



## **Agnieszka Budziewicz-Guźlecka**

Institute of Spatial Management and Socio-Economic Geography  
University of Szczecin  
agnieszka.budziewicz-guzlecka@usz.edu.pl  
ORCID: 0000-0002-9403-7925

## **Roman Chorób**

Institute of Economics and Finance  
University of Rzeszów  
rchorob@ur.edu.pl  
ORCID: 0000-0003-2045-6251

# **Socio-Spatial Aspects of Cluster Structures with Particular Emphasis on Maritime Economy**

**Keywords:** cluster structures, spatial dispersion, cooperation, innovation, competitiveness, maritime economy

## **Introduction**

The essence of each national economy is the spatial differentiation of effects of management occurring within its borders. Understanding and explaining the processes determining the occurrence of spatial diversity, and also conditioning the degree of its intensity, is one of the trends in economic geography. During the last two decades there has been observed a considerable increase in the interest in the phenomenon of spatial concentration of economic activity and the resulting effects. These studies are a part of the trend of the so-called new economic geography (NEG).<sup>1</sup>

Integration links, conducive to territorial concentration, determine the development of market conditions for the operation of business entities. Properly functioning as well as emerging integration structures in the economy are one of the essential elements of its dynamic expansion, especially in the era of globalisation. An example of such structures are clusters that play an important role in economic processes in many

---

1 Szczepan Figiel and Dominika Kuberska and Justyna Kufel, *Analiza uwarunkowań i stanu rozwoju klastrów rolno-żywnościowych w Polsce* (Warszawa: IERiGŻ, PIB, 2011), 8.

countries, including Poland. In the regions located by the Baltic Sea, the maritime economy is particularly important, where cooperative links of a cluster nature can develop dynamically, bringing together enterprises, universities and business environment institutions in their structures.

The main objective of this study is to present the socio-territorial contexts related to the functioning of cluster structures. Clusters form the subject of this research, and the scope of the research covers examples of these structures operating in coastal areas. The priority of all clusters is to strive to effectively increase the level of innovation, which in turn increases the competitiveness of entities-participants of these structures. This issue is of particular importance for the maritime economy, which often struggles with barriers to the proper development of integration processes taking place in this sphere.

The paper presents the concept and genesis of clustering, as well as the aspects of territorial differentiation of cluster structures. A short characterisation was also made of the benefits and advantages of the functioning of these innovative integration structures. Further on, development processes and examples of key cluster structures are discussed. The culmination of the above considerations is the analysis of two Polish coastal clusters: the Maritime Cluster of Western Pomerania and the West Pomeranian Maritime Cluster – as a case study. A valuable supplement is the analysis of the Norwegian seaside cluster: Marine Recycling Cluster.

In order to identify the primary cognitive purpose of the study, an in-depth source literature search was employed together with the results of our own research. To this end, in-depth interviews were conducted among experts in the field of maritime economy and clusters (in the Zachodniopomorskie Voivodeship) using the CATI method. The research was conducted in January 2023 and the selection of experts for the survey was carried out using the “snowball” method. Based on the issues raised, a thesis was put forward that effective cooperation is conducive to the proper expansion of cluster structures, which in turn play a key role in the process of integrating the maritime economy environment.

### **The outline of ideas and the genesis of concepts of cluster structures**

Initially in the achievements of economic sciences there was omitted the spatial dimension of phenomena occurring in economics and, consequently, economy was considered in terms in which it adopted a one-point nature. Only through the works of economists dealing with the problem of land rent or international trade the location has become the subject of study by a wider group of scientists. Thus, thanks to Giacomo Becattini who referred to Marshall<sup>2</sup> industrial districts, there was born the concept of agglomeration as a social environment being a strong and dynamic form of organisation,

---

2 Cf. Alfred Marshall, *Principles of Economics* (London: Macmillan, 1920).

where physical proximity and cultural relations allow using the advantage of proximity in order to achieve benefits, which allows small businesses to share certain expenses and mutual positive reinforcement.<sup>3</sup>

The agglomeration phenomenon is connected with the occurrence of various types of effects associated with it (“economies of agglomeration”). The effects of agglomeration are classified to the group of external economies of scale. They are connected with the benefits that are the share of companies or urban centres, occurring due to the spatial proximity.<sup>4</sup> The benefits which are a result of the agglomeration have been studied by the Swedish economist Bertil Ohlin who classified the following to their sources:

- internal benefits of scale that are connected with the technique of production,
- localisation benefits as a manifestation of impact of the industry on individual entities,
- urbanisation benefits being a manifestation of functioning of the economy as a whole and of external nature with respect to enterprises and industries,
- connections occurring between industries.<sup>5</sup>

The attempts to define what a cluster is were and are still undertaken by many authors. Due to its interdisciplinary nature the theory of clusters as specific forms of agglomerations gains importance due to the interest from researchers representing different disciplines. Since the definitions of a cluster in various cross-sections and references have been presented many times in the available literature on the subject, this study has refrained from quoting them, and only focused on the review of the concept of clustering and the distinguishing features of this type of structure.

In the literature on the subject, beside the definition presented above, there function many other terms for the cluster (e.g., group, industrial bunch, cooperation network). Most of them point to three key distinguishing features of the cluster:

- concentration on a specific area, of cooperating and interdependent companies operating in the same or related sectors of industry or services,
- interactions and functional relations between companies,
- trans-sector dimension of the cluster covering with its range both horizontal as well as vertical integration relations.

These are also the features that characterise business ecosystems that are able to compete with other business ecosystems.<sup>6</sup>

3 Cf. Jerzy Figuła, *Dystrykty przemysłowe. Małe i średnie firmy włoskie w dobie globalizacji* (Polkowice: Dolnośląska Wyższa Szkoła Przedsiębiorczości i Techniki w Polkowicach, 2008).

4 Cf. Michael J. Healey and Brian W. Ilbery, *Location and Change: Perspectives on Economic Geography* (Oxford: Oxford University Press, 1990).

5 Skawińska Eulalia and Romuald I. Zalewski, eds. *Klasy biznesowe w rozwoju konkurencyjności i innowacyjności regionów. Świat-Europa-Polska* (Warszawa: PWE, 2009).

6 Anna Drab-Kurowska and Agnieszka Budziewicz-Guźlecka, “The Digital Post Ecosystem - Example of Poland in the Context of Research,” *Sustainability* 13 (2021), 5: 2550.

## Aspects of spatial dispersion of cluster structures

Already in 1920, as mentioned earlier, Marshall pointed out the “location advantages” resulting from the geographical proximity of enterprises producing similar goods.<sup>7</sup> According to Porter’s definition<sup>8</sup>, a cluster is a geographical concentration of interconnected companies. It is necessary to indicate the geographical concentration of companies between which there are horizontal and vertical links; these companies cooperate and compete with each other within a specific market segment, use common local infrastructure and identify with the same vision of industry and regional development. Various authors have highlighted the geographical (spatial) aspects related to location.<sup>9</sup> Geographical proximity is necessary due to the mutual relations between the entities that form them. The benefits of functioning within a cluster stem mainly from the geographical proximity of a large group of independent entities, the accumulation of specific knowledge, highly-qualified employees, specialisation, ease of finding subcontractors and service providers, and the implementation of joint activities in certain areas.

It should be emphasised that the territorial paradigm shows that a diverse territory can be a source of innovation. Geographical proximity enables the exchange of human capital and unites entities in the region in terms of common culture and basic worldview and political principles, as well as knowledge of the area or industry in which the cluster operates. This facilitates the learning process and the transfer of knowledge between cluster members. The most important types of actors included in the cluster are industry enterprises, R&D institutions, intermediary institutions, and financial institutions. Often companies operating in a cluster decide to create a formal structure or institution to coordinate cooperation between them. The relationship between entities is a very important feature of a cluster. Maintaining the relationship by various entities within the cluster produces the so-called synergy effect, which means strengthening the effectiveness of each individual entity in the cluster and increasing their competitiveness when they act together – in the cluster – rather than as individual unrelated entities.

Companies in a cluster monitor each other’s activities and copy new and better solutions that they have observed. Being close both geographically and technologically,

---

7 Cf. Alfred Marshall, *Principles of Economics* (London: Macmillan, 1920).

8 Michael E. Porter, “Location, Competition and Economic Development: Local clusters in Global Economy,” *Economic Development Quarterly* 14 (2000), 1: 15–34.

9 Michael Enright, *Survey of the Characterization of Regional Clusters: Initial Results Working Paper* (Hong Kong: University of Hong Kong, Institute of Economic Policy and Business Strategy, 2000); Philip Cooke, “From Technopoles to Regional Innovation Systems: The Evolution of Localised Technology Development Policy,” *Canadian Journal of Regional Science* 24 (2001).

organisationally and institutionally is usually conducive to faster and more effective diffusion of innovation and knowledge.<sup>10</sup> Of significance for the essence of the functioning of the cluster structure is the role and relationship between the following factors:

- spatial concentration,
- geographical proximity,
- the systemic, networked nature of socially-rooted ties,
- cooperation, i.e., simultaneous competition and cooperation of economic entities,<sup>11</sup>
- long-term traditions of a given activity in a given location (so-called local or regional tradition heartland),
- an attractive market for specialised labour.<sup>12</sup>

Clusters as specific structures of relations may arise in virtually every sector of the economy – both in industry and services, in sectors of advanced technology as well as in sectors of traditional technology. They can be distinguished by varied levels of innovation and technological progress and at the same time they can use different strategies and differently shape the prospects of their own development.<sup>13</sup>

The cluster is a recognised instrument of regional development policy. The main objective of the cluster-based policy is to increase the level of competitiveness of the local, regional and national economy. This is to influence the growth of innovativeness of enterprises and improvement of their competitive position. Activities should focus on strengthening the competitive position of the cluster by directing the development and increasing the specialisation of cooperating enterprises and institutions to achieve economies of scale. In markets where network effects appear, clusters can count on the so-called benefits of the first move consisting in a quick reaction to the changing environment.<sup>14</sup>

10 Andre Torre, “On the role played by temporary geographical proximity in knowledge transmission,” *Regional Studies* 42 (2008): 869–889; Philipp Marek, and Mirko Titze, and Clemens Fuhrmeister, and Ulrich Blum, “R&D collaborations and the role of proximity,” *Regional Studies* 51 (2017), 12: 1761–1773.

11 Roman Chorób, “Koopetycja w innowacyjnych strukturach integracyjnych,” *Prace i Materiały Wydziału Zarządzania Uniwersytetu Gdańskiego, “Zarządzanie i Finanse”* (“*Journal of Management and Finance*”) 11, No. 1 (2013)1: 83–92.

12 *Kierunki i polityka rozwoju klastrów w Polsce* (Warszawa: Ministerstwo Gospodarki Departament Rozwoju Gospodarki, 2009).

13 Roman Chorób, “Strengths functioning cluster structures prerequisite for innovation and competitiveness of the economy,” *Zeszyty Naukowe Wyższej Szkoły Ekonomiczno-Społecznej w Ostrołęce* 4 (2015), 19: 74–82.

14 Agnieszka Budziewicz-Guźlecka, *Oddziaływanie polityki społeczno-gospodarczej na zmiany polskiego rynku usług telekomunikacyjnych* (Szczecin: Wydawnictwo Naukowe Uniwersytetu Szczecińskiego, 2019), 74.

## The benefits and advantages of functioning of innovative structures

Cluster structures due to the geographical proximity of many so-called key players stimulate and support innovation of economic entities. Moreover, a developing cluster is characterised by dynamic growth in the number of companies, which allows the creation of new, often valuable jobs. At the same time it should be emphasised that the functioning of the innovation cluster by external effects, such as technological expansion process, impacts on other branches of local or regional economy, leading to an increase in its international competitive position.<sup>15</sup>

The functioning of the cluster is associated with a number of potential internal effects – largely internalised by the entities of the cluster (e.g., lower production costs, lower transaction costs, the positive impact on productivity and profitability), as well as external effects – penetrating into the economic system in which a given cluster functions, e.g., an increase of competitive potential and investment attractiveness, positive impact on the level of economic development). Benefits and costs of the cluster structure should, generally speaking, be considered at the level of a company (micro level), industry (meso level) and the economy of the region / state (macro level).<sup>16</sup>

An advantageous influence of the cluster structures on the surrounding economy is connected with many diverse factors. A cluster is a place in resources of which there are special production factors. The most important among them are knowledge (and the innovations which are the results of it) and a high-quality human capital. For the development of the economy, those human resources are of key importance, which, due to their education, use scientific and technical knowledge and the ability to perceive the environment in creative work, development, dissemination and practical application.<sup>17</sup> Clusters positively influence the appearance of new economic entities in the region and the creation of the culture of innovation and entrepreneurship.

- 
- 15 Thomas Andersson, et al., 2004, *The Cluster Policies Whitebook, International Organization for Knowledge Economy and Enterprise Development (IKED)* (Malmö: IKED, 2004); Roman Chorób, "Współpraca podmiotów jako jedna z determinant ekspansji inicjatyw klastrowych," *Zeszyty Naukowe Wyższej Szkoły HUMANITAS XVII* (2016), 3: 27–38; Magdalena Kozak, "Klasy – wyzwanie dla rozwoju MŚP w Polsce," *e-mentor 1* (2009), 28: 12–16; Adam Oleksiuk, *Konkurencyjność regionów a parki technologiczne i klasy przemysłowe* (Bydgoszcz-Warszawa: Oficyna Wydawnicza Branta, 2009), 82; Agata Rundo, "Klasy jako model współpracy przedsiębiorstw," in: *Nowoczesne modele współpracy przedsiębiorstw*, eds. Agata Rundo, Marta Ziółkowska (Warszawa: CeDeWu, 2013), 57–58.
- 16 Tomasz Brodzicki, "Teoretyczne aspekty koncepcji klastra," in: *Klasy i polityka klastrowa w Polsce. Konkurencyjność przedsiębiorstw, sektorów i regionów*, eds. Tomasz Brodzicki, Joanna Kuczevska (Gdańsk: Wydawnictwo Uniwersytetu Gdańskiego, 2012), 17.
- 17 Agnieszka Budziewicz-Guźlecka, "Rozwój kapitału ludzkiego w województwie zachodniopomorskim w aspekcie gospodarki opartej na wiedzy," *Zeszyty Naukowe Uniwersytetu Szczecińskiego. Ekonomiczne Problemy Usług 840* (2014), 114: 30.

A cluster is an attractive place of localisation for the foreign direct investments (FDI) and an attractive labour market for the qualified workers which, additionally, increases its competitiveness.<sup>18</sup>

Business networking is not a task in itself, it is a means to achieve an end by achieving efficiency faster, for example in the form of better results in each area of cluster activity, for example by collaborating with others, using common creative potential and focusing on mutual benefits.<sup>19</sup>

The presence and activity of industrial centres bring three fundamental positive changes for the region in which the cluster is located:

1. Acceleration of the pace of economic growth – energetic clusters, becoming the engine of growth, contribute to the local GDP, the wealth of society, stimulate the economic situation.
2. Improvement of conditions for development of companies and enterprise – cluster companies have better access to knowledge and innovation, other companies providing specialised services, suppliers and all business facilities (such as consultancy, aid, law institutions), and even to a better labour market, now consisting of selected experts.
3. Increase of innovation – clusters favour innovation since they have the possibility of close and constant cooperation with the R & D sector; also important is the intra-cluster competition which forces levelling up and mobilises weaker participants of the relation to raise their level.<sup>20</sup>

The third of said effects is especially important since innovation is the key to success in the present increasingly-competitive market. Entities which have the courage to implement new technologies and apply solutions unknown so far quickly gain a competitive advantage and become the vanguard of business-setting trends and directions of development.

---

18 Dzierżanowski Maciej and Małgorzata Rybacka and Stanisław Szultka eds., *Rola klastrów w budowaniu gospodarki opartej na wiedzy* (Gdańsk-Szczecin: Urząd Marszałkowski Województwa Pomorskiego, 2011), 27–28; Roman Chorób, “Innovative integration relations opportunity for development of Polish agribusiness and increase competitiveness of the economy,” *Nierówności społeczne a wzrost gospodarczy. Social Inequalities and Economic Growth* 50 (2017), 2: 349–356.

19 Agnieszka Budziewicz-Guźlecka, Maciej Czaplewski and Anna Drab-Kurowska, *Integracja sektorowa wybranych europejskich rynków pocztowych i telekomunikacyjnych w warunkach globalizacji* (Kraków, Legionowo: edu-Libri, 2018), 10.

20 *Klastry – w kierunku konkurencyjności i rozwoju*, Polskie Stowarzyszenie Doradcze i Konsultingowe, accessed 10 April 2018, <http://www.biznesklaster.pl/company/article/179-klastry-w-kierunku-konkurencyjnosci-i-rozwoju/>.

## Development processes and examples of key cluster structures

Most of the definitions, including the ones quoted in the previous chapter, present static (structural) character of the cluster. However, some researchers (Rosenfeld, Motoyama, Stachowicz, Mrozowicz, Góra)<sup>21</sup> see the cluster as a dynamic form which is founded on relations and connections between its entities. They believe that the cluster should be regarded as a process. Thus, the cluster (industrial cluster) development process is understood as a set of resources and actions occurring from the moment of formation of the cluster structure to its bankruptcy or transformation.

Kazimierz Mrozowicz defines a cluster as a “process-determined structural-functional organizational system operating on the basis of administrative and legal rules in a certain socio-economic environment, whose effectiveness is conditioned by the impact of the external environment and the characteristics of its internal conditions, their mutual coincidence and interdependence, which in total are influenced by the general system processes, mainly: homeostasis, synergy, entropy, specialization and equivalence.”<sup>22</sup> Giving the fundamental importance to the dynamic functions realised within the cluster, the above-mentioned author proposes a model of cluster, showing in it the relations between the static elements of the discussed organisational structure and the dynamic processes realised within its organisational framework (Tab. 1).

In the current context, the competitiveness of the economy is increasingly based on research, development and innovation (R&D&I) and the ability to dynamically absorb or participate in the creation and development of new technologies. In order to address the above challenges, as demonstrated earlier, cooperation between stakeholders representing various environments, industries or technologies is crucial. Case studies show the multi-actor and multi-area nature of innovations and their dynamics. Innovation networks grow as innovation develops, becoming more complex with more participants; Therefore, cooperation between actors is of particular importance. The key to achieving this goal is clusters which, thanks to the naturally-established cooperation of enterprises, research institutions, business environment institutions,

21 Cf. Stuart A. Rosenfeld, “Bringing Business Clusters into the Mainstream of Economic Development,” *European Planning Studies* 5 (1997), 1; Yasuyuki Motoyama, “What Was New About the Cluster Theory?: What Could It Answer and What Could It Not Answer?” *Economic Development Quarterly* 22 (2008): 353 (originally published online 9 September 2008), accessed 15 December 2022, <http://edq.sagepub.com/content/22/4/353>; Jan Stachowicz, and Lilla Knop, “The concept of cluster creation and development,” in: *Cluster. Politics. Management. Good clustering practices in the world*, ed. Ewa Bojar (Lublin: Towarzystwo Naukowe Organizacji i Kierownictwa; Stowarzyszenie Wyższej Użyteczności “Dom Organizatora,” 2009), 63–81; Jolanta Góra, *Dynamika klastra: zarys teorii i metodyka badań* (Wrocław: I-BiS, 2008).

22 Kazimierz Mrozowicz, “Klastry przedsiębiorczości z perspektywy teorii organizacji,” *Nauka i Gospodarka* 1 (2010), 4: 65.



**Table 1.** Structural and functional attributes of the cluster

Structural attributes of the cluster (the cluster as organisational structure)	Functional attributes of the cluster (the cluster as organisational process)
<ul style="list-style-type: none"> <li>– government agencies, local government, authorities and administration of different levels,</li> <li>– universities, research and development centres, scientific institutes,</li> <li>– bridging institutions, business environment, consulting companies, business incubators, development agencies, technology transfer centres, industry associations,</li> <li>– financial, insurance, consulting, technical, legal institutions,</li> <li>– companies, manufacturers, suppliers, consignees, service providers, sales centres,</li> <li>– the infrastructure and industrial parks along with superstructure resources,</li> <li>– government programs, the EU programs,</li> <li>– the land use policy for a given administrative.</li> </ul>	<ul style="list-style-type: none"> <li>– generating and maintaining market advantage due to a consistent policy as a result of recognising and exploiting specific local resources,</li> <li>– aggregation of entities to the critical mass of the cluster,</li> <li>– local concentration of entities of the cluster,</li> <li>– cooperation and competition in the perspective of functional relations (formal and informal),</li> <li>– vertical and horizontal trans-sectoral networks of relations within the identical or related industries,</li> <li>– transfer of organisational resources (factors of production, knowledge, marketing strategy, etc.),</li> <li>– creating a climate of internal identity, organisational culture and ethical behaviour towards strategic partners and competitors,</li> <li>– creation and promotion of mainly local culture of entrepreneurship and innovation.</li> </ul>

Source: Kazimierz Mrozowicz, "Klasy przedsiębiorczości z perspektywy teorii organizacji," *Nauka i Gospodarka* 1 (2010), 4: 65.

non-governmental organisations and local authorities, are referred to as a catalyst for innovative processes.<sup>23</sup>

The maritime economy covers sectoral and cross-sectoral economic activities related to the oceans, seas and coastal areas, including direct and indirect support activities, which may be land-based, necessary for the functioning of the maritime economy sectors. Maritime economy includes organisations serving the environment through economic and organised use of the sea or coast. Maritime economy is an extremely important role for the national economy. In addition, for a region located in the coastal area, the development of this region is important due to the development of services, for example related to maritime transport, tourism, etc. The aspects of national security resulting from the location of the region are also important. An example of such organisations serving the region (but also the whole country) are clusters, and, more precisely, clusters bringing together entities related to maritime and maritime-related topics. The importance of clusters for the development of the maritime economy is extremely important, because the initiatives undertaken by clusters have a greater chance of being implemented,

23 Szczepan Figiel ed., *Uwarunkowania rozwoju i dyfuzji innowacji w sektorze rolno-spożywcym i na obszarach wiejskich* (Warszawa: IERiGŻ, PIB, 2016), 80; Sarama Maria and Roman Chorób, *Spoleczne i ekonomiczne aspekty transformacji cyfrowej w Polsce* (Rzeszów: Wydawnictwo Uniwersytetu Rzeszowskiego, 2021), 58; *Krajowe Klasy Kluczowe*, accessed 10 January 2023, <https://www.gov.pl/web/rozwoj-technologie/krajowe-klasy-kluczowe>.

as they have been analyzed by a larger number of organisations and the implemented ideas result from the synergy effect. It should be remembered that all cluster initiatives affect the development of the involved enterprises and contribute to the growth of socio-economic capital.

The Ministry of Development and Technology (MRiT) understands cluster policy as an important element of the state's coherent public policies, including education, industry, technology and innovation policies. In June 2020, the Ministry of Development and Technology developed a document entitled *Post-2020 Cluster Policy Directions*, summarising the work of the Ministry's Cluster Policy Working Group. The focus of activities implemented at the central level is to strengthen the concentration of efforts and resources on a specific group of National Key Clusters (NKC), identified through an open competition, defined as clusters of significant importance to the national economy and of high international competitiveness.<sup>24</sup>

The NCC selection system comprises an assessment of six areas of cluster operation: human and organisational resources, infrastructural and financial resources, economic potential of the cluster, knowledge creation and transfer, activities for public policies, customer orientation.<sup>25</sup> The above-mentioned areas are, in a way, a tool for assessing cluster development, as well as they indicate the direction of development of the country's cluster policy and the priorities of MRiT. The list of clusters that have the status of National Key Cluster (valid until a specific date) can be checked on the website of the Ministry.<sup>26</sup>

Currently, more and more attention is being paid to the green economy (e.g. green sea freight services<sup>27</sup>) and to a sustainable blue economy. A sustainable blue economy is any economic activity related to the oceans, seas, and coasts. It includes many interconnected established and emerging sectors.<sup>28</sup> In the EU, the blue economy is set to play an important role in achieving the objectives of the European Green Deal.

24 Ibidem.

25 Justyna Choińska-Jackiewicz et. al., *Kierunki rozwoju polityki klastrowej w Polsce po 2020 roku* (Warszawa: Ministerstwo Rozwoju, Departament Innowacji, 2020), 4.

26 *Lista Krajowych Klastrow Kluczowych*, accessed 20 January 2023, <https://www.gov.pl/web/rozwoj-technologie/lista-kkk>.

27 Agnieszka Budziewicz-Guźlecka and Anna Drab-Kurowska, "Selected aspects of corporate social responsibility in maritime freight services on the example of selected courier companies," *SHS Web Conf.* 58 (2018) 01003, DOI: 10.1051/shsconf/20185801003.

28 Dorota Pyć, "Paradygmaty zrównoważonego rozwoju gospodarki morskiej i niebieskiej gospodarki z perspektywy konwencji Narodów Zjednoczonych o prawie morza," *Prawo Morskie* 43 (2022): 25–42; Dorota Michalak and Paulina Szyja, "Czy w Polsce jest możliwa realizacja niebieskiej gospodarki?" *Ekonomia i Środowisko* 3 (2022): 74–96.

## Western Pomeranian Maritime Cluster and The West Pomeranian Maritime Cluster - case study

There are officially 15 clusters in the Zachodniopomorskie Voivodeship. The following clusters are engaged in maritime and offshore topics:

- Maritime Cluster of Western Pomerania – maritime economy, logistics.
- West Pomeranian Maritime Cluster - maritime economy, in particular the “offshore” industry and maritime construction.
- Cross-Border Waterway Cluster Berlin-Szczecin-Bałtyk – tourism.
- Polish Sailing Cluster – maritime economy, tourism.
- Baltic SeaNergy Cluster – renewable energy sources, tourism.

For the purposes of further analyses, the West Pomeranian Maritime Cluster and the West Pomeranian Maritime Cluster were selected. The choice of these two clusters was dictated by the fact that, in particular, these clusters are part of the maritime economy by their activity, corresponding at the same time to the issues raised in the study.

The West Pomeranian Maritime Cluster includes enterprises (60 entities), universities, high schools, vocational schools, school complexes, as well as business environment institutions. The West Pomeranian Maritime Cluster has the following strategic objectives:

- the construction of a thriving maritime economic centre, being also a high-tech logistics hub for the southern Baltic region,
- combining the tourist and recreational functions of the region with the development of maritime and transportation industries in a balanced way,
- promoting the region as a recognised training, research and development base for the needs of the international maritime economy,
- establishing a forum of maritime experts influencing the creation and revision of legislation and development plans for the region, the country and Europe.<sup>29</sup>

By providing financial incentives, the maritime cluster attracts businesses by creating either added value or new jobs. The strategic objectives in the West Pomeranian Maritime Cluster are pursued through, among other things:

- preparing and running joint research and development projects,
- commercialisation of scientific achievements,
- effective training of operational and management staff in response to the needs raised at the Cluster level,
- attracting compelling companies and young talent to the region,
- creating the Cluster’s brand, building the region’s brand,
- promoting companies operating within the Cluster as well as joint ventures,
- lobbying, co-creating the state’s maritime policy and its regulations.

---

29 *Klaster Morski Pomorza Zachodniego*, accessed 12 January 2023, <http://klastermorski.com/>.

A significant function of the Cluster in the above processes is to enable cooperation between entities that are both enterprises, universities and business environment institutions. To this end, the Cluster also undertakes a number of initiatives and activities aimed, among others, at developing common positions, presenting the potential of Cluster members and establishing cooperation between partners and other organisations related to the maritime economy. These activities are of particular importance in terms of strengthening cooperation between partners, which makes the Cluster play an important role in the process of creating an integrated maritime economy environment.<sup>30</sup>

Currently, the West Pomeranian Maritime Cluster Association has almost 91 members, including 68 supporting members (businesses and institutions, mainly related to the maritime industry and economy). The cluster brings together not only entities from the Zachodniopomorskie Voivodeship, but also those from the Pomorskie Voivodeship, Lubuskie Voivodeship and Silesia, which demonstrates that the Cluster is open to specialists. The aim of the Cluster is:<sup>31</sup>

- integrating the environment of West Pomeranian maritime enterprises and related companies, supporting economic development and entrepreneurship development.
- action to increase the innovative capacity of maritime enterprises operating in the Zachodniopomorskie Voivodeship;
- operations for the creation of an innovative maritime economy in Western Pomerania;
- ensuring the flow of information between cluster members to enable, among other things, the exchange of experience and joint action in selected areas;
- supporting the development of the maritime economy through the creation of a network of cooperation between businesses, local authorities, universities and business environment institutions;
- jointly creating Polish maritime policy with local authorities and state administration and working to ensure the consistency of Polish law with European legislation;
- information, education and lobbying activities to promote the Zachodniopomorskie Voivodeship as an attractive place for investors to engage in business;
- business consulting, developing innovative technologies, supporting economic initiatives aimed at increasing employment in the enterprise sector;
- creating conditions for effective commercialisation of research results of universities and R&D units;

30 Arkadiusz Marchewka, "Funkcjonowanie Klastra Morskiego Pomorza Zachodniego w procesie tworzenia zintegrowanego środowiska gospodarki morskiej," *Zeszyty Naukowe Uniwersytetu Szczecińskiego. Ekonomiczne Problemy Usług* 719 (2012), 94: 216.

31 *Statute of the West Pomeranian Maritime Cluster*, accessed 15 January 2023, <http://klastermorski.org/>.

- developing the professional qualifications and skills of workers to meet the needs of the regional economy;
- activity in European and global organisations, especially in the organisation of European clusters for the development of the maritime economy of West Pomerania.

It is worth noting that 15 projects of shipbuilding companies in the Zachodniopomorskie Voivodeship submitted as part of the following competition received funding from the European Union: Measure 1.5.<sup>32</sup> Projects of enterprises assuming the development of innovation and competitiveness of the shipbuilding industry.

At the end of 2021, the West Pomeranian Maritime Cluster initiated the creation and signing of the *Zachodniopomorskie Offshore 2027* program. The plan for the development of the “offshore wind sector” in the Zachodniopomorskie Voivodeship covers the years 2021–27, but envisages continuation until 2040. It includes several segments: offshore structures, vessels, transportation and logistics, service and repair, offshore energy, materials, education, and R&D&I. The objective is to create a West Pomeranian “offshore” environment – a networked system of links between local governments, Szczecin Metropolis Development Agency, business environment institutions, universities and companies interested in “offshore wind” activities.

For the entities of the West Pomeranian Maritime Cluster, the development of the “offshore” sector, including “offshore wind,” means not only the construction and installation of major structures at sea, but also the construction of specialised vessels or the construction of transmission grids and energy storage facilities.

### **Recommendations for the functioning of clusters related to the maritime economy based on empirical research and foreign example**

Interviews were conducted with experts and a foreign example was analysed to develop recommendations for the operation of clusters related to the maritime economy in the Zachodniopomorskie Voivodeship. The analysis was based on a survey conducted among maritime and cluster experts in the Zachodniopomorskie Voivodeship using the CATI methodology. Experts were interviewed as part of the survey. The research was conducted in January 2023 and 8 experts were surveyed. The selection of experts for the survey was carried out using the “snowball” method, i.e. experts invited to the survey designated further experts from the research area to participate

---

32 RPZP.01.05.00-IZ.00-32-008/19: 1.5. *Inwestycje przedsiębiorstw wspierające rozwój regionalnych specjalizacji oraz inteligentnych specjalizacji. Typ projektu: Innowacyjne inwestycje przedsiębiorstw, Projekty przedsiębiorstw zakładające rozwój innowacyjności i konkurencyjności przemysłu stoczniowego*, Regionalny Program Operacyjny Województwa Zachodniopomorskiego, accessed 20 January 2022, <https://rpo.wzp.pl/skorzystaj/nabory/15-inwestycje-przedsiębiorstw-wspierajace-rozwoj-regionalnych-specjalizacji-oraz-inteligentnych-specjalizacji-3>.

in the survey, until the target research group was reached. The resulting personal reflections made it possible to identify the most significant challenges faced by cluster members in functioning clusters.

The study was also aimed at developing recommendations for potential interested stakeholders, i.e., entities considering joining the cluster, organisations in cluster structures, or representatives of government organisations.

Due to the nature and limited volume of the article, only selected research results will be given in the following section. The research pointed out the following challenges – problems faced by members of clusters related to the maritime economy:

- certain entities belonging to clusters expect support of various kinds from the cluster, while not offering any commitment on their own part,
- uncertainty among cluster members to establish cooperation in the implementation of larger projects, such as those of an international nature,
- dominance of micro and small enterprises in the structure of business entities makes micro and small enterprises within the cluster become subcontractors of larger enterprises and are not interested in pursuing broader cooperation within the cluster,
- lack of strong ties in the cluster between entities, lack of identification of some entities with the cluster and lack of willingness to share experiences among cluster members.

The considerable number of clusters operating in Europe testifies to their significance for the activities of entities related to the maritime economy. The group of countries with the most extensive and efficient cluster policies (Austria, Germany, Norway, Denmark, Sweden, France, Spain, Canada) is largely regional. The greater capacity of regions to support clusters comes from the organisation of the socio-economic system.<sup>33</sup> Norway has a particularly high level of complementarity between national and regional cluster policies. In addition, it should be noted that the countries listed (with the strongest cluster policies) are among the most economically-developed countries, with companies and clusters of companies having high competitive potential – and yet they are taking additional measures under cluster policies to ensure that this potential and competitive advantage is maintained in foreign and global markets.

In Norway, planning and implementation of cluster policy is held “between” the central and regional levels – it is the responsibility of institutions operating at the interface between the two levels. The program board of *The Norwegian Innovation Clusters* comprises representatives from the business, scientific and research and regional communities, as well as members sourced from the three Managing Institutions.<sup>34</sup> The program board provides advice on strategic development, and also participates in the assessment

---

33 Justyna Choińska-Jackiewicz et. al., *Kierunki rozwoju polityki klastrowej w Polsce po 2020 roku* (Warszawa: Ministerstwo Rozwoju, Departament Innowacji, 2020), 16.

34 *Ibidem*, 19.

of projects submitted by clusters (both in terms of new projects and extensions of already existing support).

The Marine Recycling Cluster (MRC) is an example of a Norwegian cluster of 35 entities engaged in drone surveillance and marine biomonitoring, as well as cleanup and waste processing operations.<sup>35</sup> The cluster works out a complete value chain for marine waste mapping and analysis, waste cleanup and handling, as well as handling of discarded fishing gear. The cluster is also collaborating to find new and better solutions to protect the oceans from marine debris through innovation across the value chain. It deals with the training of volunteers in maritime operations and the provision of machinery and methods of treating collected marine debris. It cooperates not only with entities in Norway, but also abroad.

The Marine Recycling Cluster can be referred to as an example of a cluster with areas of good practice, namely: a complete value chain for marine cleaning and waste disposal in the context of environmental impact.<sup>36</sup> The good practice accounts for the identified need which is the high demand for products and services which can improve sea cleanup and prevent ocean pollution. The cluster seeks to pave the way to cleaner seas around the world through smart technologies and modern methods. The system of selection of cluster members, based on a well-defined value chain in the above area, may be considered particularly valuable. The selection of members is deliberate, based on merit, and each entity has a specific place in the value chain. The cluster keeps a high level of focus of its activity on the identified value chain, fostering the efficiency of the activities undertaken and strengthening cooperation between its members.

## Summary and Conclusions

The problems (challenges) faced by members of clusters related to the maritime economy, which stemmed from the study, and which were highlighted earlier, can be mitigated by proactive action on the part of the cluster coordinator. The role of the cluster coordinator should be emphasised, and it should exert authority, be willing and able to integrate an environment which is often in competition with each other in the maritime economy market. Cluster coordinators should decide whether their objective is to grow the cluster quantitatively in terms of the number of members or to make a more deliberate, purposeful selection of member entities so that they fit more closely into the cluster's well-defined value chains. In the latter case, we can use the Norwegian cluster operation model.

---

35 Marine Recycling Cluster, accessed 13 January 2023, <https://marinerecycling.no>.

36 Maciej Piotrowski, ed., *Benchmarking klastrów w Polsce – edycja 2020* (Warszawa: Polska Agencja Rozwoju Przedsiębiorczości, 2021), 138.

Members of a cluster should be aware that by operating in the cluster, individual small companies win the chance to authenticate their offerings, increase the recognition of the brand and its products. The symbiosis with larger cluster participants provides smaller entities with an opportunity to grow, including by becoming involved in the implementation of larger ventures and more complex projects, thereby gaining valuable experience, establishing business contacts and expanding their market share.

It should be emphasised that membership in clusters related to the maritime economy in the Zachodniopomorskie Voivodeship results in credibility, as the status of a cluster member is a guarantee of its trustworthiness as an entity applying for funds, initiating business cooperation, and as a provider of products or services.

In the coming years, the role and importance of clusters will increase, especially within EU development policy. The new approach is to be based on “economic ecosystems” connecting industry and service sectors and shared value chains. As a result, European companies are supposed to be more competitive, but also more independent from global suppliers. This represents an additional development opportunity for countries in the east of the European Union, especially a major economy like Poland.

The West Pomeranian Maritime Cluster, through its entry into the “offshore wind” sector in the Zachodniopomorskie Voivodeship, brings the opportunity to participate in a broad supply chain under the so-called “local content,” requiring Polish participation in the construction of farms inside the Polish economic zone, which is in line with EU development policy.

All these measures are particularly essential in terms of strengthening cooperation between partners, thus making the presented clusters related to the maritime economy in the Zachodniopomorskie Voivodeship play an important function in the process of creating an integrated maritime economy environment.

## BIBLIOGRAPHY

- Andersson, Thomas, Sylvia Schwaag-Serger, Jens Sörvik, and Emily Wise. *The Cluster Policies Whitebook, International Organization for Knowledge Economy and Enterprise Development (IKED)*. Malmö: IKED, 2004.
- Brodzicki, Tomasz. “Teoretyczne aspekty koncepcji klastra.” In: *Klasy i polityka klastrowa w Polsce. Konkurencyjność przedsiębiorstw, sektorów i regionów*, edited by Tomasz Brodzicki, and Kuczevska Joanna, 15–28. Gdańsk: Wydawnictwo Uniwersytetu Gdańskiego, 2012.
- Budziewicz-Guźlecka, Agnieszka. “Rozwój kapitału ludzkiego w województwie zachodniopomorskim w aspekcie gospodarki opartej na wiedzy.” *Zeszyty Naukowe Uniwersytetu Szczecińskiego. Ekonomiczne Problemy Usług* 840 (2014), 114: 29–44.



- Budziewicz-Guźlecka, Agnieszka. *Oddziaływanie polityki społeczno-gospodarczej na zmiany polskiego rynku usług telekomunikacyjnych*. Szczecin: Wydawnictwo Naukowe Uniwersytetu Szczecińskiego, 2019.
- Budziewicz-Guźlecka, Agnieszka, Maciej Czaplewski, and Anna Drab-Kurowska. *Integracja sektorowa wybranych europejskich rynków pocztowych i telekomunikacyjnych w warunkach globalizacji*. Kraków, Legionowo: edu-Libri, 2018.
- Budziewicz-Guźlecka, Agnieszka and Anna Drab-Kurowska. "Selected aspects of corporate social responsibility in maritime freight services on the example of selected courier companies." *SHS Web Conf.* 58 (2018) 01003. DOI: 10.1051/shsconf/20185801003.
- Choińska-Jackiewicz, Justyna, Beata Lubos, Marcin Łata, Marta Mackiewicz, and Agata Wancio. *Kierunki rozwoju polityki klastrowej w Polsce po 2020 roku*. Warszawa: Ministerstwo Rozwoju, Departament Innowacji, 2020.
- Chorób, Roman. "Koopetycja w innowacyjnych strukturach integracyjnych." *Prace i Materiały Wydziału Zarządzania Uniwersytetu Gdańskiego "Zarządzanie i Finanse" ("Journal of Management and Finance")* 11, No. 1 (2013) 1: 83–92.
- Chorób, Roman. "Strengths functioning cluster structures prerequisite for innovation and competitiveness of the economy." *Zeszyty Naukowe Wyższej Szkoły Ekonomiczno-Społecznej w Ostrołęce* 4 (2015), 19: 74–82.
- Chorób, Roman. "Współpraca podmiotów jako jedna z determinant ekspansji inicjatyw klastrowych." *Zeszyty Naukowe Wyższej Szkoły HUMANITAS*, XVII (2016), 3: 27–38.
- Chorób, Roman. "Innovative integration relations opportunity for development of Polish agribusiness and increase competitiveness of the economy." *Nierówności społeczne a wzrost gospodarczy. Social Inequalities and Economic Growth* 50 (2017), 2: 349–356. DOI: 10.15584/nsawg.2017.2.23.
- Cooke, Philip. "From Technopoles to Regional Innovation Systems: The Evolution of Localised Technology Development Policy." *Canadian Journal of Regional Science* 24 (2001): 21–40.
- Drab-Kurowska, Anna, and Agnieszka Budziewicz-Guźlecka. "The Digital Post Ecosystem - Example of Poland in the Context of Research." *Sustainability* 13 (2021), 5: 2550. DOI: 10.3390/su13052550.
- Dzierżanowski Maciej, Małgorzata Rybacka, and Stanisław Szultka, eds. *Rola klastrów w budowaniu gospodarki opartej na wiedzy*. Gdańsk-Szczecin: Urząd Marszałkowski Województwa Pomorskiego, 2011.
- Enright, Michael. *Survey of the Characterization of Regional Clusters: Initial Results Working Paper*. Hong Kong: University of Hong Kong, Institute of Economic Policy and Business Strategy, 2000.
- Figiel, Szczepan ed. *Uwarunkowania rozwoju i dyfuzji innowacji w sektorze rolno-spożywczym i na obszarach wiejskich*. Warszawa: IERiGŻ, PIB, 2016.

- Figiel, Szczepan, Dominika Kuberska, and Justyna Kufel. *Analiza uwarunkowań i stanu rozwoju klastrów rolno-żywnościowych w Polsce*. Warszawa: IERiGŻ, PIB, 2011.
- Figuła, Jerzy. *Dystrykty przemysłowe. Małe i średnie firmy włoskie w dobie globalizacji*. Polkowice: Dolnośląska Wyższa Szkoła Przedsiębiorczości i Techniki w Polkowicach, 2008.
- Góra, Jolanta. *Dynamika klastra: zarys teorii i metodyka badań*. Wrocław: I-BiS, 2008.
- Healey, Michael J., and Brian W. Illbery. *Location and Change: Perspectives on Economic Geography*. Oxford: Oxford University Press, 1990.
- Klaster Morski Pomorza Zachodniego. Accessed 12 January 2023. <http://klastermorski.com/>.
- Marine Recycling Cluster. Accessed 13 January 2023. <https://marinerecycling.no>.
- Kierunki i polityka rozwoju klastrów w Polsce*. Warszawa: Ministerstwo Gospodarki Departament Rozwoju Gospodarki, 2009.
- Klastry – w kierunku konkurencyjności i rozwoju*, Polskie Stowarzyszenie Doradcze i Konsultingowe. Accessed 10 April 2018. <http://www.biznesklaster.pl/company/article/179-klastery-w-kierunku-konkurencyjnosci-i-rozwoju/>.
- Kozak, Magdalena. “Klastry – wyzwanie dla rozwoju MŚP w Polsce.” *e-mentor* 1 (2009), 28: 12–16.
- Krajowe Klastry Kluczowe*. Accessed 10 January 2023. <https://www.gov.pl/web/rozwoj-technologie/krajowe-klastery-kluczowe>.
- Lista Krajowych Klastrów Kluczowych*. Accessed 20 January 2023. <https://www.gov.pl/web/rozwoj-technologie/lista-kkk>.
- Marchewka, Arkadiusz. “Funkcjonowanie Klastra Morskiego Pomorza Zachodniego w procesie tworzenia zintegrowanego środowiska gospodarki morskiej.” *Zeszyty Naukowe Uniwersytetu Szczecińskiego. Ekonomiczne Problemy Usług* 719 (2012), 94: 205–218.
- Marek, Philipp, Mirko Titze, Clemens Fuhrmeister, and Ulrich Blum. “R&D collaborations and the role of proximity.” *Regional Studies* 51 (2017), 12: 1761–1773. DOI: 10.1080/00343404.2016.1242718.
- Marshall, Alfred. *Principles of Economics*. London: Macmillan, 1920.
- Michalak, Dorota and Paulina Szyja. “Czy w Polsce jest możliwa realizacja niebieskiej gospodarki?” *Ekonomia i Środowisko* 3 (2022): 74–96.
- Motoyama, Yasuyuki. “What Was New About the Cluster Theory?: What Could It Answer and What Could It Not Answer?” *Economic Development Quarterly* 22 (2008): 353 (originally published online 9 September 2008). Accessed 15 December 2022. <http://edq.sagepub.com/content/22/4/353>.
- Mrozowicz, Kazimierz. “Klastry przedsiębiorczości z perspektywy teorii organizacji.” *Nauka i Gospodarka* 1 (2010), 4: 61–70.

- Oleksiuk, Adam. *Konkurencyjność regionów a parki technologiczne i klastry przemysłowe*. Bydgoszcz-Warszawa: Oficyna Wydawnicza Branta, 2009.
- Piotrowski, Maciej, ed. *Benchmarking klastrów w Polsce – edycja 2020*. Warszawa: Polska Agencja Rozwoju Przedsiębiorczości, 2021.
- Porter, Michael E. “Location, Competiton and Economic Development: Local clusters in Global Economy.” *Economic Development Quarterly* 14 (2000), 1: 15–34.
- Pyć, Dorota, “Paradygmaty zrównoważonego rozwoju gospodarki morskiej i niebieskiej gospodarki z perspektywy konwencji Narodów Zjednoczonych o prawie morza.” *Prawo Morskie* 43 (2022): 25–42.
- Rosenfeld, Stuart A. “Bringing Business Clusters into the Mainstream of Economic Development.” *European Planning Studies* 5 (1997), 1.
- RPZP.01.05.00-IZ.00-32-008/19: 1.5. *Inwestycje przedsiębiorstw wspierające rozwój regionalnych specjalizacji oraz inteligentnych specjalizacji. Typ projektu: Innowacyjne inwestycje przedsiębiorstw, Projekty przedsiębiorstw zakładające rozwój innowacyjności i konkurencyjności przemysłu stoczniowego*. Regionalny Program Operacyjny Województwa Zachodniopomorskiego. Accessed 20 January 2022. <https://rpo.wzp.pl/skorzystaj/nabory/15-inwestycje-przedsiębiorstw-wspierające-rozwoj-regionalnych-specjalizacji-oraz-inteligentnych-specjalizacji-3>.
- Rundo, Agata. “Klastry jako model współpracy przedsiębiorstw.” In: *Nowoczesne modele współpracy przedsiębiorstw*, edited by Agata Rundo, and Marta Ziółkowska, 47–76. Warszawa: CeDeWu, 2013.
- Sarama, Maria and Roman Chorób. *Społeczne i ekonomiczne aspekty transformacji cyfrowej w Polsce*. Rzeszów: Wydawnictwo Uniwersytetu Rzeszowskiego, 2021.
- Skawińska, Eulalia, and Romuald I. Zalewski, eds. *Klastry biznesowe w rozwoju konkurencyjności i innowacyjności regionów*. Świat-Europa-Polska. Warszawa: PWE, 2009.
- Stachowicz, Jan, and Knop, Lilla. “The concept of cluster creation and development.” In: *Cluster. Politics. Management. Good clustering practices in the world*, edited by Ewa Bojar, 63–81. Lublin, 2009.
- Statute of the West Pomeranian Maritime Cluster*. Accessed 15 January 2023. <http://klastermorski.org/>.
- Torre, Andre. “On the role played by temporary geographical proximity in knowledge transmission.” *Regional Studies* 42 (2008): 869–889.

## SUMMARY

The main objective of this study is to present the socio-territorial contexts related to the functioning of cluster structures. Clusters are the subject of the research, and the scope of the research covers examples of these structures operating in coastal areas. This issue is of particular importance for the maritime economy, which often struggles with barriers to the proper development of integration processes taking place in this sphere.

To specify the basic, cognitive purpose of the study, an in-depth query of the literature on the subject was used, as well as the results of own research. For this purpose, in January 2023, in-depth interviews were conducted among maritime economy experts and cluster experts (in the Zachodniopomorskie Voivodeship) using the CATI method. It has been proven that effective cooperation is conducive to the proper expansion of cluster structures, which in turn play a key role in the process of integrating the maritime economy environment.

## Aspekty społeczno-przestrzenne struktur klastrowych ze szczególnym uwzględnieniem gospodarki morskiej

**Słowa kluczowe:** struktury klastrowe, dyspersja przestrzenna, kooperacja, innowacyjność, konkurencyjność, gospodarka morską

## STRESZCZENIE

Podstawowym celem powyższego opracowania jest prezentacja kontekstów społeczno-terytorialnych związanych z funkcjonowaniem struktur klastrowych. Przedmiot badań stanowią klastry, a zakresem badań objęto przykłady tych struktur funkcjonujące na obszarach nadmorskich. Zagadnienie to ma szczególne znaczenie dla gospodarki morskiej, borykającej się częstokroć z barierami właściwego rozwoju procesów integracyjnych zachodzących w tej sferze.

Konkretyzując zasadniczy, poznawczy cel opracowania, wykorzystano pogłębioną kwerendę literatury przedmiotu, jak też posłużono się wynikami badań własnych. W tym celu w styczniu 2023 roku przeprowadzono wywiady pogłębione wśród ekspertów gospodarki morskiej oraz ekspertów z dziedziny klastrów (w województwie zachodniopomorskim) wykorzystując metodę CATI. Dowiedziono, że efektywna kooperacja sprzyja prawidłowej ekspansji struktur klastrowych, które z kolei odgrywają kluczową rolę w procesie integrowania środowiska gospodarki morskiej.

## Citation

Budziewicz-Guźlecka, Agnieszka, Chorób, Roman. "Socio-spatial aspects of cluster structures with particular emphasis on maritime economy." *Studia Maritima* 36 (2023): 199–218. DOI: 10.18276/sm.2023.36-05.