

## Chapter 3

# Trans–Arctic Interactions and Cross–Country Collaboration

**Bistra Vassileva**

*University of Economics – Varna, Bulgaria*

### **ABSTRACT**

*The Arctic gains an increasing geopolitical importance in the globalized world. The region provides a lot of opportunities especially due to the global warming and intensive development of digital technology but at the same time, it poses extreme challenges. The chapter starts with a literature review on interactions, relationships, networks and their implications on trans-Arctic collaborations. The first section begins by exploring how each Arctic state deals with the opportunities and challenges of the region. The second section describes the evolution of trans-Arctic relations. In the third section, market connections between the Arctic states, the importance of establishing a predictable regulatory framework, knowledge and data exchange, broadband penetration, and use of traditional indigenous knowledge to stimulate sustainable long-term trans-Arctic interactions are analyzed. The chapter ends with conclusions and recommendations aimed at the future development of trans-Arctic interactions with a focus on global intervention policies and strategies in the region.*

### **INTRODUCTION**

The Arctic gains an increasing geopolitical importance in our modern globalized world. The challenges posed by the Arctic to react to the recent globalization trends are unlike any on the planet. This region provides many opportunities especially due to the global warming and intensive development of digital technology but at the same time, the Arctic poses extreme challenges. The region is characterized by a dispersed population, harsh climate, and lower rates of broadband adoption than non-Arctic regions.

The chapter starts with a literature review on the interactions, relationships, networks, and their implications on trans-Arctic collaborations. Detailed review of theoretical concepts of interactions is presented followed by the main aspects of collaboration and network models. The first section begins by exploring how each Nordic state (Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden, and the USA) deals with the opportunities and challenges of the region. A special attention is given to the

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role of China within the framework of Globalization 3.0 (China-dominated) (Walker, 2007). Next, this section lays out some of the predominant societal benefits of trans-Arctic economic development. The research methodology is presented at the end of the section. Second section describes the evolution of trans-Arctic relations between the Arctic states as well as between China and the Arctic states with a special focus on the Belt and Road Initiative (BRI) as a driver for the future development of trans-Arctic interactions. Comparative analysis on the collaborative models in the region is performed with a focus on recent geopolitical influences and interventions. In third section, the market connections between the Nordic states and between China and the Arctic are analyzed. The opportunities to develop sustainable long-term trans-Arctic interactions are discussed.

The global demand for natural resources and shorter routes for marine transportation of goods has started a race in and to the Arctic by the stakeholders looking to gain footholds in the circumpolar region. The situation in the Arctic raises many important questions about habitat and climate, about how local societies in the North should relate to the growing industrialization. That is why the trans-Arctic interactions should be based on responsible and sustainable collaborative models with long-term goals. The chapter ends with the conclusions based on the received research results. The conclusions are discussed regarding their implications for future research. Recommendations aimed at future development of trans-Arctic interactions are given. A special attention is devoted to the research implications for global intervention policies and strategies in the region.

## **BACKGROUND**

### **Theoretical Background of Nonlinear Dynamics, the Ecosystem Approach, and Network Theory: Implications to Trans-Arctic Collaborations**

Following the rise of complexity theory and nonlinearity, the complexity economics (Arthur, 2013; Axelrod & Cohen, 1999) became a hot-spot issue in contemporary scientific business literature. The recent debate within the field of economics over the concept of complexity (Israel, 2005; Markose, 2005; McCauley, 2005; Velupillai, 2005; Rosser, 2008a, 2008b) gives an emphasis on more dynamically based definitions of complexity that have tended to be used more widely and frequently in economics over recent decades than the computational explanation of complexity. Some researchers believe that the application of the ideas of complexity and nonlinear dynamics allows them to understand the spontaneous, self-organizing dynamics of the world with the potential for immense impact on the conduct of economics, business, and even politics (Waldrop, 1992, p. 12). In contrast, Horgan (1995, 1997) (as cited in Rosser (1999, p. 170)) teases what he labels “chaoplexology,” arguing that complexity is the latest in a series of failed fads, the “four C’s” of cybernetics, catastrophe, chaos, and complexity. These sharply contrasting viewpoints reflect the controversy surrounding the multidisciplinary study of complexity, as well as its predecessors in a line of development within the broader science of nonlinear dynamics (Figure 1). According to the framework developed by Strogatz (1994, pp. 9-10), the application of complexity theory and nonlinear dynamics in economics is a part of spatiotemporal complexity and belongs to frontier studies.

In the last two decades, various methods of nonlinear dynamics and chaos theory have been frequently used to analyze various branches of economics (Markose, 2002). He divided these methods into three groups. The first group includes formalist/deductive methods and related dynamical systems, e.g. classical methods of optimization, classical probability, and econometric models. These methods have an implica-

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