \$42 billion – is likely to slow its approval process.

Since October 2018, the structure of the CIC has evolved. Under the leadership of Challenge Seattle and the Business Council of British Columbia (BCBC), a CIC Steering Committee was established, as well as seven main thematic sub-committees where two experts from each side of the border are appointed as leaders, coordinating each working group. The subcommittees cover a number of different topics which include:

- Life Sciences
- Transformative Technologies
- Sustainable Agriculture
- Transportation, Housing and Connectivity
- Best and Diverse Talent
- Higher Education Research Excellence
- Efficient People/Goods Movement across the Border

The financial support from private stakeholders provided the impetus to establish an alternative transportation link (e.g. seaplane) to connect Seattle and Vancouver where multi-national tech companies have their own headquarters. The service started in spring 2018 but due to its carrying capacity and travel price, it cannot be considered a substantial solution for the transportation gap in services and infrastructure in the region. Beyond the commitment of public resources to the high-speed rail project, a few milestones have driven the momentum closer towards integration, including:

- Cascadia Steering Committee: Convened in the U.S. in January 2019, the Steering Committee will incubate and advance game-changing ideas within their aforementioned focus areas;
- Digital Health Initiative: BC Cancer Agency and Fred Hutchinson Cancer Research Center are teaming up to improve rural healthcare throughout the region;

- Cascadia Venture Acceleration Network (CVAN): A collaboration of tech, research, and investment partners from British Columbia, Washington and Oregon aims to match tech start-ups with funding and collaboration opportunities across borders;
- Financial Innovation Network: Venture Capitalists from both cities are teaming up to increase VC funding for start-ups and early-stage companies throughout the region;
- Global Innovation Exchange (GIX): The University of British Columbia (UBC) joins the University of Washington (UW) and China's Tsinghua University to bring together talented students and faculty to partner with industry in tackling real-world challenges mostly relating to healthcare and capacity building projects;
- Cascadia Urban Analytics Cooperative (CUAC): Created in 2017, CUAC is another UBC/UW collaboration. This one utilizes data science and analytics to help solve urban problems;
- University Collaborations: Universities and polytechnics throughout Cascadia are teaming up to drive research, innovation, entrepreneurship, workforce development and economic growth.

The Cascadia Innovation Corridor is recognized by the Canadian Government as a premiere initiative. In addition, public officials from Ottawa along with private stakeholders and business-led organizations rolled out a national program termed "the Digital Supercluster": a cross-industry initiative dedicated to facilitating and funding collaborative, technology-based leadership projects that develop products and platforms throughout Canada. The Digital Supercluster was selected for federal funding in May 2018. It is now undertaking Phase 1, which seeks to produce major impacts in precision health, data platforms, and the creation of links through Augmented Reality/Virtual Reality technologies.

This initiative does have a strong focus on British Columbia since this province features significant competitive advantages compared to other Canadian provinces including: large creative and digital media talent, a global center of excellence in the Internet of Things (IoT), remarkable data analysis capabilities and infrastructure, talent and research generated by BC post-secondary institutions, a geographic advantage as Canada's gateway to Asia, and the integral role played within the Cascadia Innovation Corridor.

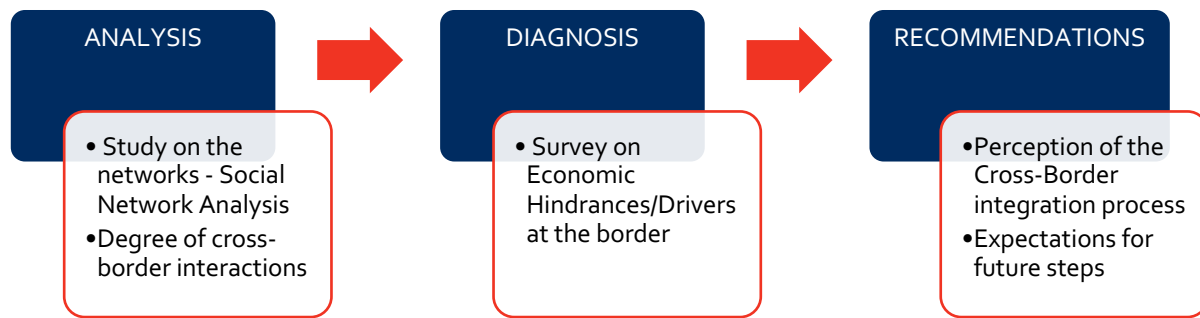
2. RESEARCH METHODS

In the field of economic geography, cross-border regions are commonly defined as “a bounded territorial unit composed of the territories of authorities participating in a cross-border cooperation initiative” (Perkmann M., 2003: 157). Cascadia represents one of those regions, which “are becoming increasingly recognized as locations of competitive advantage in the global economy” (Vance, 2012: 5). As previously mentioned, the Cascadia Innovation Corridor effort which began in 2016 has been promoting the region as an innovation hub with world-wide significance. This initiative seeks to mobilize the region’s manifold assets – such as human capital, universities, investments, and financial capital – which could enable Cascadia’s innovation economy to compete globally (Andersen & Wenstrup, 2016). Therefore, Cascadia represents an ideal case study for evaluating the effects of an international border on a cross-border innovation ecosystem (Cappellano & Makkonen, 2019). The analysis contributes to: I) understanding the role of the border in affecting cross-border knowledge flows in the region; II) capturing the effect of the border on the knowledge networks (Balland, 2012) in Cascadia and; III) developing policy recommendations to tackle the hindrances of the border.

In this research I distinguish between the Cascadia Innovation Corridor and the innovation ecosystem across the border. The first is a private-public initiative which aims to strengthen the innovation ecosystem, in which a self-orchestrated group of actors (with different roles) work jointly to spur innovation and economic development in the border region. To this end, this research examines networks of organizations that are active in the cross-border innovation ecosystem, pointing out strengths and missing links.

The research approach discussed in this report combines the academic understanding of theories and models in the field of cross-border development with policy makers’ methods to drive regional economic growth. The research strategy outlined below (Fig. 4) is based on the assumption that cross-border cooperation processes take place in a “grey zone of formal and informal networks” (Lundquist & Trippel, 2013; 453) across a wide range of different organizations (Cappellano & Makkonen, 2019). At the same time, the “inter-organizational networks formed by organizations of different typology—in particular, firms, institutions and universities” (Lazzeretti & Capone, 2016: 5857) are critical to promoting innovation. Therefore, those networks acquire a dual role: they inform both innovation economies and the regional planning processes.

FIG. 4: RESEARCH FRAMEWORK



2.1 INTERVIEWS

Because the primary focus of this study is on the high-tech industry, structured interviews were conducted both in person and by phone with 43 key representatives from distinguished organizations active in the innovation ecosystem including, but not limited to: public authorities, companies, NGOs, universities, incubators, and accelerators. The survey used to guide the interviews was purposely tailored to gather data about the main hindrances and drivers impacting economic linkages across the border. In our analysis, we identified a set of feasible hindrances and drivers drafting on literature review. Afterwards, we tested the survey with local experts. During the interviews, participants could choose multiple options. Data on networks were then assessed using the appropriate Social Network Analysis.

The following results of the survey discuss the drivers and hindrances that are perceived as having the greatest impact on tech economies in Cascadia. The data collected for this project includes interviews conducted using “roster-recall methodology” to define the networks of the most relevant organizations in Cascadia tech economies, in line with other studies of the same kind (for more detailed information see Cappellano & Makkonen, 2019). The panel of organizations that were interviewed was established based on official documents and local newspapers. The panel was then discussed with six external experts—three academics and three entrepreneurs—who validated that the roster included the most central actors in the Cascadia region. By participating at official cross-border meetings, I was able to further refine the panel.

The survey was sent to 55 organizations and supplemented with interviews held in person or by phone during the summer of 2018, leading to a response rate of 78% (see Fig. 5).

FIG. 5: SAMPLE OF INTERVIEWEES

	WA	BC
Public Authorities	2	2
Government	3	3
Universities	2	5
Incubators/Accelerators	2	2
Multi-National Companies	1	-
NGOs	9	9
Others	1	2
Total	20	23

2.2 LIMITS OF THE RESEARCH

The Cascadia Innovation Corridor is still a nascent and evolving effort, and therefore the data availability is limited as some impacts have yet to surface.

The term “tech economies” is ambiguous, and may thus be interpreted differently in both the data and by interviewees. While the most prominent actors involved in the CIC effort were targeted, the sample of interviewees did not include consistent numbers of economic actors engaged in tech economies. Despite having invited three U.S.-based multi-national companies to the interview, just one representative from those companies was interviewed. This is, however, still significant due to the remarkable role that this company has been playing in the CIC ethos.

The fragmented nature of social relationships did not smooth the process to recruit interviewees. Therefore, the sample has included mainly actors in Vancouver and Seattle, the main hubs for tech economies. Consequently, the rest of the region has not been fully covered with the exception of a few interviewees from Victoria (BC) and Bellingham (WA).

3. RESULTS

A detailed list of cross-border networks of organizations engaged in promoting innovation in Cascadia is provided. Most notably, a few groups emerge to be prominent in the fields of life science (particularly oncology), IT and clean technologies.

The Social Network Analysis empirically demonstrates that Microsoft is the most connected actor in the Cascadia innovation ecosystem. This is a peculiarity that distinguishes Cascadia from other cross-border regions (CBRs), particularly when compared to European cases where the cross-border cooperation process is dominated by the public sector (e.g. Blatter, 2004; Platonov & Bergman, 2011; Javakhishvili-Larsen et al., 2018). The Cascadia Innovation Corridor offers an interesting exception to the general rule of what types of organizations take active roles in cross-border cooperation and integration.

The study about economic drivers and hindrances affecting the cross-border innovation economies demonstrates that access to a talented workforce in BC and geographical proximity are the two most important drivers in Cascadia. Interestingly, the U.S. federal political climate is perceived as both a driver and as a hindrance. Transportation infrastructure represents the most perceived concern, along with U.S. immigration policy, which hinders the cross-border movement of skilled labor (Richardson K. , 2016).

Economic integration in Cascadia is currently perceived to be rather weak. However, in a short-term scenario (five years), there is cautious optimism that the region will become more integrated. The respondents pointed out different items which could catalyze more economic development in Cascadia, including: harmonization of U.S./Canada policies, transportation infrastructure, larger industry support and a smoother border crossing. The interviewees advocate for a larger role of local public authorities (e.g. city councils) in the process of economic integration in Cascadia.

3.1 NETWORKS

It is demonstrated knowledge that networks can influence processes like “learning, decoupling, institutionalization, integration and agglomeration” (Balland, Boschma, & Frenken, 2015) which are critical in knowledge-intensive technological sectors. From a CBR perspective, networks are likely to be conducive to tighter economic integration (Ganster & Collings, 2017; Cappellano & Makkonen, 2019). Therefore, this research elaborates on the knowledge networks acting to boost innovation in Cascadia in different ways, such as:

- Conducting research activities along with peers on the other side of the border
- Mentoring start-ups and firms in the region
- Producing significant research outcomes jointly (e.g. patents)

- Ensuring funding streams for businesses in the region
- Disclosing business opportunities to peers on the other side of the border

The majority of the networks listed below are encompassed within the framework of the Cascadia Innovation Corridor effort. There are some, however, that are developing independently.

Microsoft, as the most connected actor in Cascadia (discussed later), spurred several collaborations across the region. For instance, Microsoft funded the Global Innovation Exchange (GIX) in collaboration with Chinese universities. The GIX is a cross-border education institute that promotes cross-border and cross-sector curricula as well as linking the scientific and business communities in the Cascadia region with their Asian peers. Microsoft also financed the Cascadia Urban Analytics Cooperative (CUAC), which involves both the University of Washington (based in Seattle, WA) and the University of British Columbia (based in Vancouver, BC) to conduct research activities together in the field of regional economic development, including transportation, housing stability, population health, and responsible data science. Furthermore, Microsoft leveraged other initiatives by engaging actors from Oregon State. This is the case with the British Columbia Institute of Technology (BCIT), Lake Washington Institute of Technology (LWTech), and Oregon Institute of Technology (Oregon Tech), which work closely to leverage their extensive applied education offerings in high-demand STEM fields. They recently signed a MoU to lay the groundwork for close collaboration related to work-integrated student learning placements, professional development opportunities for faculty, and sponsorships of events and future-oriented initiatives, among other areas under development.

Aside from the Cascadia Innovation Corridor, the region features strong assets for research and development in the field of oncology. For example, the Fred Hutchinson Cancer Research Center (based in Seattle) and the British Columbia Cancer Agency (based in Vancouver) share one of the longest-lasting networks in the region; researchers from both sides of the border work closely together in this research with a joint funding request. The collaboration has been formalized with a MoU. Important results achieved include a jointly produced patent covered by Intellectual Property Rights and some grants from the Fred Hutchinson Cancer Research Center. Researchers from the two institutions exchange presentations and other scientific activities concerning oncology. An interviewee explained the success of this collaboration: “We work in the same research area. Our leaders work proactively towards collaboration.” According to this interviewee, the members of those organizations are acquainted with the benefits deriving from a cross-border collaboration.

The Life Science industry represents one of the sectors where Cascadia possesses remarkable assets in terms of knowledge and entrepreneurship. Two agencies, Life Sciences BC and Life Science Washington, jointly conduct a bundle of activities aimed at networking, consulting and applying for joint grant funds. The collaboration in this sector is not as structured as in the oncology case, but it has been growing during the last decade. Considering the strong

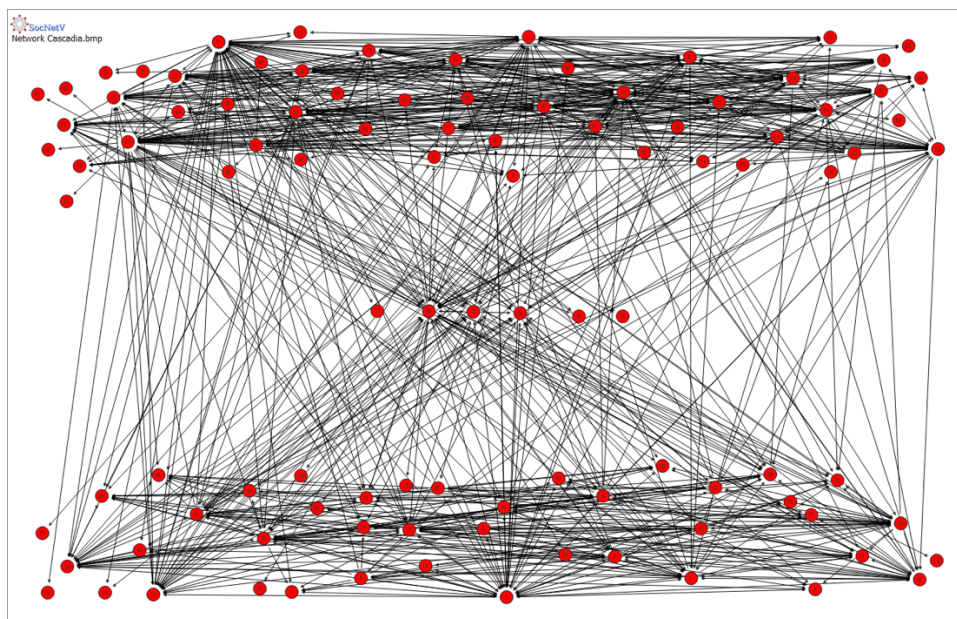
endowment of research and development skills in the region, it is reasonable to forecast that Cascadia can grow its importance in the Life Science sector.

Spearheaded by the Canadian Consulate in Seattle, the Cascadia Venture Acceleration Network (CVAN) was established in late 2017. Nearly 50 tech and research companies from British Columbia, Washington State and Oregon joined together to match start-ups with cross-border opportunities. The CVAN members are committed to providing information on business opportunities, facilitating the commercialization of innovation products, and guiding the scale-up of cross-border business.

Among the networks addressed in the research, there is also an emphasis on the 'Clean Tech' sector. In fact, the Seattle-based Clean Tech Alliance has set up the Cascadia Clean Tech Accelerator in order to provide mentoring and funding capital to start-ups or emerging firms in this sector. The funding program has not yet supported a company from British Columbia but the program is open to any firm, and may also benefit actors on the other side of the border in the short term.

Fig. 6 (below) displays the networks as assessed by the software adopted for the Social Network Analysis. The networks are based on the total number of organizations each respondent stated they cooperated with in the field of hi-tech economies. The group of actors on the top of the diagram represent the Canadian stakeholders, while the US organizations are displayed at the bottom. A middle level conveys the five organizations which operate on both sides of the border. In Fig. 7, we list the organizations and each link they have with U.S. based partners and actors based in Canada.

FIG. 6: NETWORKS PROCESSED THROUGH THE SNA SOFTWARE



The density of the networks is empirically proven to be weak, demonstrating that the Cascadia cross-border innovation ecosystem is still at its early stage. Fig. 6 clearly illustrates that links are much denser on each side of the border rather than between groups across the border.

The most connected actors in the cross-border innovation ecosystem are listed in Fig. 7 below. The multi-national companies (notably: Microsoft, Amazon and Boeing) are all ranked within the 12 most connected actors since they work intensively with several actors on both sides of the border, moving towards knowledge creation and further commercialization of their products. Both Amazon and Microsoft opened departments on the Canadian side of the border. In early 2020, Microsoft is expected to increase its corporate presence in Vancouver, BC taking over 75,000 square feet of office space in Gastown. On the public-sector side, the Canadian Consulate in Seattle has been a lead supporter in proactively establishing and strengthening its networks on the two sides of the border in the Cascadia Innovation Corridor initiative.

FIG. 7: THE MOST CONNECTED ORGANIZATIONS IN THE CASCADIA REGION

	Organization	US	Canada	Sum
1	Microsoft	12	16	28
2	Canadian Consulate in Seattle	15	12	27
3	University of British Columbia	8	18	26
4	British Columbia Province Government	6	18	24
5	City of Vancouver	5	17	22
6	Washington State Government	15	7	22
7	Boeing Commercial Airplanes	13	8	21
8	Business Council of British Columbia	5	16	21
9	Simon Fraser University	4	17	21
10	University of Washington	12	8	20
11	Amazon	11	8	19
12	Cascadia Venture Acceleration Network	8	11	19

The two governments (BC and Washington State) have connected with each other (e.g. signing the MoU in 2016) but they tend not to collaborate with other actors. Likewise, an expert interviewee stated that, concerning the “the Cascadia Innovation Corridor, there has been a connection between high-level policies at the state/provincial level. In the layers beneath that, we are not that integrated.” The results from the Social Network Analysis confirm this statement. Beyond the formal agreements between two provincial/state governments, there is currently low connectivity between actors across the border. Allegedly, the Cascadia Innovation Corridor set the ground for further collaboration, but this process is in its very early stages.

As is commonly the case in various cross-border regions, there are a number of governmental organizations (e.g. consulates, provincial or state governments, etc.) and universities among

the most connected actors in the cross-border network (Fig. 7 above). In Cascadia, the role of the three multi-national companies emerges to be pivotal within (and beyond) the Cascadia Innovation Corridor.

Such a large involvement of private stakeholders, both in number and in scope, also distinguishes Cascadia's case from the rest of North American border cases. For instance, in U.S.-Mexican border regions, the dominant actors leading cross-border cooperation processes are nonprofit organizations (Ganster & Collins, 2017; Cappellano & Makkonen, 2019). In Europe, the cross-border cooperation processes are mainly led by the public sector (Blatter, 2004), with poor engagement of communities and private stakeholders (Gonzalez-Gomez & Gualda, 2014).

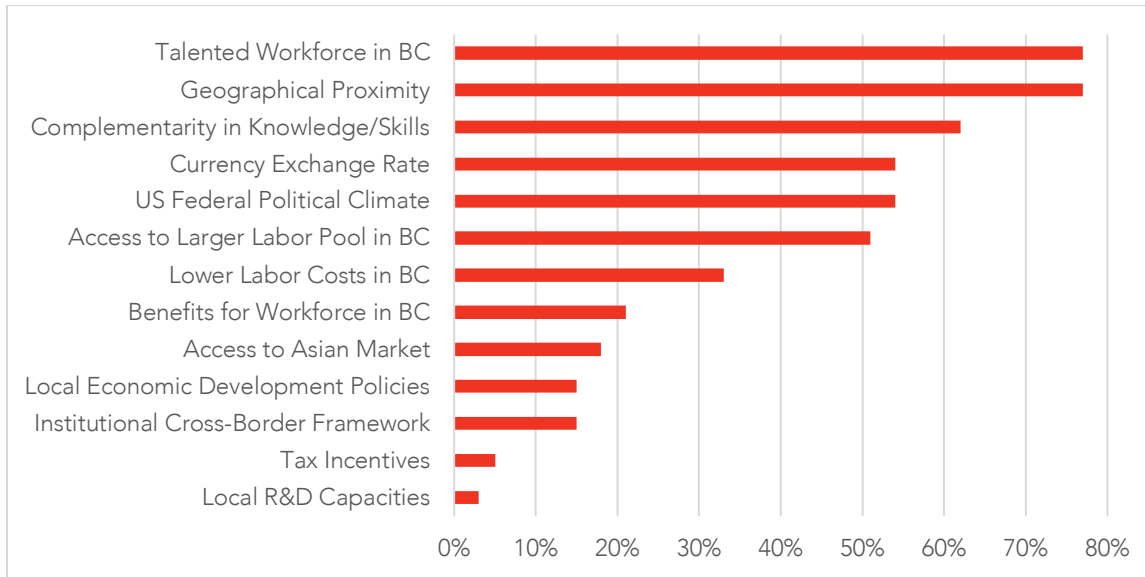
3.2 DRIVERS AND HINDRANCES AT THE BORDER

Analysis on economic drivers is based on data collected through the surveys and interviews. In this analysis, economic drivers are forces that enable long-term growth, or "differences in economic structure, innovation capabilities and cost structure" (Lundquist & Trippl, 2013: 458).

The results underline how access to a talented workforce in BC—in line with academic literature (see for instance Richardson, 2016)—is ranked as being as important as geographical proximity (Fig. 8). In addressing the geographical proximity question, respondents valued the possibility to work in the same time zone and at a short commuting distance, as well as the quality of a workforce endowed with skills and knowledge that fit the needs of U.S. companies. In fact, the complementariness of this factor can explain the main drivers of cross-border economies for the U.S. side of the border; for example, multi-national companies from Washington State opened departments on the other side of the border (Vancouver, BC) mainly to tap into the talented workforce there. Moreover, the currency exchange rate does act as an incentive to boost economic relationships with Canadian peers, depending on market conditions. When the two currencies have closer values, there is a larger influx of Canadian shoppers into the U.S. (Storer, Davidson, & Trautman, 2015).

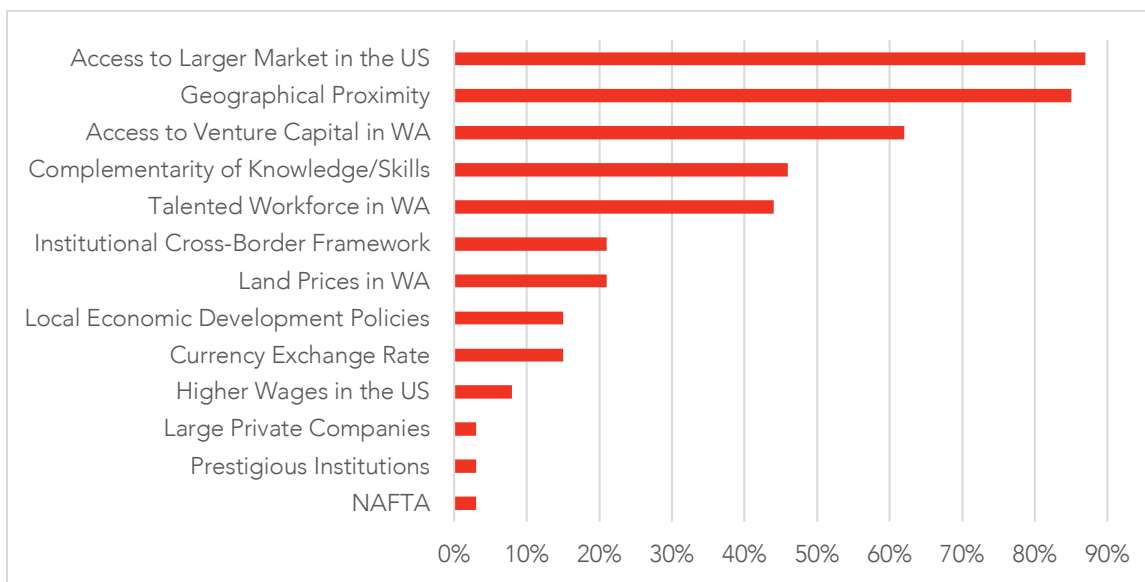
Interestingly, the U.S. federal political climate, which has been heavily affected by the U.S. presidential election of 2016, is also a driver for cross-border linkages. When U.S. immigration policies create hardening conditions for hiring international workers, U.S. based companies will sometimes establish a foothold in Canada to tap into benefits from Canadian immigration policies. Accordingly, access to a larger labor pool in British Columbia represents an asset to counterbalance the increasingly rigid procedures for obtaining an H1B Visa in the U.S. for business professionals.

FIG. 8: ECONOMIC DRIVERS FROM WASHINGTON STATE (WA) TO BRITISH COLUMBIA (BC)



For the Canadian stakeholders, as shown in Fig. 9, the most important drivers include access to larger markets and venture capital, which are highly desired. This confirms the importance of geographical proximity in driving cross-border economies (Cappellano & Rizzo, 2019) to exploit cost asymmetries, to enter into a foreign market, to benefit from complementary environments, and so on. As such, the economic potential of the Cascadia region for those in BC relies on the possibility to access external resources including a talented workforce, larger markets, and venture capital. Moreover, the unstable U.S. federal political climate acts as a driver for U.S. organizations to seek partners for cross-border cooperation in Canada.

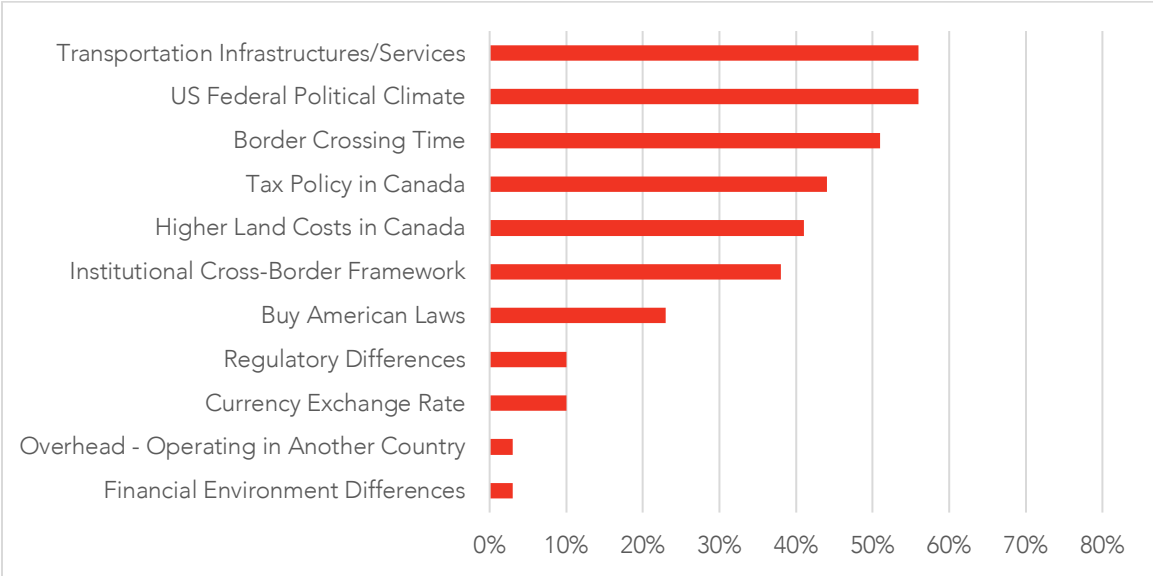
FIG. 9: ECONOMIC DRIVERS FROM BRITISH COLUMBIA (BC) TO WASHINGTON STATE (WA)



Notwithstanding these drivers, the network analysis reveals a poor degree of economic activity across the border in most technological sectors. Transportation infrastructure represents the biggest barrier impeding the growth of Cascadia (Fig. 10, next page). In this view, the development of high-speed rail might address this deficit. Interviewees also argued that a second infrastructure gap undermines cross-border interaction: the border itself. The time required to pass through the ports of entry is still too long. Work on electronic infrastructure is still needed to smooth the border-crossing process and diminish border waits and crossing times. Additionally, the U.S. federal political climate acted as a barrier as well as a driver. The instability of the political and commercial relationships between the U.S. and Canada creates fear that, in the near future, immigration policies could worsen.

Other minor aspects concern policy tools. Among these, the institutional cross-border framework is considered to be an ineffective driver or even a hindrance. Interviewees ask for more commitment from local governments—namely the city governments of Vancouver and Seattle—to engage with the Cascadia region. While reading official documents concerning the future development of the two main cities, the word “border” does not even surface. This suggests a scarce interest to act with a more holistic perspective and conceiving Cascadia as one single region rather than two entities separated by the international border.

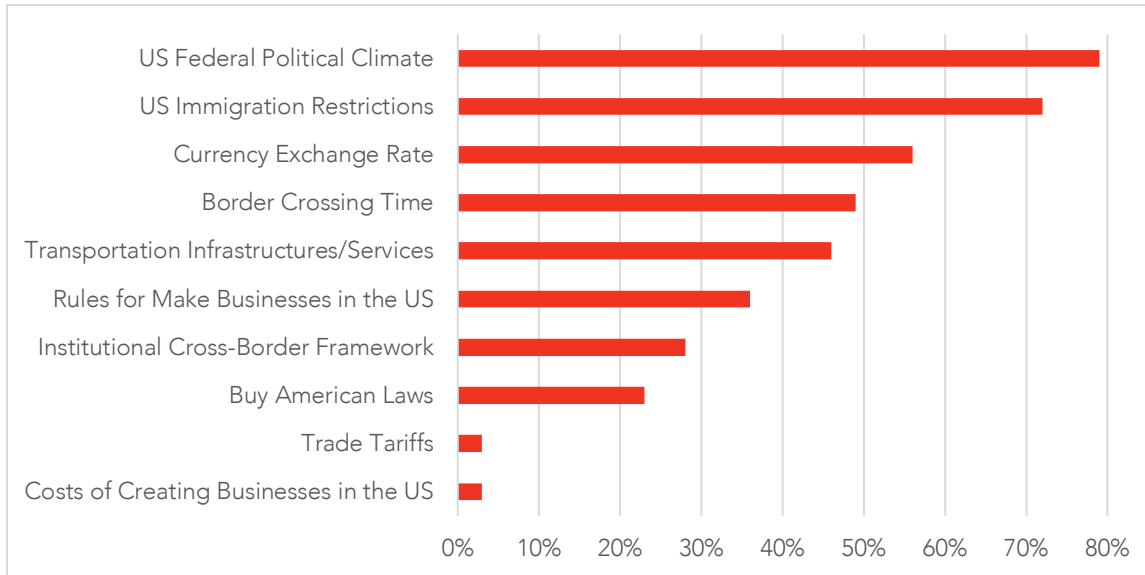
FIG. 10: ECONOMIC HINDRANCES FROM WASHINGTON STATE (WA) TO BRITISH COLUMBIA (BC)



After analyzing economic hindrances from BC to Washington (Fig. 11), it is apparent that the impacts of U.S. immigration policies and the political climate are dramatically more important than in the other direction from Washington to BC. Infrastructural deficiencies, such as transportation services and border crossing time, are rated as less of a hindrance for BC to Washington connections than the other way around. Allegedly, this is due to the fact that BC residents cross the U.S. border more frequently than Washington residents, and therefore may

not see the border and transportation as inconvenient because it's more familiar and routine to them than U.S. residents (Storer, Davidson, & Trautman, 2015).

FIG. 11: ECONOMIC HINDRANCES FROM BRITISH COLUMBIA (BC) TO WASHINGTON STATE (WA)



Nearly a third of interviewees (28%) stated that the institutional cross-border framework served as a hindrance, reflecting that the “institutional set-up” (Lundquist & Tripp, 2013)—the bundle of agreements between public authorities—supporting the cross-border cooperation processes is not perceived as effective (as it is in other border regions) yet. The institutional framework, being at its very infancy, still works as an impediment rather than a driver to allow more business to move across both sides of the border.

3.3 COOPERATION VS COMPETITION

Beyond a perception of cooperation between the two sides of the border—a “give and take relationship between BC and Washington State,” according to an academic interviewee—the historical competition in the region still persists in economies and between public authorities. For example, one interviewee shared that “the relationship between the airports [...] is just about competition. Our common interests are limited to border issues, and preclearance. We do approach tourism services but, at the end of the day, we compete.” The two airports compete to attract more passenger flows between locations in Asia and the U.S. East Coast. Similarly, the relationship between sea ports is defined by competition in order to attract increasing numbers of passengers and freight, even though the three main ports (Vancouver – Seattle – Tacoma) compete against the ones located in California (e.g. Long Beach) for the best North American hub from Asia.

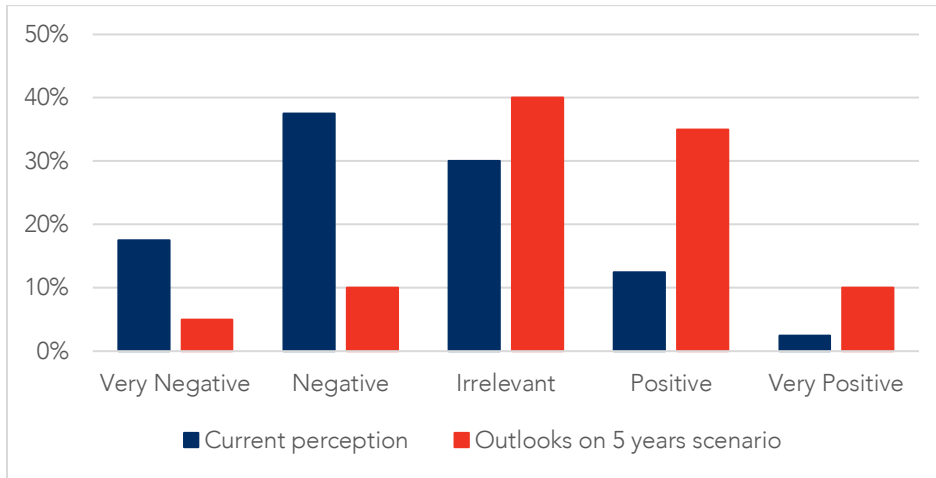
Competition has been reported by interviewees in several economic sectors such as film-making and tech, including emerging Virtual Reality (VR) and Augmented Reality (AR) initiatives, where Vancouver is emerging as the best hub in the world. One BC expert interviewee summarized that the main reason for such poor cross-border economic interaction has to do with economic structure: “I am not looking to have business relationships with Seattle-based multi-national companies since they want to compete with me. Our focus is overseas (e.g. EU, Korea). In Washington State there are more investors/competitors than customers. Due their size, they do tend to buy companies in BC rather than cooperate with them. It is a matter of size, indeed!” The BC companies are, on average, smaller in size than those in Washington State. Therefore, they struggle to cooperate with Washingtonians since: I) there is not a large customer base, II) the venture capital is still larger than in BC but is less available than in California, and III) for the business’ size differences, the U.S. multi-national companies tend to buy the small BC companies.

3.4 PERSPECTIVES ON THE CROSS-BORDER INTEGRATION PROCESS

Social network analysis also revealed the fragmentation of the cross-border economic ecosystem, which is illustrated by the perceptions of the interviewees as reported in Fig. 12. Each interviewee was asked to forecast how the ecosystem would be integrated in the next five years. Respondents mainly judged economic integration in the current ecosystem to be weak. Conversely, there is a cautious optimism concerning the integration process in the near future.

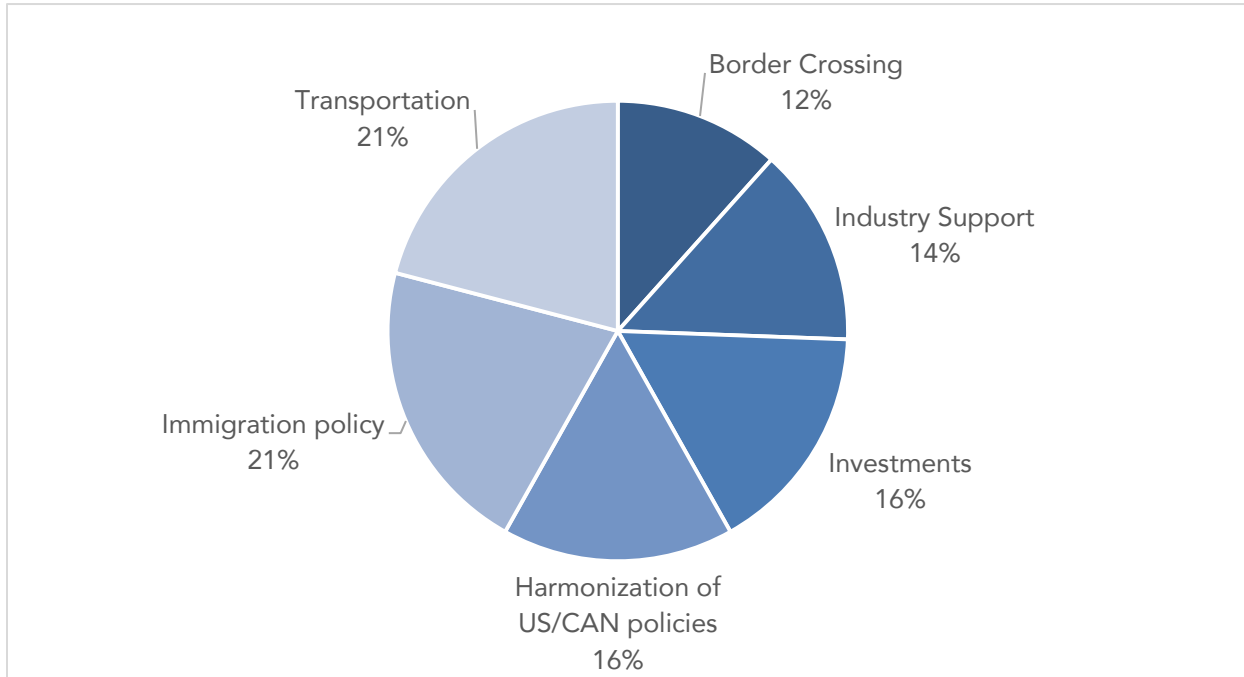
Allegedly, this change in perception reflects the impetus behind the Cascadia Innovation Corridor, which is boosting the will of more and more multi-national companies to invest in the Cascadia region¹. Furthermore, charismatic leaders have been committed to the Corridor, gaining the attention of a public audience. The opening of the seaplane service seems to be the first tangible result derived from the Corridor. The commitment of public resources to the high-speed rail project and the nourishing of collaboration keeps the momentum moving towards closer integration.

FIG. 12: COMPARISON OF PERCEPTIONS ABOUT CROSS-BORDER ECONOMIC INTEGRATION



During interviews, two final open questions dealt with the expectations of the Corridor initiative in particular and local cross-border integration policies in general. In the near future, interviewees forecasted closer integration. When asked what a critical turning point might be, respondents answered in many different ways, underscoring the diverse panel of issues reported in Fig.13. Several argued that “the political climate will have to improve” and that “the current trajectory is not helpful.” Those interviewees blamed the U.S. federal political climate for inflicting a negative impact on the relationship with Canada. They called for a stark change in immigration policy (e.g. migration working visas) in order to reinforce cross-border economies. In this regard, one interviewee argued that the alignment of border policies (e.g. trade tariffs) would be a necessary pre-condition for the success of the Cascadia Innovation Corridor.

FIG. 13: CRITICAL NEEDS FOR A MORE INTEGRATED ECONOMY



In sum, the interviews revealed a strong desire to harmonize policies in order to support and manage businesses on both sides of the border. Concerning transportation, some commented that there is no regional plan to efficiently target this deficiency, while others strongly encouraged the high-speed rail project. Notwithstanding the large involvement of private companies, multiple respondents called for a stronger commitment of private stakeholders. In line with the Microsoft example, a “critical mass of companies operating on both sides of the border would be the right trigger” as stated by an interviewee for a tighter integration process. Some interviewees acknowledged that there is a need to boost stronger cross-border networks in a broader sense. In particular, it was advocated that tighter collaboration should happen in the field of research and development and among business communities, with interviewees noting a lack of knowledge about business opportunities on the other side of the border.

3.5 ROLE OF CITY GOVERNMENTS

Border policies, international trade policies, and immigration policies are all under federal jurisdiction, and thus the role that the biggest city governments in the region play in the Cascadia integration processes is marginal. A review of official documents, including the regional growth strategies “*Metro Vancouver 2040 Shaping Our Future*”ⁱⁱ in Canada and the “*Amazing Place: Growing Jobs and Opportunity in the Central Puget Sound Region*”ⁱⁱⁱ in the U.S., reveals a neglected interest to collaborate with peers across the border. Nevertheless, the two documents have a regional scope that covers multiple counties; only the U.S. strategy

considers the CIC and the economic linkages with Vancouver, BC. All in all, there seems to be a short-sighted perspective on the economic opportunities to tap into with a regional cross-border economic development strategy.

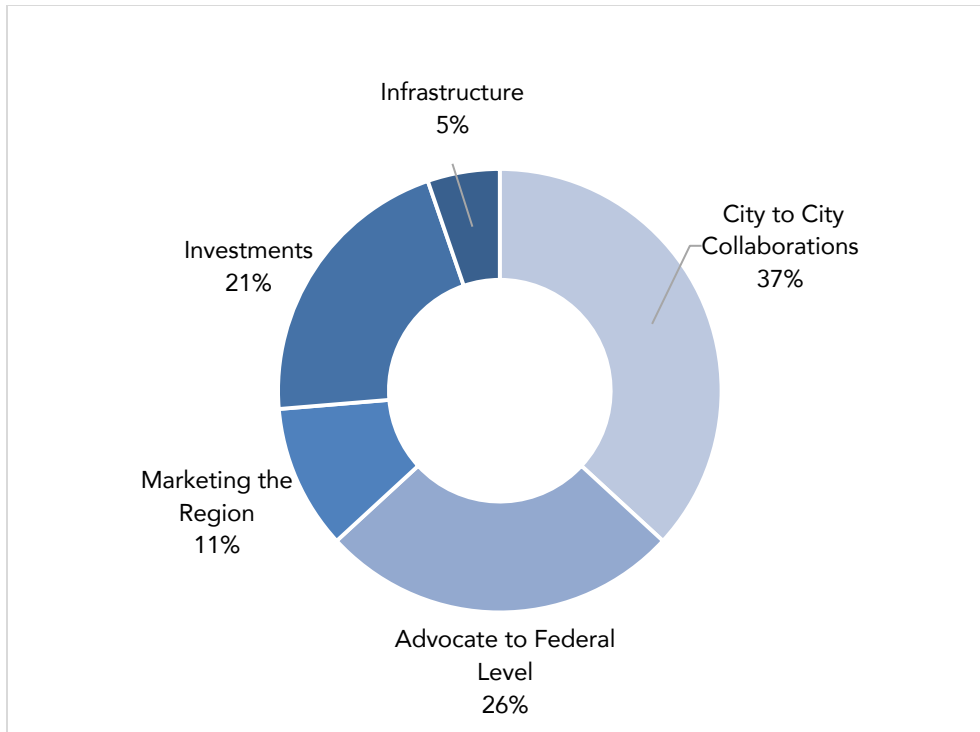
Interviews revealed that the two city governments have a line of communication limited to particular topics: environment, social housing, and disaster resilience. Other than that, there is no emphasis on collaboration across sectors or infrastructures (e.g. transportation services). The city departments from Seattle, WA and Vancouver, BC have a dialogue but they do not cooperate to address joint initiatives towards common threats including affordable housing, resilience to natural hazards, and public transportation.

An official that was interviewed summarized the relationships among city governments as follows:

“The relationships among Vancouver and Seattle City Governments are intense and diverse since the two cities’ officials used to meet regularly on a monthly basis for talking about a roster of “hot” topics, including: housing, planning, resilience, GHG emission and their impacts in urban areas. The two cities used to collaborate within a few international platforms, including the Pacific Coast Collaborative^{iv}, the 100 Resilient Cities,^v and others. All in all, we meet regularly officials from [...] City Government in person (2-3 times a year) or on remote (once a month). We achieved the level to understand each other’s needs and challenges. Unfortunately, we haven’t succeeded yet to tackle the most urgent matters jointly such as housing, planning, transportation and resilience.”

Results shown in Fig. 14 indicate that at least 37% of respondents would welcome tighter relationships and a stronger official commitment between the cities. In fact, several interviewees remarked that there was a need to build networks from the bottom up and “better established platforms for continued cross-border communication and collaboration.”

FIG. 14: LOCAL AUTHORITIES' INVOLVEMENT IN CASCADIA INTEGRATION



Besides building networks with their peers in the other city, local authorities were also asked to facilitate “many forums and events to bring the communities and the community leaders together and work together to listen and find out the challenges and things getting in the way, so that they can help address it. Such initiatives require [a] kind of coordination [that] private entities cannot facilitate on their own.”

Moreover, respondents invited local authorities to brand the region internationally (as a whole Cascadia region) and domestically, lobbying federal authorities to develop more harmonized policies, including immigration policies.

4. CONCLUSIONS

This research confirms that the Cascadia innovation ecosystem possesses the key assets needed to ensure long-term growth. As demonstrated in the report, the two powerhouses in the region (Vancouver, BC and Seattle, WA) share a similar economic cluster portfolio along with an overlapping knowledge base. These work as necessary preconditions for economic interaction across the border. Furthermore, the workforce in the region is endowed with talent and skills, which are fine-tuned to industry needs on both sides of the border. This hints at a key resource to be leveraged in cross-border economic development. Beyond geographical proximity, access to external resources—notably capital or a talented workforce—represents the most important driver for cross-border economies.

Multi-national companies are very engaged in the cross-border innovation ecosystem. In particular, Microsoft is the most central actor in this field. The large involvement of those wealthy private stakeholders in the Cascadia Innovation Corridor represents a driver which enables tighter cross-border integration. This represents a novelty in the border literature, distinguishing Cascadia from EU cases where the public sector dominates the cross-border cooperation processes, as well as U.S./Mexican border regions where non-profit organizations play a first-tier role.

A very fragmented innovation ecosystem exists in Cascadia. Despite the great potential for collaboration, there is not much interaction among actors across the border. The few cross-border networks in operation are still in an emerging phase. The difference of economic structures—notably, in firm size—has been pointed to as an impediment for tighter economic collaboration in Cascadia. Moreover, the U.S. federal political climate works as one of the strongest impediments to cross-border economic integration. U.S. immigration policies represent a serious concern for those who consider establishing a business from BC to WA. For those commuting from Washington to BC, transportation infrastructure does represent a major concern. Those crossing the border from Canada to the U.S. evaluate the time spent at the border more as a burden than a barrier. In addition, interviewees pointed out that a competitive aspect of the Seattle-Vancouver relationship prevents a comprehensive approach to the challenges in the region.

All in all, cross-border integration in Cascadia is currently perceived as weak by the interviewees. However, in the near future scenario (five years) there is a cautious optimism that tighter collaboration will take shape. The Cascadia Innovation Corridor has generated an impetus for a closer interaction in Cascadia. As demonstrated empirically, the business organizations are not as connected as the State and Provincial governments, which have a strong connection sealed by MoUs. Those agreements laid the basis for an institutional cross-border policy framework that has not been appreciated yet as an effective driver for cross-border interactions. However, this may change in the near term since the MOUs among governments are relatively new, and the momentum and visibility of the CIC is building.

Concerning tighter integration in Cascadia, survey outcomes reveal that federal-level policies like immigration and border infrastructure are impacting the economic linkages across the border in Cascadia, and that transportation is a crucial aspect in the region. Furthermore, respondents call for larger industry support in cross-border economies in Cascadia in line with the role of Microsoft. Moreover, respondents advocated for implementing “better established platforms for continued cross-border communication and collaboration.” (See Fig. 15 for Policy Recommendations based on this research.)

FIG. 15: POLICY RECOMMENDATIONS TO FOSTER CROSS-BORDER COOPERATION IN CASCADIA



The majority of the impediments to tighter cross-border cooperation in Cascadia pertain to federal level jurisdiction. The U.S. approach to security and immigration, set post-9/11 and hardened during the Trump administration, constitutes a severe barrier to the flow of people through the border. The regional innovation ecosystem in Cascadia would greatly benefit if business people, academics, and scientists could move more freely in the region. Moreover, border infrastructure needs to be updated in order to reduce border crossing times. Transportation projects could work towards reducing travel time from Seattle to Vancouver. To this end, the opening of the sea-plane service represents a milestone in the process.

Public authorities in the region can work proactively to heighten attention on these aspects in their respective federal agendas. Additionally, they should begin to brand the area as a whole Cascadia region in order to lure more private companies into the cross-border cooperation process. Local institutions should set the groundwork for a more inclusive approach towards

cross-border cooperation processes by inviting NGOs, private stakeholders, and communities to take part in bi-national forums in order to create a shared vision for the region. At the same time, a strategic vision for cross-border regional planning is needed to efficiently tackle urgent challenges, most notably housing availability/affordability, transportation, disaster resilience, and environmental protection.

There are several potential steps towards cross-border cooperation in Cascadia. In October 2019, the two city governments signed a MoU to promote joint economic development. In line with what has been discussed in this report, both Seattle and Vancouver City governments are taking a larger role with the CIC. Private stakeholders have also been increasing their engagement in the CIC. For instance, Amazon co-hosted the Fall 2019 Economic Leadership Forum of the Pacific Northwest Economic Region in Seattle. Other private and financial actors have been increasing their presence on the other side of the border. For example, Vancouver-based Westbank Corp which has earmarked \$450 million for building a 47-storey luxury tower in downtown Seattle. Additionally, there are new investments addressing infrastructure in Cascadia. In December 2019, the Cascadia Fibre project should break ground. It will build a new fiber-optic network between Seattle and Vancouver, BC upgrading the aging infrastructure and offering new opportunities for consumers.

ENDNOTES

ⁱ Last April, the Seattle-based Multi-National Company Amazon announced to expand its operations in Vancouver by 3000 new employees. Source: <https://www.cbc.ca/news/canada/british-columbia/amazon-vancouver-new-jobs-1.4641765>

ⁱⁱ The document has been adopted in 2017. Metro Vancouver is a federation of 21 municipalities, one Electoral Area and one Treaty First Nation that collaboratively plans for and delivers regional-scale services. Its core services are drinking water, wastewater treatment and solid waste management. Metro Vancouver also regulates air quality, plans for urban growth, manages a regional parks system and provides affordable housing. The regional district is governed by a Board of Directors of elected officials from each local authority

ⁱⁱⁱ The document has been issued in 2011 and later updated in 2017. It is released by the Puget Sound Regional Council which convenes its members from King, Pierce, Snohomish and Kitsap counties in Washington State. The role of the regional Council is to design policies and coordinates decisions about regional growth, transportation and economic development planning within those counties. King County hosts the City of Seattle.

^{iv} See <http://pacificcoastcollaborative.org/>

^v See <https://www.100resilientcities.org/>

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