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Moving maritime clusters to the next level: Canada's Ocean Supercluster initiative

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ABSTRACT

This brief discussion paper reviews *Canada's Ocean Supercluster* strategy, launched by the Canadian Federal government in early 2018. It explains what *Canada's Ocean Supercluster* strategy is, why it matters for innovation and economic development, and discusses the extent to which the strategy is likely to support and strengthen the knowledge-based ocean economy in Canada. It raises a number of questions which should form the basis of a research agenda destined to better understand and improve the effectiveness of policies aimed at supporting maritime innovation, the development of coastal regions, and economic development more generally.

1. Introduction

In 2017, Canada's Federal government launched the *Innovation Superclusters* strategy to "*invite industry-led consortia to lead and to invest in bold and ambitious proposals that will supercharge their regional innovation ecosystems. By pulling in large firms, innovative small and medium-sized enterprises (SMEs) and industry-relevant research institutions, business leaders will come together—with partners and in new ways— to build business-led innovation superclusters at scale*" ([10]: 4). By investing $950 million over five years, the government's intention is to foster innovation-driven ecosystems that enable industry to develop and commercialise new products and processes – generating, as the cluster takes shape, a durable regional innovation ecosystem.

This discussion paper reviews the *Ocean Supercluster* strategy, one of five superclusters announced in February 2018. It succinctly outlines the strategy's theoretical underpinnings, overviews previous clusters in Canada's maritime economy, and outlines this new strategy. The paper's purpose is to raise awareness of this new policy and to stimulate debate by querying certain of its premises. The discussion section raises some key issues, in particular possible elements that may limit the policy's effectiveness as an economic development strategy. The questions raised point to a research agenda, and to the need for policy-makers to incorporate and coordinate cluster policy with wider policies in areas such as intellectual property, regional development, employment and incomes. For the time being Canada's super-cluster policy, and, more broadly, its innovation policies, are developed and implemented in silos which limit their long-term effectiveness.

2. Maritime clusters in Canada – a brief history

A cluster is commonly understood as a geographically circumscribed concentration of institutions and firms that operate within the same (or closely related) industries [22]. There is usually a formal or semi-formal organisation that coordinates the cluster, allowing leaders to meet and to discuss issues and strategies. Actors within the cluster will often work on collaborative projects. Around the cluster a specialised labour-force will develop, key physical infrastructure will be built, and educational and research institutions will adapt their curricula and focus in order to respond to industry needs.

The cluster concept is a guiding paradigm linking innovation and economic development that has been fully integrated into economic and political thinking [18,19]. Martin & Sunley [15], however, argue that the concept's popularity has much to do with its successful marketing and with the 'the way in which it has been closely tied to a set of positive images and associations' (p 9). Indeed, recent research demonstrates that clusters can thrive but can also decline and disappear [12,16], that geographic clustering does not necessarily enhance collaborations and interactions [8,9], that collaborations, knowledge exchange and interactions are not always structured by physical co-location [7], and that the impacts of local innovation are not necessarily

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felt where innovation occurs [24]. Underlying these questions is the vagueness of cluster theory itself [15], which, beneath apparently clear definitions, hides a multitude of processes and policies with different purposes and strategies.

Maritime industrial policy is no exception [2]. There is virtually no questioning of the idea that clusters offer a favourable environment which increases the competitiveness and innovation capability of maritime firms [14,21,23,25,26]. It should be noted, however, that some researchers have questioned the effectiveness of geographically circumscribed maritime clusters, particularly in regions where favourable preconditions do not exist [4].

In Canada, clusters have also become key elements of current innovation and economic policy to support the maritime industry [17]. The policy-backed emergence of clusters in British-Columbia, Quebec and Newfoundland is based on pre-existing specialisation in these industries and on the desire to enhance local externalities that connect industries, science, skills, and productivity [5]. In keeping with Porter [4,22] maritime clusters are understood as geographic concentrations of firms in maritime sectors, of research and education organisations active in related fields, and of public support mechanisms operated by the government and regional stakeholders.

The development of these clusters in Canada reflects different local realities. In the Pacific Area, British-Columbia's Pacific Ocean Technology Cluster, located on Vancouver island, is centred on the province's capital, Victoria: it is associated with the federal government's innovation strategy, which identifies marine technology as a national priority and which encourages federal and provincial ministries to support the sector. In the east of Canada, dominated by peripheral coastal areas, Quebec's maritime cluster is primarily a regional development initiative, which can be traced back to policies and programs aimed at supporting pre-existing maritime activities by providing infrastructure and by building institutions (Doloreux and Melançon, 2013). In St. John's (Newfoundland), the Ocean Technology Cluster thrived as the oil industry developed: significant education and research activities have emerged, as well as activities linked to the energy sector, such as remote sensing, data recording and communication products for ocean applications [13].

Canada's maritime cluster policies reflect at least three different strategies [4], which themselves speak to different theoretical understandings of how clusters develop and thrive [15]. The BC cluster policy reflects a top-down approach, led by federal investment in big science and research: it was thought that this investment would spawn spin-off activities and that a self-sustaining cluster would develop. In Quebec, the strategy has primarily been one of regional development: in a stagnating coastal region, which possessed institutions, expertise and some private-sector maritime activity, the policy aimed at making these activities coalesce into a dynamic milieu. Whilst this policy was funded by federal and provincial agencies, the strategy was devised and implemented by local actors. Finally, the maritime cluster policy in St. John's and Halifax, whilst it builds upon strong maritime traditions in fishing and ship-building, is opportunistic and entrepreneurial: it has taken off in the context of a booming offshore oil industry that has provided opportunities for local companies, universities and workers. The maritime cluster policy is therefore driven by local actors, but has only developed because of the presence of global firms and of buoyant international markets for oil.

Whilst Canada's maritime clusters articulate varied strategies and ambitions, the extent to which they have so far generated self-sustaining regional innovation and development processes is questionable. They have resulted in the consolidation of local knowledge, advanced research and innovation leading to new maritime activities (marine biotechnology and ocean renewable energy) and to a certain revitalization of existing sectors (fisheries, seafood transformation). There has also been collaboration between actors within the clusters operating in different fields. However, Kealey (2017) reports that R&D intensity of firms in the maritime sector remains low, that the sector itself is small relative to Canada's economy and relative to clusters elsewhere (such as in San Diego), and that the sector remains dominated by government and educational institutions.

Indeed, research on Canada's maritime clusters reveals that these policies have not always been successful. In Quebec, for instance, maritime sectors have tended to grow more slowly within the targeted regional cluster, and employment there is *decreasingly* science-intensive [6]. Interactions and collaboration between actors in the cluster remain limited [3]. When they do occur they emerge from long-standing systemic relations within the local knowledge infrastructure [17]. In British-Columbia's Pacific Ocean Technology Cluster, lack of private-sector actors has led to narrowly focused exploration and research, with limited evidence of entrepreneurial market-driven activity [4]. In contrast, St. John's Ocean Technology Cluster, whilst reliant on the dominant energy sector, has branched out into wider markets and has become a leader in certain fields of maritime technology (notwithstanding the relatively low private-sector commitment to R&D, Kealey, 2017). There are a number of institutions, in particular Oceans Advance, which federate the industry and which support interactions between companies, researchers and government organisations [5]. There is, however, anecdotal evidence that successful start-ups and promising technology companies have been bought-up by multinational companies – but the extent of this process has yet to be fully explored.[1]

3. *Canada's Ocean Supercluster* – what is being proposed

In 2017, the government of Canada put forward a new agenda to support growth and accelerate innovation through supercluster initiatives. A supercluster is defined as '*an innovation hotbed that is home to a strong industrial cluster, or clusters, linked through their shared reliance on specialized inputs, including technologies, talent and infrastructure*' [10]. The objectives of a supercluster are to foster '*large-scale industry partnerships, supported by other innovation ecosystem players, and asks them to work together on ambitious market-driven proposals to supercharge their regional innovation ecosystems, enhancing the growth and competitiveness of participating firms and maximizing economic benefits, including good, well-paying jobs and prosperity for Canada'* [11]. The idea behind this initiative is to build a competitive advantage in attracting cutting-edge research, investment and talents; increase expenditures in R&D and advanced technologies; support new companies, commercialisation and productivity; and to gather a critical mass of growth-oriented firms and strengthen collaborations between private, academic and public sector organisations [10].

The distinction between 'cluster' and 'supercluster' is rather vague. In some respects a super-cluster is can be thought of as a cluster of clusters. Whereas 'clusters' have tended to focus upon specific industrial sectors and their immediate sub-contractors (e.g., [12]), 'super-clusters' focus on the entire value-chain (including related services) and on the cross-fertilization of ideas and knowledge between apparently unrelated sectors. In a maritime super-cluster, industries as diverse as

[1] This observation is drawn from one of the authors' site visits and from his discussions with local entrepreneurs (in June 2010). Research on the degree to which high-performing technology companies located in particular regions actually remain in these regions is required : this is an uncomfortable question, which no agency has - to our knowledge – explored. A recent report on innovation in Canada [1] highlights that whilst many innovations are initiated in Canada (i.e., stem from Canadian companies, R&D and patents), they are often purchased and/or exploited by companies based outside Canada. Indirect evidence suggests that this also occurs at the regional scale [24]: however the belief that local innovation leads to local growth - despite there being no necessary connection because regions are open economic systems - is so pervasive that questioning the link has, until recently, been perceived as a radical rejection of endogenous growth theory. Now that the international appropriation of intellectual property is becoming a recognised issue, the question will gain hopefully legitimacy at the regional and local scales.