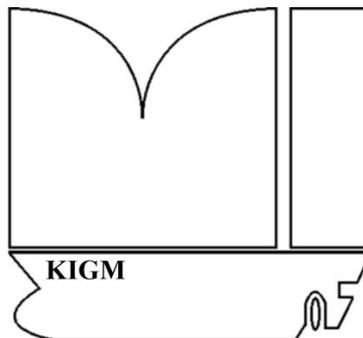




Linking maritime education with the changing job market for a new generation of Baltic Sea experts

Maritime and Inland Waterborne Economy

Sectors: Classifications, Value Added, Structures



Polish Chamber of Maritime Commerce

(Generation BALT working paper)

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Chapter 1 – Introduction

Foresight for the generations to come

This study is an input for the project - **Generation BALT. Linking maritime education with the changing job market for a new generation of Baltic Sea experts.**

First, from the perspective of the South Baltic Region the study will propose the notions and definitions of the maritime and inland waterborne economy, its quantitative and qualitative dimension and value.

On the basis of the resulting synthesis, tailored-made activities could be planned, fitting to the needs of the labour market. Chosen segments of the SB maritime economy will be thoroughly analyzed, and foresight of future trends will be made.

Virtual power

The European Union is one of the global maritime players (huge Exclusive Economic Zones, 40% of the world tonnage, important ship owners in all the businesses, major shipbuilding with high added value, mighty offshore industry, oceanographic research etc.) but this power remains virtual and cannot be really organized as long as it has not been identified¹.

Incomparable statistic data

There is not one sectoral (NACE) classification which grasps all maritime sector. It means that in many cases no uniform data are collected centrally, hence making this sub-sector much harder to monitor than ship construction. Different definitions are used in different sources making it difficult to arrive at “hard” estimations².

Incomparable administration structures

Additionally the administration structures of maritime and inland waters affairs in EU member countries and public statistics are incomparable.

Underestimation of inland waters

The land-locked countries have significant water surfaces and river network. They have a long tradition in inland aquaculture (lakes, ponds, rivers) which they also use for non-productive functions like flood prevention, water retention, landscaping and rural development. They produce together around 40.000 tons of fish (3% of the EU

¹ Mr. Fabrice Maire, vice-president of The European Network of Maritime Clusters at Lisbon Atlantic Conference – November 29th 2011

² Study on Competitiveness of the European Shipbuilding Industry. Within the Framework Contract of Sectoral Competitiveness Studies – ENTR/06/054, Final report, Client: Directorate-General Enterprise & Industry, Rotterdam, 8 October 2009

production). A serious effort must be made to reduce administrative obstacles as well as to promote permitting and spatial planning taking into account environmental constraints.

Leading thesis

- Thesis 1.** There are no natural barriers between „salt” and „sweet” waters. There are only natural obstacles
- Thesis 2.** To the natural obstacles people added barriers of the incomparable administration and statistics
- Thesis 3.** Maritime and inland waters affairs are the part of the whole administrative area affairs
- Thesis 4.** Maritime and inland waters affairs concern economic and none-economic activities
- Thesis 5.** Economic activities related to the oceans, seas, inland waters environment create Gross (Net) Value Added as a part of GDP
- Thesis 6.** None-economic activities (science, education, seminars) add value
- Thesis 7.** Economic activities related to the oceans, seas, inland waters environment belong to the maritime and inland waterborne economy
- Thesis 8.** Economic activities related to the oceans, seas, inland waters environment should be classified and codified in the public statistics
- Thesis 9.** Economic activities related to the oceans, seas, inland waters environment create logistic Value Added Chain
- Thesis 10.** The Gross Maritime and Inland Waterborne Economy Product is a part of the Gross Domestic Product
- Thesis 11.** The maritime and inland waterborne economy is a part of the whole economy
- Thesis 12.** The maritime and inland waterborne economy is analyzed by the Maritime Economics
- Thesis 13.** Three starting points have been identified in view to bring order and to establish commonly acceptable economic and statistic system of the maritime and inland waterborne economy

Chapter 2 – Maritime and Inland Waterborne Economy distinctive features

The concept of the MARITIME AND INLAND WATERBORNE ECONOMY originates from the definition of ECONOMY as a whole: **economy**, it is a system of activities and effects which deals with **production, manufacture, distribution** and **consumption** of goods and services.

Since Maritime and Inland Waterborne Economy possesses its own and the same attributes as a whole economy, the notion could be defined as follows³:

a system of the economic activities and effects which deals with: production, manufacture, distribution and consumption of goods and provision of services connected with the oceans, seas, inland waters environment and its nature capital⁴.

The oceans, seas, and inland waters as the **scarce** public goods should be protected against unsustainable human economic activity in the field of the Maritime and Inland Waterborne Economy. The Maritime and Inland Waterborne Economy concept is convergent to the Directive 2000/60/EC in the field of water policy, where the water management concerns the “area of land and sea, made up of one or more neighbouring river basins together with their associated groundwaters and coastal waters”

2.1. Categorization and classification of the maritime and inland waterborne activities

The economic activities composing the Maritime and Inland Waterborne Economy are measured by the whole economy common qualitative indexes, e.g. Gross (Net) Added Value, work units, and their own set of the qualitative, e.g.: turn-over, tons,

³ See NACE Rev.2.page 53 Glossary: **Production**: Production is an activity resulting in a product. It is used with reference to the whole range of economic activities. The term is not reserved for the agricultural, mining or manufacturing sectors. It is also used in relation to the services sector. More specific terms may be used to denote production: provision of services, processing, manufacturing, etc., depending on the branch of activity. Production may be measured in various ways either in physical terms or by value. **Value added**: The gross value added at basic price is defined as the difference between output at basic prices and intermediate consumption at purchaser's prices.

⁴ Definition: Waławik-Narbutt W.: *Zdefiniowanie pojęcia Gospodarki Morskiej, klasyfikacja statystyczna wszystkich gospodarczych działalności morskich i metody obliczania Wskaźnika Wartości Dodanej Brutto w celu analizowania wartości dodanej brutto Gospodarki Morskiej i jej udziału w Produkcje Regionalnym/Krajowym Brutto*, Szczecin 2008

freights, DWT, BRT, import/export, tons-km, and the quantitative indexes, e.g. CGRT in shipbuilding

The economic activities composing the Maritime and Inland Waterborne Economy are offered in the market by the natural and social sciences economic activities generated from: e.g. Archaeology, Anthropology, Astronomy, Biology, Chemistry, Earth science, Economics, Education, Environmental studies, Geography, History, Law, Linguistics, Management, Medicine, Microbiology, Physics, Politics, Public administration, Psychology, Sociology, Zoology and the cross-disciplines

The economic activities composing the Maritime and Inland Waterborne Economy of production, manufacture, distribution and consumption of goods and services out of the indicated by EUROSTAT six branches: (1) Agriculture, hunting and fishing, (2) Business activities and financial services, (3) Construction, (4) Industry, (5) Trade, transport and communication services and (6) other services, form the seventh branch of national economies.

The economic activities composing The Maritime and Inland Waterborne Economy of production, manufacture, distribution and consumption of goods and provision of services should be as a starting point, identified and classified in accordance with the appendix III of the UE Directorate-General for Maritime Affairs and Fisheries (DG Mare) “Study on the drivers for sustainable growth from the oceans, seas, coastal regions and maritime sectors”.

The necessity of having one commonly accepted definition of maritime and inland water-borne economy and full classification and codification of all its economic activities is supported in Poland by: Gdansk University - Chair of Geography, Gdynia Maritime University, Szczecin Maritime University, Baltic Academy of Skills, E. Kwiatkowski University of Business and Administration in Gdynia, Actia Forum Ltd Gdynia, University of Lower Silesia, Wrocław, Sea Sciences Research Committee Gdynia, Maritime and River League Gdynia, Maritime Commission of Civic Platform Gdynia, Polish Chamber of Maritime Commerce Gdynia, Sea Fisheries Institute - National Research Institute Gdynia, Morski Wortal Ltd. Szczecin, Maritime Experts Association Szczecin, Association of Towns Highway Amber Gdynia, Association of Short Distance Shipping Promotion Szczecin, Pomeranian Maritime and Vistula River Catchment Basin Association, Gdynia, Westpomeranian Maritime Cluster Szczecin, Office of the Marshal of Pomorskie Voivodeship Gdańsk, Administration of Inland Shipping Wrocław, Union of Agents and Shipowners Representatives Gdynia, Union of Polish Shipowners Szczecin, Union of Towns and Municipalities Gdańsk, Union of Polish Inland Shipowners Szczecin.

Abroad, this worked up the interest by EU GD Mare, Marine South East Cluster Southampton Great Britain and Observatoire de Versailles Saint-Quentin Université de Versailles Saint-Quentin-en-Yvelines, France.

2.2. Adding value

The economic activities create Gross (Net) Value Added and non-economic activities add value.

The (gross, net) value added of economic activities it is a difference between the value of a firm's (industry) output (i.e. the total revenues received from selling that output) and the costs of the inputs of raw materials, components or services bought in to produce that output from: production, manufacture, distribution and consumption of the Maritime and Inland Waterborne Economy

The Gross Value Added Index of the Maritime and Inland Waterborne economic activities equals to the Gross Maritime and Inland Waterborne Economy Product and its share in the Gross Domestic Product on: sectorial/regional/domestic/European, global levels

The efficiency of the Maritime and Inland Waterborne Economy is based on the competitiveness of all economic, supported by the non economic activities, being the parts of the value added chain and cooperation within clusters, hubs, and networks on the different territorial levels

The Maritime and Inland Waterborne Economy is subject to the to the common spatial planning.

The Maritime and Inland Waterborne Economy at the central and regional levels should be managed by the Main Unit for Management which is identified under Article 3(1) of the Directive 2000/60/EC in the field of water policy.

The Maritime and Inland Waterborne Economy economic and non economic activities should have the complete public statistical picture, useful for the administrator, businessman, researcher, scientist, producer, manufacturer, distributor, and consumer of goods and services

2.3. Natural Capital Value

The deep-sea contains a wealth of largely undiscovered forms of life with so far unknown genetic composition and functioning (life without photosynthesis, survival in extreme conditions with regard to temperatures and pressure) and holds unique biological and chemical processes. Marine resources could be used for or inspire blue biotech developments with applications in pharmaceuticals and cosmetics, in food production and processing, in biotechnology (e.g. permeable or adhesive tissues) or in bio-engineering/bionics (e.g. sharkskin coating). Assessing the economic value of biodiversity and realising this value in a sustainable way are among the key challenges.

In contrast to depleting land-based deposits of minerals, the oceans contain huge stocks of raw materials and minerals including iron ore, tin, copper, manganese, gold, diamonds, sulphides, phosphorites, diamonds, lime, siliceous sand and gravel alongside with energy sources (oil, gas, methane hydrates). Rare metals such as gallium, neodymium, indium, lithium, niobium and tantalum may be of particular interest due to their strategic importance in high-tech applications. Key issues of their future exploitability pertain to of the increased scarcity and prices of land based resources, to the concentration, location and cost of commercial exploitation of sea based resources, and to the ability to manage the environmental impacts to ensure sustainability.

Already in 2006 The Institute of Oceanology of Polish Academy of Science in Sopot, Poland started the researching and published one of the first studies: *Basis for a valuation of the Polish Exclusive Economic Zone of the Baltic Sea: Rationale and quest for tools*⁵.

⁵ OCEANOLOGIA, 48 (1), 2006. pp. 145–167. _C 2006, by Institute of Oceanology PAS



Chapter 3 – Classification of maritime economic activities

3.1. Public Statistic Data, Classification and Codification

Public Statistic Data Eurostat Nace Rev.2

NACE is the acronym (is derived from the French title “Nomenclature générale des Activités économiques dans les Communautés Européennes”, Statistical classification of economic activities in the European Communities). used to designate the various statistical classifications of economic activities developed since 1970 in the European Union. NACE provides the framework for collecting and presenting a large range of statistical data according to economic activity in the fields of economic statistics (e.g. production, employment, national accounts) and in other statistical domains.

An economic activity takes place when resources such as capital goods, labour, manufacturing techniques or intermediary products are combined to produce specific goods or services. Thus, an economic activity is characterized by an input of resources, a production process and an output of products (goods or services).

The principal activity of a statistical unit is the activity which contributes most to the total value added of that unit.

The international family of economic and social classifications is made up of classifications registered in the United Nations Inventory of Classifications, reviewed and approved as guidelines by the United Nations Statistical Commission or other competent intergovernmental boards on such matters as economics, demographics, labour, health, education, social welfare, geography, environment, time use and tourism.⁶

Therefore for our purposes Eurostat NACE Revision 2 enables grouping of activities linked to the environment of oceans, seas, inland waters. As a logic consequence these activities will be selected out of the following NACE Rev. 2 Sections from A till U:

A Agriculture, forestry and fishing, B Mining and quarrying, CA Manufacture of food products, beverages and tobacco products, CB Manufacture of textiles, apparel, leather and related products, CC Manufacture of wood and paper products, and printing, CD Manufacture of coke, and refined petroleum products, CE Manufacture of chemicals and chemical products, CF Manufacture of pharmaceuticals, medicinal chemical and botanical products, CG Manufacture of rubber and plastics products, and other non-metallic mineral products, CH Manufacture of basic metals and fabricated metal products, except machinery and equipment, CI Manufacture of computer, electronic

⁶ NACE Rev. 2, Statistical classification of economic activities in the European Community, “Eurostat Methodologies and Working Papers”, European Communities, Luxembourg 2008 (Eurostat NACE Rev.2), page 39

and optical products, CJ Manufacture of electrical equipment, CK Manufacture of machinery and equipment, CL Manufacture of transport equipment, CM Other manufacturing, and repair and installation of machinery and equipment and petroleum products, D Electricity, gas, steam and air-conditioning supply, E Water supply, sewerage, waste management and remediation, F Construction, G Wholesale and retail trade, repair of motor vehicles and motorcycles, H Transportation and storage, I Accommodation and food service activities, JA Publishing, audiovisual and broadcasting activities, JB Telecommunications, JC IT and other information services, K Financial and insurance activities, L Real estate activities, MA Legal, accounting, management, architecture, engineering, technical testing and analysis, MB Scientific research and development, MC Other professional, scientific and technical activities, N Administrative and support service activities, O Public administration and defence, compulsory social security, P Education, QA Human health services, QB Residential care and social work activities, R Arts, entertainment and recreation, S Other services, T Activities of households as employers; undifferentiated goods- and services-producing, U Activities of extra-territorial organizations and bodies ⁷

Structure and coding of NACE

The structure of NACE is described in the NACE Regulation as follows:

- i. a first level consisting of headings identified by an alphabetical code (sections)
- ii. a second level consisting of headings identified by a two-digit numerical code (divisions),
- iii. a third level consisting of headings identified by a three-digit numerical code (groups),
- iv. a fourth level consisting of headings identified by a four-digit numerical code (classes).

The code for the section level is not integrated in the NACE code that identifies the division, the group and the class describing a specific activity. For example, the activity “Manufacture of glues” is identified by the code 20.52, where 20 is the code for the division, 20.5 is the code for the group and 20.52 is the code of the class; section C, to which this class belongs, does not appear in the code itself.

The divisions are coded consecutively. However, some “gaps” have been provided to allow the introduction of additional divisions without a complete change of the NACE coding. These gaps have been introduced in sections that are most likely to prompt the need for additional divisions. For this purpose, the following division code numbers have been left unused in NACE Rev. 2: 04, 34, 40, 44, 48, 54, 57, 67, 76, 83 and 89.

In cases where a given level of the classification is not divided further down in the classification, “0” is used in the code position for the next more detailed level. For example, the code for the class “Veterinary activities” is 75.00 because the division

⁷ Eurostat NACE Rev.2. pages 91 – 314

“Veterinary activities” (code 75) is divided neither into groups nor into classes. The class “Manufacture of beer” is coded as 11.05 since the division “Manufacture of beverages” (code 11) is not divided into several groups but the group “Manufacture of beverages” (code 11.0) is divided into classes.

Whenever possible, residual groups or classes of the type “others” and/or “n.e.c. (not elsewhere classified)” are characterized by the digit 9 (for instance group 08.9 “Mining and quarrying n.e.c.” and class 08.99 “Other mining and quarrying n.e.c.”).

3.2. EU DG Mare proposal

Maritime economic activities are important for Europe, notably for its coastal regions, which are home to about 40% of the EU population. These regions account for a production value of some € 450 billion. In view of the current economic, financial and social crisis, seriously affecting the maritime sectors, there is a need to prepare for the post-crisis period and explore new growth potentials.

In this context, Commission President Barroso called for boosting new sources of growth, employment and social cohesion in inter alia the maritime sector⁸.

The European Commission, under its Integrated Maritime Policy (IMP)⁹, intends to identify the future potential of cutting-edge technologies and services for marine and maritime applications and innovative uses of marine and coastal resources as drivers for innovation, competitiveness and, ultimately, growth and jobs and social cohesion, in established, emerging and prospective sectors.

EU GD Mare in its "Scenarios and drivers for sustainable growth from the oceans, seas and coasts"¹⁰ suggests sectors and sub-sectors in 5 areas, which we treat as the starting point for classification and codification purposes:

Maritime sectors should be understood as industrial or service-related activities that either directly or indirectly produce economic or non-economic value from use of the sea or sea resources.

Area 1: Maritime sectors as defined in annex III of the study on the Economic Impact of Maritime Industries in Europe.¹¹ This list needs to be updated by the contractor as part of work package 1, in order to include new and future uses, examples of which have been given above.

Area 2: Activities generated from coast and sea-related recreation and tourism, including the following types of activities: hotels and restaurants, tour operators and tourist assistance, real estate, amusement parks, leisure services (e.g. cruising, boat trips, rental of sports equipment, outdoor activities and guided

⁸ Barroso, J.M., Political Guidelines for the next Commission, 3 September 2009

⁹ For comprehensive information on the IMP, please refer to http://ec.europa.eu/maritimeaffairs/index_en.html

¹⁰ Open call for tenders No MARE/2010/01

¹¹ Attached as a technical annex to the specifications

visits), museums, preservation of historical sites and promotion of maritime heritage on land and afloat, and health/well-being.

Area 3: Fisheries exploitation of living sea resources and related activities.

Area 4: Exploitation of living and non-living resources on the basis of extracting and/or processing natural resources from the sea. Such activities would include, beyond the scope of the study on Economic Impact of Maritime Industries in Europe, the extraction, processing or recreation of sea resources for a variety of uses, such as energy generation, food for human or animal consumption, non-food usages in e.g. engineering, cosmetics or medicinal purposes.

Area 5: Other (economic) activities related to the oceans and seas that can contribute to sustainable growth and employment in maritime sectors or coastal regions, or to the well-being of Europeans in coastal regions. This concerns in particular enabling knowledge and data generation and services.

The above list of areas with maritime activities is not necessarily exhaustive. If deemed appropriate, in light of future potentials for sustainable jobs and growth, the contractor should suggest further areas of sea-related activities.

Areas of marine and maritime research relevant for IMP have been exemplified in the European Strategy for Marine and Maritime Research¹² and should serve as a general reference for enabling technologies. They include:

- Climate change and the oceans impact of human activities on coastal and marine ecosystems and their management
- Ecosystem approach to resource management and spatial planning
- Marine biodiversity and its economic value in the future
- Biotechnology
- Continental margins and deep sea
- Marine and maritime technology
- Operational oceanography
- Exploration and exploitation of marine traditional and renewable energy resources
- Marine Bionics

Potentials of extreme technologies for use in deep sea or ice, and technologies covering key future challenges which potentially could find solutions from the seas or related to the seas, such as mobility, health, food security, in particular vitamins and proteins, need to be covered.

Out of these sectors the concrete economic activities should be named, classified and codified. The rules of Eurostat Nace Rev. 2. will serve this purpose.

¹² A European Strategy for Marine and Maritime Research A coherent European Research Area framework in support of a sustainable use of oceans and seas [COM\(2008\) 534 final of 03.09.2008](#)

Table 1. Maritime sectors (DG Mare proposal)

No.	Sector	Subsector	Definition
1	Shipping		Merchant shipping & ship management; Short-sea shipping; Chartering-out; Cruise & ferry services; Ocean towage
2	Shipbuilding	Seagoing vessels	Merchant ships; Fishing boats; Ocean-going tugs, workboats, supply ships <i>etc.</i> ; Floating sections
		Repair & conversion	Repair & Conversion of seagoing vessels
		Naval ships	Newbuilding & repair of naval ships
		Inland vessels	Inland barges; Inland & harbour tugs; Inland workboats, supply ships <i>etc.</i> ; Repair; Floating sections; Dry docks
		Scrapping	All shipscrapping (and recycling)
3	Offshore supply		Seismic research; Construction, installation and conversion of platforms, storage vessels & equipment; Drilling; Offshore-related transport, engineering, communication, consultancy & other support
4	Inland shipping		Inland shipping & ship management; Chartering-out; Inland cruises & ferries; Harbour & river towage; Freightage (<i>Note: no inland terminals</i>)
5	Maritime works	Cables & pipelines	Nautical cable & pipeline works for offshore, telecommunications <i>etc.</i>
		Dredging & other works	Dredging; River works; Construction of dykes, harbours & canals; Support vessels; Sand transport
6	Seaports & related services		Cargo-handling ; Shipping related storage, agency, maritime logistics & expedition; Port authorities; Pilotage
7	Fishing		Maritime fishing; Professional inland fishing; Shellfish production
8	Recreation	Recreational vessels	Yacht construction; Sporting, sailing & rowing boats; Canoes; Inflatable boats; Repair; Floating sections
		Recreational services	Yacht chartering & renting; Marinas; Inland yacht-basins; Supporting services concerning the construction of & trade in recreational vessels; Yachting-related training & trade
9	Maritime services	R&D & Education	Research & development; Consultancy; Nautical training & education
		Classification & inspection	Classification societies; Sampling; Laboratories
		Support services	Bunkering; Ship supply; Rescue; Diving; Maritime insurance, financing, brokerage, law & medical services; Crewing; Maritime associations; Maritime government services
10	Maritime equipment		Manufacturing of & wholesale trade in maritime equipment

Source: “Study on the drivers for sustainable growth from the oceans, seas, coastal regions and maritime sectors”, Appendix III, DG Mare,

3.3. Proposal of the economic activities classification

Economic activities connected with oceans, seas and inland waters environment are proposed to be classified in relation to DG Mare sectors and Eurostat Nace Rev.2.

Down below there are enumerated the proposed names of the economic activities connected with oceans, seas and inland waters environment, which, if agreed between all stakeholders could compose the contents of the public statistic.

These economic activities connected with oceans, seas and inland waters environment would be classified to the respective: Section, Group and receive Eurostat NACE Rev.2. codes.

These economic activities connected with oceans, seas and inland waters environment belong to the two areas: (1) performance (distribution, consumption) of services and (2) production / manufacturing of goods.

3.3.1. Area of Services

Sector Agriculture, Forestry and Fishing (NACE Section A)

- 1) Services of fishing on a commercial basis in ocean and coastal waters
- 2) Services of taking of marine crustaceans and mollusks
- 3) Services of whale catching
- 4) Services of taking of marine aquatic animals: turtles, sea squirts, tunicates, sea urchins
- 5) Services of vessels engaged both in marine fishing and in processing and preserving of fish
- 6) Services of gathering of other marine organisms and materials: natural pearls, sponges, coral and algae
- 7) Services of fishing on a commercial basis in inland waters
- 8) Services of taking of freshwater crustaceans and mollusks
- 9) Services of taking of freshwater aquatic animals
- 10) Services of gathering of freshwater materials
- 11) Services of marine aquaculture: fish farming in sea water including
- 12) Services of farming of marine ornamental fish
- 13) Services of production of bivalve spat (oyster mussel etc.), lobsterlings, shrimp post-larvae, fish fry and fingerlings, growing of laver and other edible seaweeds, culture of crustaceans, bivalves, other molluscs and other aquatic animals in sea water
- 14) Services of aquaculture activities in brackish waters
- 15) Services of aquaculture activities in salt water filled tanks and reservoirs
- 16) Services of operation of fish hatcheries (marine)
- 17) Services of operation of marine worm farms
- 18) Services of freshwater aquaculture: fish farming in freshwater including farming of freshwater ornamental fish
- 19) Services of culture of freshwater crustaceans, bivalves, other molluscs and other aquatic animals
- 20) Services of operation of fish hatcheries (freshwater)
- 21) Services of farming of frogs

Sector Water supply; Sewerage, Waste Management and Remediation Activities (NACE Section E)

- 22) Services of desalting of sea or ground water to produce water
- 23) Services of dismantling of wrecks of ships, for materials recovery

- 24) Services of cleaning up oil spills and other pollutions on land, in surface water, in ocean and seas, including coastal areas

Sector Mining and Quarrying (NACE Section B)

- 25) Services supporting activities for petroleum and natural gas extraction: exploration services, geological observations at prospective sites, directional drilling repairing and dismantling; cementing oil and gas well casings; pumping of wells; oil and gas field fire fighting services

Sector Administrative and Support Service Activities (NACE Section N)

- 26) Services of the central administration
- 27) Services of administration, supervision and operation of military defence of sea
- 28) Services of military logistics, administration of defence-related research and development policies and related funds
- 29) Services of the regional administration and government
- 30) Services of the regional administration and government in spatial planning
- 31) Services of the regional administration and government in integrated maritime management
- 32) Services of the regional administration and government in national and international cooperation
- 33) Services of the regional administration and government in the public cabotage
- 34) Services of police forces supported by public authorities and of port, border, coastguards and other special police forces
- 35) Services of fire fighting and fire prevention
- 36) Services of employment placement agencies

Sector Other Service Activities (NACE Section S)

- 37) Services of membership organizations
- 38) Services of trade unions
- 39) Services of political parties

Sector of Real Estate Activities (NACE Section L)

- 40) Services of renting real estate
- 41) Services of operating of self-owned or leased real estate
- 42) Services of the provision of real estate activities by real estate agencies

Sector of Professional, Scientific and Technical Activities (NACE M)

- 43) Services against weeds
- 44) Services of mining engineering
- 45) Services of sanitary and pollution control engineering
- 46) Services of geophysical, geologic and seismic surveying, geodetic surveying activities
- 47) Services of spatial information archives
- 48) Services of legal representation of one party's interest against another party
- 49) Services of legal activities: advice and representation in civil cases, in criminal cases, in connection with labour disputes
- 50) Services of general counselling and advising
- 51) Services of preparation of legal documents: articles of incorporation, partnership agreements or similar documents in connection with company
- 52) Services of formation patents and copyrights
- 53) Services of preparation of deeds, wills, trusts, civil law notaries, bailiffs, arbitrators, examiners and referees, auditing of accounting records, preparing financial statements and bookkeeping
- 54) Services of overseeing and managing of other units of the company or enterprise
- 55) Services of management consultancy

- 56) Services of public relations and communication activities
- 57) Services of business and other management consultancy activities
- 58) Services of building inspection and surveying
- 59) Services of clusters, networking organizations (new)
- 60) Services of performance of physical, chemical and other analytical testing of all types of materials and products
- 61) Services of providing in natural sciences and engineering; social sciences and the humanities 1) basic research: experimental development on natural sciences and engineering or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without particular application or use in view
- 62) Services of providing in natural sciences and engineering; social sciences and the humanities 2) applied research: original investigation undertaken in order to acquire new knowledge, directed primarily towards a specific practical aim or objective
- 63) Services of providing in natural sciences and engineering; social sciences and the humanities 3) experimental development: systematic work, directed to producing new materials, products and devices, to installing new processes, systems and services, and to improving substantially those already produced or installed
- 64) Services of research and experimental development on biotechnology
- 65) Services of interdisciplinary research and development, predominantly on social sciences and humanities
- 66) Services of translation and interpretation activities
- 67) Services of weather forecasting activities
- 68) Services of environmental consulting
- 69) Services of quantity surveyors
- 70) Services of investigation into market potential
- 71) Services of consultancy
- 72) Services of fashion design related jewellery
- 73) Services of industrial design

Sector of Transportation and Storage (NACE Section H)

- 74) Service of transport of passengers on vessels on sea or coastal waters
- 75) Service of transport of passengers on vessels on great lakes
- 76) Service of transport of passengers cruise or sightseeing boats, operation of ferries, water taxis
- 77) Service of renting of pleasure boats with crew for sea and coastal water transport (e.g. for fishing cruises)
- 78) Service of transport of freight over seas and coastal waters:
 - General cargo:
 - a. Containers
 - b. Other general cargo
 - Break bulk cargo:
 - a. Iron ore
 - b. Coal
 - c. Mineral oil
 - d. Gas
 - e. Other break bulk
- 79) Service of freight towing or pushing of barges, oil rigs
- 80) Service of time charters
- 81) Service of transport of passengers on inland vessels
- 82) Service of transport of passengers via rivers, canals, lakes and other inland waterways, including inside harbours and ports
- 83) Service of time charters

- 84) Service of transport of freight over inland waters: rivers, canals, lakes including inside harbours and ports:
 General cargo:
 a. Containers
 b. Other general cargo
 Break bulk cargo:
 a. Iron ore
 b. Coal
 c. Mineral oil
 d. Gas
 e. Other break bulk
- 85) Service of time charter
- 86) Services of operation of storage and warehouse facilities for all kinds of goods
- 87) Services of operation of grain silos
- 88) Services of operation of refrigerated warehouses
- 89) Services of operation of . storage of goods in foreign trade zones
- 90) Services of the sea port internal rail and road transportation
- 91) Services of the inland ports rail and road transportation
- 92) Services of operation of logistics centre (new)
- 93) Services of operation of terminal facilities such as harbours and piers
- 94) Services of operation of waterway locks
- 95) Services of operation of pilotage and berthing activities
- 96) Services of operation of lighterage, salvage activities, lighthouse activities
- 97) Services of loading and unloading of goods
 General cargo: (n.e.o)
 a. Containers
 b. Other general cargo
 Break bulk cargo: (n.e.o)
 a. Iron ore
 b. Coal
 c. Mineral oil
 d. Gas
 e. Other break bulk
- 98) Services of attending passengers
- 99) Services of freight contract:
 a. Booking
 b. Chartering
- 100) Services of issue and procurement of transport documents and waybills
- 101) Services of sea-freight forwarders agents
- 102) Services of brokerage for ship space
- 103) Services of customs agents
- 104) Services of ship register
- 105) Services of uncrating, sampling, weighing of goods
- 106) Services of dredging
- 107) Services of ship -chandler

Sector of Arts, Entertainment and Recreation (NACE Section R)

- 108) Services of libraries, archives
- 109) Services of museums
- 110) Services of botanical and zoological gardens and nature reserves

Sector of Education (NACE Section P)



- 111) Services of pre-primary education
- 112) Services of primary education
- 113) Services of secondary education
- 114) Services of technical and vocational secondary education
- 115) Services of higher education
- 116) Services of post-secondary non-tertiary education
- 117) Services of tertiary education
- 118) Services of sports and recreation education
- 119) Services of cultural education
- 120) Services of sailing, shipping schools

Sector of Financial and Insurance Activities (NACE Section K)

- 121) Services of financial activities
- 122) Services of provision of insurance: accident and fire insurance, health insurance, travel insurance, property insurance, motor
- 123) Services of provision of marine insurance
- 124) Services of provision of transport insurance
- 125) Services of provision reinsurance activities underwritten by other insurance carriers
- 126) Services of assessing and settling insurance claims: claims adjusting, risk assessing, risk and damage evaluation, average and loss adjusting, settling insurance claims
- 127) Services of insurance agents and brokers

Sector of Wholesale and retail trade (NACE Section G)

- 128) Services of agents involved in the sale of ships
- 129) Services of whole and retail sale of fish, other seafood and products thereof
- 130) Services of whole and retail sale of sporting equipment in specialized stores
- 131) Services of whole and retail sale of fishing gear, boats

Sector of Administrative and Support Service Activities (NACE Section N)

- 132) Services of renting and leasing of tangible and non-financial intangible assets
- 133) Services of renting of recreational and sports equipment:- pleasure boats, canoes, sailboats
- 134) Services of renting and leasing of water transport equipment
- 135) Services of renting and operational leasing, without operator: mining and oilfield equipment
- 136) Services of renting of containers
- 137) Services of renting of pallets
- 138) Services leasing of intellectual property products (except copyrighted works, such as books or software)
- 139) Services of travel agency
- 140) Services of tour operator
- 141) Services of cleaning of the inside of road and sea tankers
- 142) Services of disinfecting and exterminating activities for ships
- 143) Services of planting, care and maintenance of: stationary and flowing water (basins, alternating wet areas, ponds, swimming pools, ditches, watercourses, plant sewage systems)
- 144) Services of organization, promotion and/or management of events, such as business and trade shows, conventions, conferences and meetings

Sector of Accommodation and Food Service Activities (NACE Section I)

- 145) Services of hotels and similar accommodation

Sector of Information and Communication (NACE Section J)

- 146) Services of publishing of books, periodicals and other publishing activities
- 147) Services of publishing on-line statistics and other information
- 148) Services of motion picture, video and television programme production
- 149) Services of radio broadcasting
- 150) Services of television broadcasting
- 151) Services of wired telecommunications activities
- 152) Services of wireless telecommunications activities
- 153) Services of satellite telecommunications activities
- 154) Services of data processing, hosting and related activities
- 155) Services of Web portals
- 156) Services of news syndicates and news agencies

Sector of Real Estate Activities (NACE Section L)

- 157) Services of renting real estate
- 158) Services of operating of self-owned or leased real estate
- 159) Services of the provision of real estate activities by real estate agencies

Sector Human Health and Social Work Activities (NACE Section Q)

- 160) Services of hospitals

Sector Public Administration and Defence (NACE O)

- 161) Services of administration of defence-related research and development policies and related funds

Sector Activities of Households as Employers; Undifferentiated Goods- and Services-producing activities of Households for own use (NACE Section T)

Not applicable

Sector Activities of Extraterritorial Organizations and Bodies (NACE Section U)

- 162) Services of maritime and inland water international organizations

3.3.2. Area of Production / Manufacturing

Sector Mining and Quarrying (NACE Section B)

- 163) The extraction of solid minerals (coal and ores)
- 164) The extraction of liquids minerals (petroleum)
- 165) The extraction of liquids minerals (natural gas)
- 166) Drilling, completing and equipping wells;
- 167) Operating separators, emulsion breakers
- 168) Desalting equipment and field gathering lines for crude petroleum
- 169) Other activities in the preparation of oil and gas up to the point of shipment from the producing property.

Sector Manufacturing (NACE Section C)

- 170) Preparation and preservation of fish, crustaceans and molluscs:
- 171) Freezing, deep-freezing, drying, cooking, smoking, salting, immersing in brine, canning etc.
- 172) Production of fish, crustacean and mollusc products: fish fillets, roes, caviar, caviar substitutes etc.
- 173) Production of fishmeal for human consumption or animal feed
- 174) Production of meals and solubles from fish and other aquatic animals unfit for human consumption

- 175) Activities of vessels engaged only in the processing and preserving of fish
- 176) Processing of seaweed
- 177) Extraction of fish and marine mammal oils
- 178) Manufacture of fish dishes, including fish and chips, manufacture of local and national dishes
- 179) Manufacture of transport containers
- 180) Ship propellers and blades thereof, anchors, manufacture of sports goods
- 181) Manufacture of meteorological instruments, manufacture of tally counters, manufacture of mine detectors, navigation, aeronautical, and nautical equipment, including sonobuoys, manufacture of radar equipment
- 182) Manufacture of marine engines, manufacture of turbines and parts thereof: waterwheels and regulators thereof
- 183) Manufacture of wind turbines
- 184) Manufacture of hand-operated or power-driven lifting, handling, loading or unloading machinery: pulley tackle and hoists, winches, capstans and jacks, derricks, cranes, mobile lifting frames, straddle carriers etc.
- 185) Manufacturing of works trucks and industrial robots specifically designed for lifting, handling, loading or unloading, manufacture of conveyors, teleferics etc.
- 186) Manufacture of parts specialized for lifting and handling equipment
- 187) Manufacture of floating cranes
- 188) Manufacture of personal watercraft, manufacture of other pleasure and sporting boats: canoes, kayaks, rowing boats, skiffs
- 189) Manufacture of mechanical and electromechanical signalling, safety and traffic control equipment for inland waterways
- 190) Manufacture of sections for ships and floating structures
- 191) Building of commercial vessels: passenger vessels, ferry boats, cargo ships, tankers, tugs etc
- 192) Building of warships
- 193) Building of fishing boats and fish-processing factory vessels
- 194) Building of sailboats with or without auxiliary motor
- 195) Building of motor boats
- 196) Building of recreation-type hovercraft
- 197) Construction of floating structures
- 198) Construction of drilling platforms, floating or submersible
- 199) Construction of floating structures: floating docks, pontoons, coffer-dams, floating landing stages, buoys, floating tanks, barges, lighters, floating cranes, non-recreational inflatable rafts etc.
- 200) Construction of all types of non-residential buildings for industrial production, e.g. factories, workshops, assembly plants etc. office buildings, indoor sports facilities, warehouses, remodelling or renovating existing residential structures
- 201) Construction of bridges, tunnels
- 202) Construction of civil engineering constructions for: water main and line construction, irrigation systems (canals), reservoirs,
- 203) Construction of: sewer systems, including repair, sewage disposal plants, pumping stations, water well drilling
- 204) Construction of water projects:
 - A. Construction of: waterways
 - B. Construction of harbour
 - C. Construction and river works
 - D. Construction of pleasure ports (marinas)
 - E. Construction of locks, etc. dams and dykes
 - F. dredging of waterways
- 205) Repair of metal tanks, reservoirs and containers

- 206) Repair and maintenance of lifting and handling equipment
- 207) Repair and maintenance of mining, construction, and oil and gas field machinery
- 208) Repair and routine maintenance of ships
- 209) Repair and maintenance of pleasure boats
- 210) Repair of fishing nets, including mending, repair or ropes, riggings, canvas and tarpaulins

3.4. The International Maritime Statistics Forum

The International Maritime Statistics Forum (IMSF) has been in existence since the early 1970s' and was started by an informal coalition of statisticians in international maritime-related institutions. Its objective is "to promote harmonization and improvement in quality and scope of statistics within the international maritime industries, by means of ongoing work programmes and by affiliation with prominent national and international maritime institutions".

IMSF members have organizational ties to government, trade associations, port authorities, shipbrokers, carriers, data providers, universities, research and other international organizations generally interested in the subject of maritime statistics.

The full membership is invited to meet annually to exchange ideas and share the results of their work in relevant areas; smaller groups liaise as required, often on a regional basis, to work on special projects of mutual interest. Recent annual meetings have been held in Naples, Washington, London, Gothenburg Singapore and Gdansk.

The IMSF is responsible for developing a number of recognized standards which have been, or are in the process of being, adopted by governments and international bodies including the European Commission and United Nations. Current projects include the development of a variable, to be incorporated into leading vessel databases, indicating the country obtaining primary economic benefit from the operation of individual ships.

From Poland Maritime Institute of Gdansk and Pomeranian Maritime and Vistula River Catchment Basin Cluster Association Gdynia are the members of the International Maritime Statistics Forum.

The other members are:

- from Australia: Independent Maritime Consultant, Belgium: European Commission DGTREN, European Community Shipowners Association (ECSA),
- Canada: Statistics Canada, Transport Canada,
- Chile: CEPAL,
- China: COSCO,
- Denmark: BIMCO Danish Maritime, Danish Maritime Authority, MAN Diesel,
- Finland: Finnish Maritime Administration, Wartsila Corporation,
- France: ECOMAR , L. J. Hockley & Co. Ltd,
- Germany: Germanischer Lloyd, Institute of Shipping Economics & Logistics,

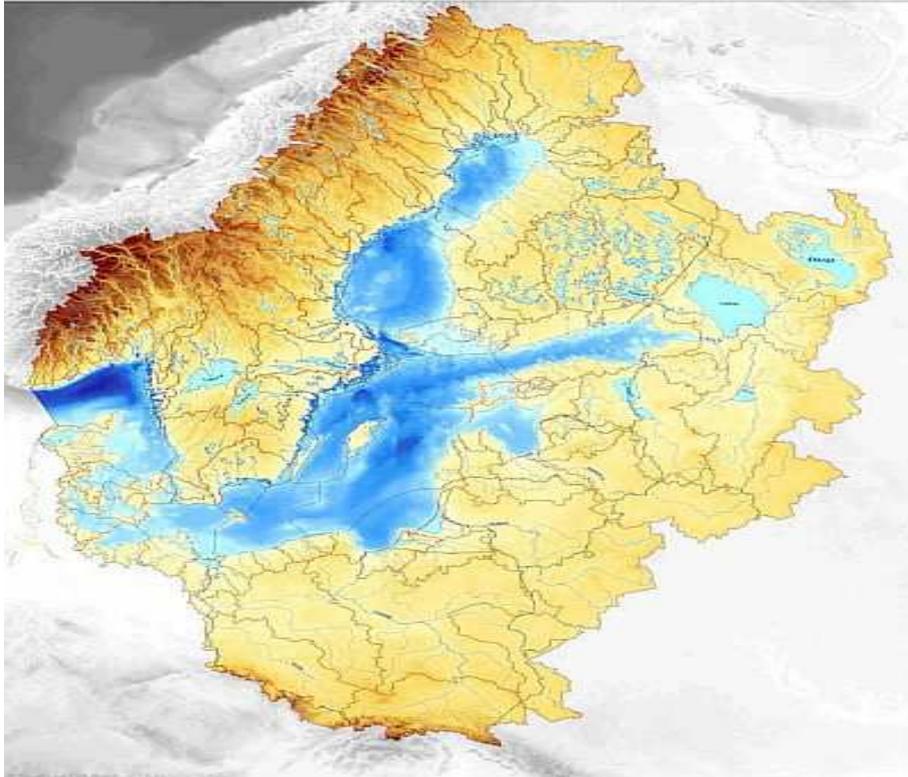
- Greece: Port of Thessaloniki, University of Piraeus,
- Luxemburg: EUROSTAT,
- Norway: Det Norske Veritas, Norwegian School of Economics and Business Administration, The Nordic Association of Marine Insurers (Cefor),
- Portugal: EMSA (European Maritime Safety Agency),
- Singapore: Seatrade Asia, South Africa: Ports Regulator of South Africa,
- Spain: Universidad de Valencia,
- Sweden: LRF Research Sweden,
- Switzerland: Federal Maritime Commission,
- The Netherlands: Dynamar, Braemar, Seascope Ltd, Departament for Transport (DFT), E A Gibsons, Intercargo, INTERTANKO,
- United Kingdom: Intertanko, IUMI, Lloyd's Marine Intelligence Unit, Lloyds Register of Shipping, Lloyd's Register-Fairplay Ltd. LMIU London Metropolitan University, SSY Consultancy & Research Ltd, Warsash Maritime Academy of Southampton, United States: Global Trade Information Services, Inc , MARAD (US Maritime Administration), R K Johns & Associates, US Army Corps of Engineers, Wales: Cardiff Business School

3.5. Public Statistic Data, Classification and Codification – Baltic Sea Region example

The new methodology would be useful for sectorial and regional purposes, e. g. for The Baltic Sea Region and Catchment Basin of 14 countries: Belarus, Czech, Denmark, Estonia, Finland, Germany, Lithuania, Latvia, Norway, Poland, Russia, Slovakia, Sweden and Ukraine.

The Baltic Sea and Catchment Basin is a large heterogeneous region. Together it covers an area of over 2000 000 km², shared by 14 countries (Belarus, Czech Republic, Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Norway, Poland, Russia, Slovakia, Sweden and Ukraine) and home to about 84 million people.

Figure 1. Baltic Drainage Basin



Source: <http://www.baltex-research.eu/>

There are 14 larger international river basins, covering a total area of 1 050 000km²: Klarälven-Trysilelva/Göta Älv, Indalsälven, Torne River, Kemijoki, Vuoksi/Lake Ladoga-Neva River, Narva River/Lake Peipsi, Gauja, Daugava, Lielupe, Venta, Nemunas, Vistula, Pregola and Oder.

The surface covers about 17% of Europe. Here there is circa 15% of global industry production and 20% of trade. There are also the abundance of lakes.

Baltic Sea Region and Catchment Basin Economy is a system of the economic activities and effects which deals with: production, manufacture, distribution and consumption of goods and provision of services connected with the Baltic Sea and inland waters environment. Its nature capital, and value of economic activities related to this economy remain unknown, and statistically incomplete.

EU ocean and seas basins strategies for: Atlantic Ocean, Arctic Ocean, Black Sea, Mediterranean Sea, North Sea also do not dispose of commonly accepted definitions, classifications, codification and value of the economic activities which occur in their regions.

Therefore, the realization of presented concept in this study would resolve problem, to the benefit of the people living and working in whole European area.

Chapter 4 – Gross Value Added of Maritime and Inland Waterborne Economy

4.1. Gross Value Added – definitions

GDP definition

Gross Domestic Product (GDP) is an integral part of the national accounts and provides a measure of the total economic activity in a region. GDP is often referred to as one of the main 'summary indicators' of economic activity and references to 'growth in the economy' are quoting the growth in GDP during the latest quarter.

GDP from the output or production approach - GDP(O) measures the sum of the value added created through the production of goods and services within the economy (our production or output as an economy). This approach provides the first estimate of GDP and can be used to show how much different industries (for example, maritime and inland waterborne) contribute within the economy.

What is Gross Value Added (GVA)?

GVA measures the contribution to the economy of each individual producer, industry or sector.

What is it used for?

GVA is used in the estimation of Gross Domestic Product (GDP). GDP is a key indicator of the state of the whole economy. There are three theoretical approaches used to estimate GDP: 'production', 'income' and 'expenditure'. When using the production or income approaches, the contribution to the economy of each industry or sector is measured using GVA.

What is the 'income' approach to estimating GDP?

The income approach to estimating GDP measures the incomes earned by individuals (e.g. wages) and corporations (e.g. profits) in the production of outputs (goods or services).

What is the 'production' approach to estimating GDP?

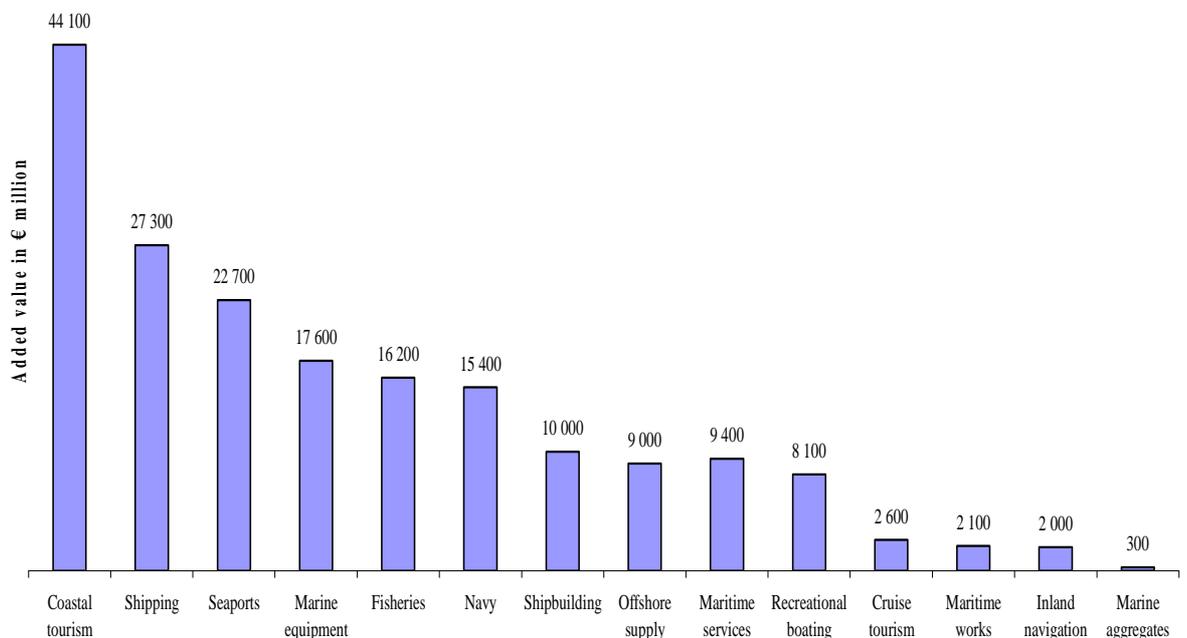
The 'production' approach to estimating GDP looks at the contribution of each economic unit by estimating the value of an output (goods or services) less the value of inputs used in that output's production process.

How does GVA relate to GDP?

The link between GVA and GDP can be defined as: GVA (at current basic prices; available by industry only) plus taxes on products (available at whole economy level only) less subsidies on products (available at whole economy level only) equals GDP (at current market prices; available at whole economy level only) or, in summary:

$$\text{GVA} + \text{taxes on products} - \text{subsidies on products} = \text{GDP}$$

Figure 2. Maritime sectors' value added - EU-27 countries plus Norway



Source: P. O'Riordan, European Commission Enterprise and Industry, "Maritime Clusters in Landlocked Countries", Prague Conference 27 April 2009

4.2. Value Added Chains

Value added chain a chain of vertically linked activities that each add value in producing and distributing a product. Depending on the nature of the product, the value added chain may involve a large number of vertical linked activities or only a few.

In many cases firms will choose to embrace a number of "stages" in the value-added chain as part of vertically integrated operations in order to reduce costs.

Analyzing Value Added Chain we should remember that also non – economic activities (e.g. government, high school) takes part in the value chain as the total cost of production of non – economic activities (e.g. wages)

4.3. Gross Value Added in relation to Gross Domestic Product

Examples:

Spain

The analysis of the maritime sector’s impact reveals that it contributes directly to the Spanish economy with an effective output of 51.164 billion euros and 26.245 billion euros of GVA, employing 456,000 people for the purpose. These figures constitute the maritime sector’s direct effect on the Spanish economy. In order to achieve these figures, the sectors involved needed to employ 500,000 people.

France

Table 2. Contribution of the maritime sector to the French economy

Sector of activity	Directly supported jobs	Output (billions of euros)	“In a nutshell...”
Merchant fleet	19,500	14*(a)	More than 300 million tonnes of goods and 12 million passengers carried per year.
Ports	40,000	4.5	41% of total external trade (by volume).
Shipbuilding and marine equipment suppliers	40,000	5	Positioning on high value-added vessels (cruise ships, stealth vessels...).
Offshore service and supply	29,000	9.4*	Oil and gas extraction in depths up to 2,000m.
Yachting industry	40,500	4	9 million pleasure craft registered.
Fishing and seafood products**	56,957	6.9*(b)	7,389 boats 664,740 tonnes of products sold.
Government Action at Sea	50,000	4.3	275 people rescued 6558 vessels inspected at sea 7220 kg of narcotics seized
Research Institutes	3,608	0.4	From clusters to deep-ocean.
Organisations and training	6,000	0.6	CCreation of the Ecole Nationale Supérieure Maritime and several maritime MBAs
Other activities**	10,500	2	Acknowledged experts in classification, certification, law, advice, administration, management...
Maritime administrations (Department of Maritime Affairs, ...)	3,800		The civil service working for the benefit of the sea and maritime industries.
Total (approx.)	300,000	51.0*	

*total including cross-sector purchases - **including figures not covered by full-time equivalent jobs and the value of production of emerging activities (EMR, etc.).
Base 2009 except (a) = 2010 and (b) = 2008

Source: Le Cluster Maritime Français

United Kingdom

A special study for Maritime UK¹³ was made as far as maritime services are concerned. There, it is an indication of The Gross Value Added: This report¹⁴, prepared on behalf of Maritime UK1, assesses the economic impact of the UK maritime services sector, here defined to include the ports, shipping and maritime services sectors. It therefore excludes sectors such as North Sea oil and gas extraction, the manufacture of marine equipment and the naval defence industry. The maritime services directly create 227,000 jobs or 0.8% of total UK employment. This figure implies that the industry was a larger employer than, for example, either the accountancy or general medical practice industries, contribute £13.1 billion to UK GDP on this basis, that the maritime services sector made a direct £13.1 billion value-added contribution to GDP or 0.9% of the UK total.

This comprehensive assessment and definition of the maritime sector (Table 4), has been produced in conjunction with, and with the agreement of all the principal organizations involved in researching the broad range of industries and activities which make up the sector. The data has been collated from a variety of sources, including published reports on aspects of the maritime economy and sector-specific information. Where estimations have been made, these have the endorsement of the respective professional body.

The Gross Value Added data are not totally trustworthy, so The British Maritime Cluster (Sea Vision) uses turnover data (Table 3) to show its importance to the British economy.

¹³ Maritime UK is an overarching body comprising the Baltic Exchange, the British Ports Association, the Chamber of Shipping, the Institute of Chartered Shipbrokers, Maritime London, the Passenger Shipping Association and the UK Major Ports Group.

¹⁴ A report: The Economic Impact of The UK'S Maritime Services Sectors, prepared for Maritime UK April 2011 by Oxford Economics

Table 3. Turnover and employment of the British maritime sector

Sector	Turnover (£bn)		Employment	
	2001	2007	2001	2007
Oil & Gas	9.20	4.00	25,500	20,000
Shipping	5.12	10.8	31,500	38,400
Manufacturing	5.20	3.87	40,600	51,000
<i>Shipbuilding</i>	2.54	1.95	24,000	25,000
<i>Marine Equipment</i>	2.66	1.92	16,600	46,000
Maritime Services	4.54	3.01	13,800	14,100
Ports	1.69	19.40	25,000	138,000
Defence/Naval	6.66	8.19	61,500	74,760
Leisure Marine	1.61	2.95	26,378	35,680
Renewable Energy		0.67		600
Construction		0.59		6,200
Decommissioning Platforms/Rigs		0.08		1,200
Other	2.82	2.45	30,460	30,833
<i>Telecommunications</i>	0.50			
<i>Research & development</i>	0.61	0.80	8,040	10,360
<i>New technologies</i>	0.23			
<i>Education & training</i>	0.14	0.07	1,100	350
<i>Ocean survey</i>	0.10	0.10		
<i>Navigation & safety</i>	0.32	0.45	4,200	5,000
<i>Aggregates</i>			2,000	1,670
<i>Fisheries</i>	0.92	1.02	15,120	13,453
TOTAL	36.84	56	254,738	410,773

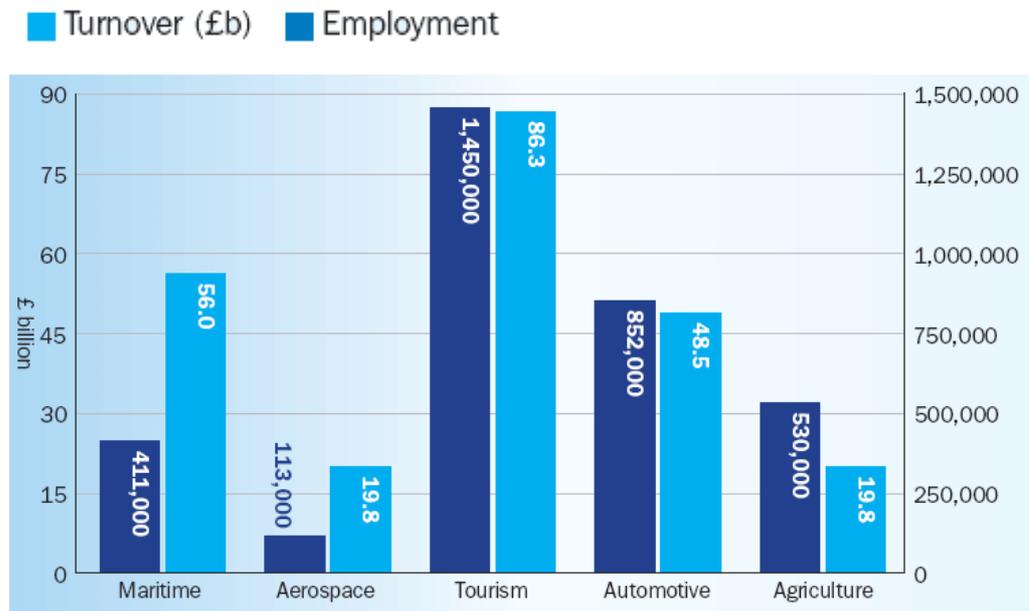
Source: Sea Vision of UK, http://www.seavisionuk.org/facts_&_figures.cfm
[access: 2011, Dec. 10th]

Table 4. Names of maritime sector in UK

Definitions	
Oil & Gas	Maritime services utilised in the exploration, development and exploitation of offshore oil and gas fields.
Shipping	Shipping services utilised in the carriage of goods and passengers and the chartering of vessels.
Shipbuilding	Construction and repair of commercial (non-leisure) and naval ships and other marine structures.
Maritime services	Maritime-related business services provided by the 'City'.
Ports	Loading, unloading and other handling of marine cargoes.
Defence/Naval	Military and civilian operations of the Royal Navy including foreign ship sales.
Leisure Marine	All leisure activities including boat building and equipment provision excluded above.
Renewable energy	Energy generated from natural sources – such as sunlight, wind, rain and tides – which is renewable (naturally replenished).
Telecommunications	The manufacture, surveying and laying of submarine telecommunication cables.
Research & development	University, public sector and industry involvement in maritime R&D.
New technologies	Include underwater unmanned vehicles, marine biotechnology and marine software.
Education & training	Marine courses in the higher education sector and seafarer/offshore industry based training.
Ocean survey	Ocean surveys primarily for hydrographic and extractive industry purposes.
Safety & salvage	Public and private sector activities related to maritime safety and salvage.
Minerals & aggregates	Shipping services utilised in the offshore extraction of minerals and aggregates (other than employment this is all covered in shipping above).
Fisheries	Sea finfish and shellfish landings and fish farming activities.

Source: Sea Vision of UK, http://www.seavisionuk.org/facts_&_figures.cfm
[access: 2011, Dec. 10th]

Figure 3. Comparison of the maritime sector with other leading sectors



Source: Sea Vision of UK, http://www.seavisionuk.org/facts_&_figures.cfm [access: 2011, Dec. 10th] on a basis of data of Oxford Economics, Crown Estates, Douglas-Westwood Associates, British Marine Federation.

The whole UK maritime sector directly employs over 410,000 people (and at least that many indirectly). It is a £56 billion turnover sector, bigger than automotive and more than double the size.

The maritime services sector made a larger contribution to UK GDP than both the civil engineering and electricity distribution industries and generates £3.1 billion for the UK Exchequer (or 0.6% of total government revenue) through a combination of taxes paid by both employees and firms in the industry. The industry also supports considerable activity in other sectors, which, in turn, have their own suppliers (some of whom will be based in the UK) and so on.

In addition, people employed by the maritime services sector and its suppliers will spend their wages on other goods and services in the UK economy. Such effects are typically referred to as the indirect and induced impacts. In total, including indirect and induced effects, it supported 531,000 jobs (or 1.8% of total employment) and contributed £26.5 billion to UK GDP including direct, indirect and induced impacts. Moreover, once these multiplier effects are accounted for, the sector makes a value added contribution of £26.5 billion (1.9% of total) to UK GDP and generated £7.8 billion (or 1.6% of total government revenue) for the UK Exchequer¹⁵

Also in case of The United Kingdom there is a lack of full statistical data as far as the Gross Value Added is concerned. Therefore the presented analyze is useful but can be treated as only the estimation

¹⁵ All figures presented refer to calendar year 2009. Not all figures may sum due to rounding effects.

4.4. Value Added of Maritime Sectors

Some efforts to estimate Value Added in European maritime economy was undertaken in 2008¹⁶. The research and report distinguished area of (1) “traditional maritime sectors” and “other”, including areas of (2) coastal (and marine) tourism and recreation and (3) Fisheries. It’s not clear, if the research took under account next two areas¹⁷:

- Exploitation of non-living sea resources,
- Other economic activities related to the oceans and seas that contribute to the well being of Europeans.

The classification of maritime Areas and sectors used the following definitions¹⁸:

Area 1: Traditional maritime sectors (alphabetical order):

- *Inland navigation*: Inland shipping and ship management; chartering-out; inland cruises and ferries; harbour and river towage; freighting;
- *Marine aggregates*: Exploitation of marine aggregates;
- *Marine equipment*: Manufacturing and wholesale trade in maritime equipment for all maritime (sub-)sectors (no building, repair and/or conversion and no offshore supply);
- *Maritime services*: Research and development; education; classification and inspection; bunkering; maritime insurance; maritime financing; maritime brokerage; maritime law; crewing; associations; government services; rescue; diving; ship supply (no port services);
- *Maritime works*: Dredging; nautical cable and pipelines; river works; construction of canals, dykes and ports; support vessels; sand transport;
- *Navy and coastguard* (no shipbuilding);
- *Offshore supply*: Construction and installation of platforms, storage vessels and equipment; drilling; offshore-related transport, engineering, communication, consultancy and other support; seismic research; manufacturing, installation and maintenance of offshore and coastal wind turbines (no extraction of oil such as operators of oil rigs);
- *Recreational boating*: Boat chartering and renting; marinas; inland boat basins; supporting services concerning the construction of and trade in recreational vessels; boating-related training and trade (no manufacturing);
- *Seaports*: Cargo-handling; shipping related storage, agency, maritime logistics and forwarding; port authorities; pilotage;
- *Shipbuilding*: Construction and repair of sea-going vessels (commercial ships, fishing boats and naval ships), recreational boats and inland vessels; ship scrapping; floating sections; dry docks (no offshore-rigs and/or -vessels);

¹⁶ “The role of Maritime Clusters to enhance the strength and development of European maritime Sectors”, Report on results, Commissioned by the European Commission (DG MARE), Policy Research Corporation N.V., November 2008

¹⁷ Webers H., "The role of Maritime Clusters to enhance the strength and development of maritime sectors", EC DG Mare Study, Policy Research Corporation N.V., Rome, 1 October 2008

¹⁸ The role of maritime clusters to enhance the strength and development of maritime sectors. Overview of the applied research methodology, Commissioned by the European Commission (DG MARE), Policy Research Corporation N.V., November 2008

- *Shipping*: Merchant shipping and ship management; short-sea shipping; chartering-out; ferry services; ocean towage (only national seafarers and onshore persons employed);

Area 2: Coastal and sea-related (marine) recreation and tourism:

- *Coastal tourism*: Tourism within 10 km from the coast;
- *Cruise tourism*: Service on board of cruise ships (no land-based tourism and/or related services);

Area 3: Fisheries:

- *Fisheries*: Maritime and inland fishing; fish processing; aquaculture.

The above areas all together cover the definition of “all European sea-related sectors”. Some estimations of Added Value for these sectors were made. Table No 5 includes research results for EU-27 countries plus Norway:

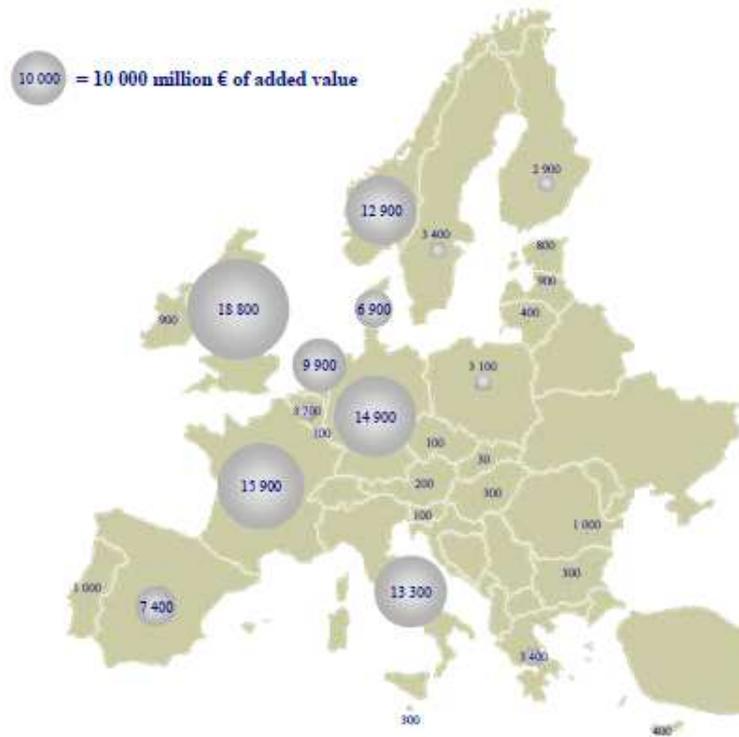
Table 5. Value Added in European Maritime Sectors

	Added Value [€ millions]	Employment (millions people)	Average value added / employee [€]
Traditional maritime sectors	123 400	1.92	64 400
Coastal (and marine) tourism	46 600	2.42	19 300
Fisheries	16 200	0.444	36 000
All European sea-related sectors	186 600	4.78	39 000

Source: Own study based on Webers H., "The role of Maritime Clusters to enhance the strength and development of maritime sectors", EC DG Mare Study, Policy Research Corporation N.V., Rome, 1 October 2008, O’Riordan P., “Maritime Clusters in Landlocked Countries”, European Commission Enterprise and Industry, Prague Conference 27 April 2009

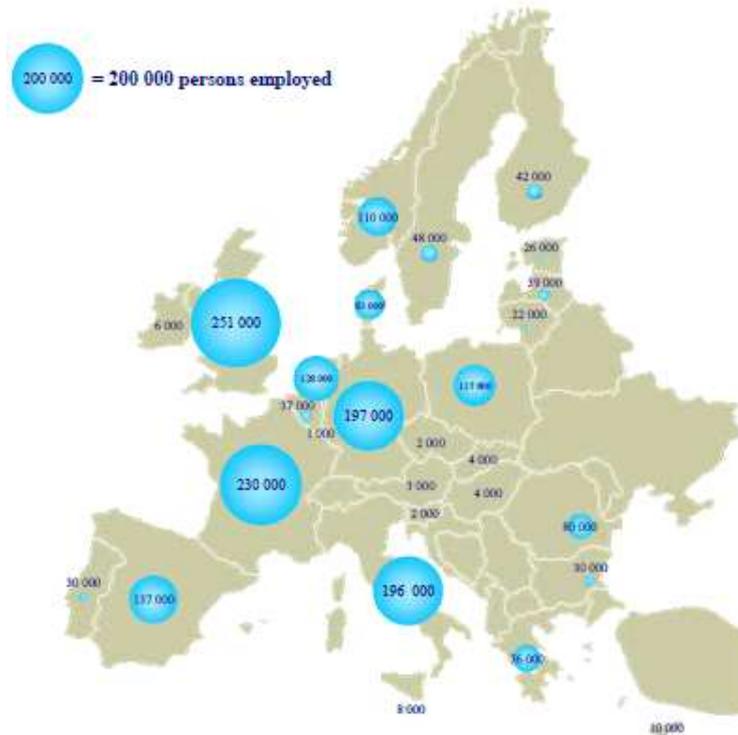
Maps are included below (Figures 4-7).

Figure 4. Added Value in traditional maritime sectors



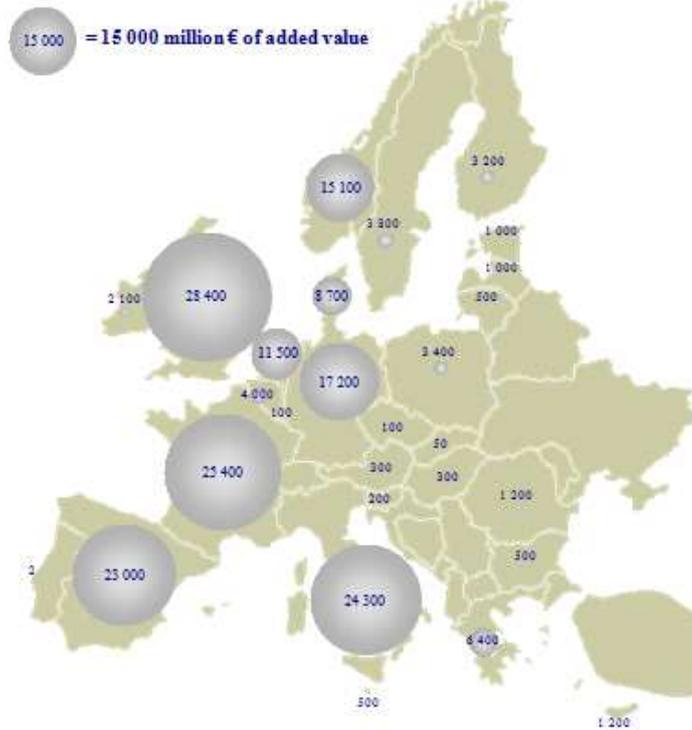
Source: Webers H., "The role of Maritime Clusters to enhance the strength and development of maritime sectors", EC DG Mare Study, Policy Research Corporation N.V., Rome, 1 October 2008

Figure 5. Employment in traditional maritime sectors



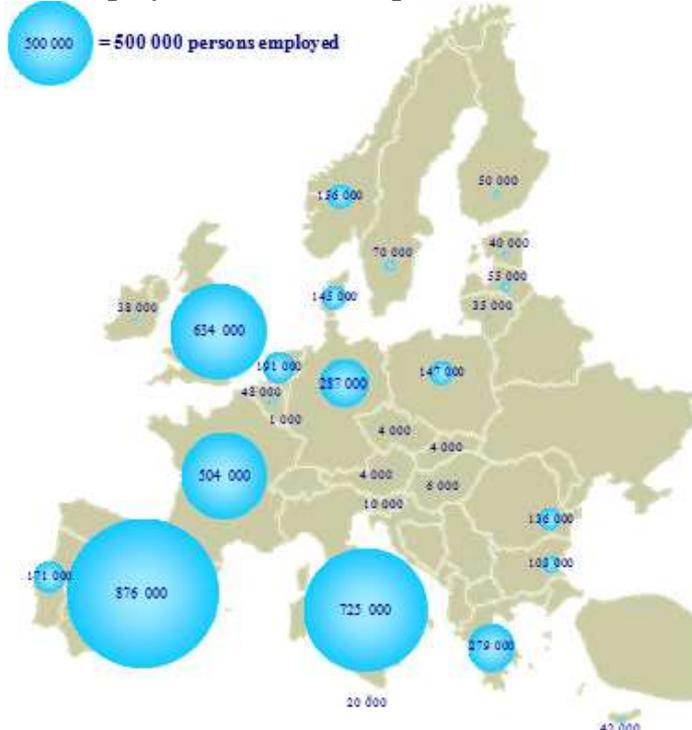
Source: Webers H., "The role of Maritime Clusters to enhance the strength and development of maritime sectors", EC DG Mare Study, Policy Research Corporation N.V., Rome, 1 October 2008

Figure 6. Added Value in all European sea-related sectors



Source: O’Riordan P., European Commission Enterprise and Industry, “Maritime Clusters in Landlocked Countries”, Prague Conference, 27 April 2009

Figure 7. Employment in all European sea-related sectors



Source: O’Riordan P., European Commission Enterprise and Industry, “Maritime Clusters in Landlocked Countries”, Prague Conference, 27 April 2009

Chapter 5 – Clustering

5.1. Cluster initiatives

The cluster initiatives can be: (1) Privately driven France, Spain, Italy, Finland, Sweden, Norway, UK, Poland, (2) Government driven Germany, Denmark, (3) Mixed: Netherlands, France, UK, Germany and Norway. Activity of public administration is not the critical factor to constitute the cluster.

The initial concepts of clusters are focused on idea depending on location, structures of industries to be adjusted in. Horizontal integration is a feature of chambers and clusters gathering competing companies. Vertical integrated clusters (networks according to ‘markets-as-network’ approach¹⁹) are rather business-oriented and gather companies acting within one value chain.

5.2. Cluster classification

Cluster categories are defined as lists of specific industries that empirically tend to co-locate.

This notion is based on the cluster category definitions developed at the Institute for Strategy and Competitiveness, Harvard Business School, US SIC industrial classification system and then translated into the European NACE system.

Five types of clusters are described below:

- Regional clusters,
- Local industries clusters,
- Traded cluster,
- Natural resource-based industries clusters,
- National clusters.

(1) **Regional clusters**, the geographic concentration of economic activities in a specific field connected through different types of linkages, from knowledge spill-overs to the use of a common labour market, are increasingly viewed as an interesting conceptual tool to understand the economic strength or competitiveness of a region. In recent years, this view has also motivated more and more policy makers and economic development practitioners to turn to cluster-based concept as new tools to strengthen regional economies.

¹⁹ Mattsson L.-G.: *Management of Strategic Change in a 'Markets-as-Networks' Perspective*, [in:] Pettigrew A. (ed.): *The Management of Strategic Change*, Blackwell, 1988, p.236

Examples:

STARNETregio regional cluster



- Approximately 900 businesses, over 11,000 employees
- Sector leaders such as AREA Science Park and FINCANTIERI Cantieri Navali SpA
- 7 research centres, universities and technology transfer bodies working in the sector

The Maritime MBA Corporate Network, Marsylia (corporate governance)

Members:

- Louis Dreyfus Shipowners
- Axa Corporate Solutions
- Calyon Global Head Of Ship Finance,
- Det Norske Veritas
- Navantia
- French Navy National Academy
- Barry Rogliano Salles
- French Maritime Cluster, Institut Français De La Mer
- Fincantieri, Federation of the Sea

Danish Network for Fisheries and Aquaculture Research (FISHNET)

Members:

- FAME: Economy and Management
- FIBP: Biochemistry
- MAST: Environment and Tourism
- SCOFDA: Fisheries Health
- SLIP: Biology
- FISHNET 100 researchers from universities and R&D organizations

- (2) **Local industries clusters** indicate that they serve local markets and are not exposed to direct competition across regions. Such industries, examples are local retail and other local services, account for about two thirds of all employment but have lower wages, productivity, and rates of innovation than the economy on average.
- (3) **Traded cluster** – industries are concentrated geographically; industries in this category have a choice as to where to locate and serve markets across regions. Such industries, examples include financial services and automotive and innovation.

Examples:

Port of Karlshamn Shipping and Logistics Clusters and Energy Cluster

One of the ten largest Shipping and Logistics clusters in Sweden with the port, shipping agents, Pilot Station, regional Customs head office, logistics providers, University with research within IT-Logistics etc. In Port of Karlshamn as a major Swedish petroleum port the Energy cluster. has been developed, including the port, the power plant, storage facilities for LPG, production of RME and the planned Bio Ethanol and Bio gas plant.

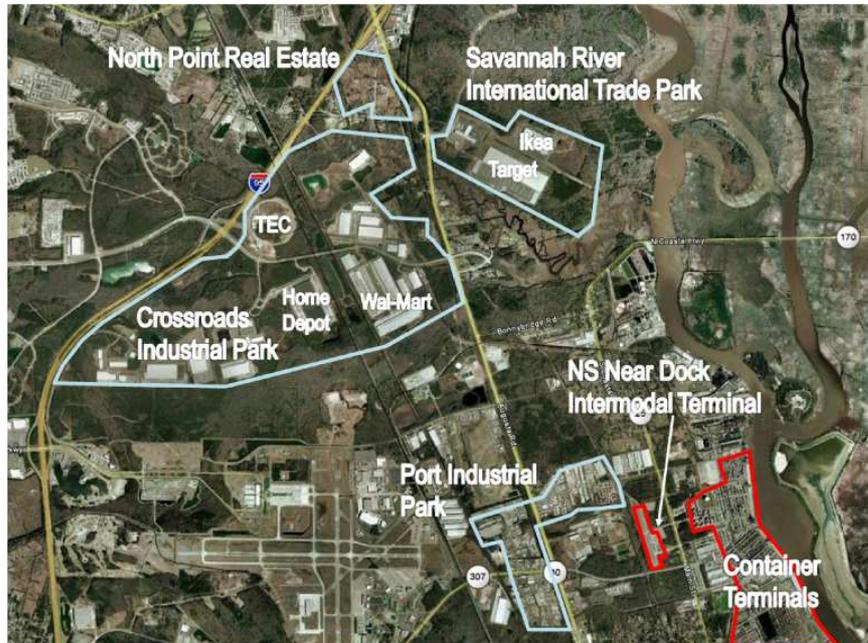
BNSF Logistics Park, Chicago



The main tenants are Wal-Mart (retailer with 3.4 million square feet), DSC Logistics (third party logistics service provider; 3PL), Georgia Pacific (the world's largest wood product manufacturer; it is using the logistic park but not the intermodal rail terminal), Potlatch (forest products), Sanyo Logistics (distribution), Partners Warehouse (3PL), California Cartage (3PL) and Maersk Logistics (3PL). The presence of the maritime shipping company Maersk underlines the setting of a

hinterland strategy pursued by several shippers around the world, which help better manage their containerized assets. The BNSF Logistics Park is an important component for inland distribution for imports from the West Coast and its dynamics are thus strongly linked with transpacific trade.

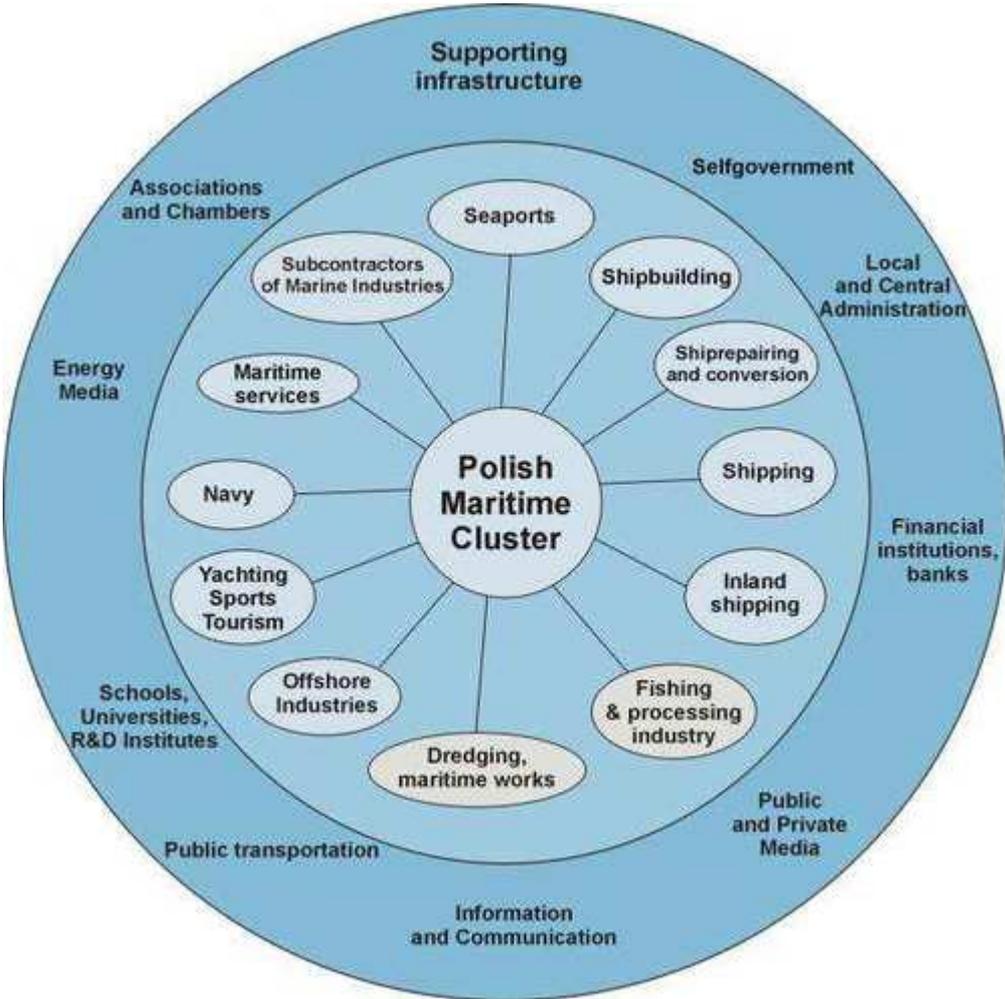
Savannah Logistics Cluster (Port-Centric Logistics Zones)



- (4) **Natural resource-based industries clusters** are concentrated geographically as well, but have to locate where the deposits of natural resources happen to be. They serve global markets but don't have much locational choice but have to locate where the deposits of natural resources happen to be.
- (5) **National clusters** are active in the countries, where the integrated maritime policy is the most developed.

Maritime Cluster also in Poland has been existing for years although not in the organized form. At the end of 2009 members of Polish Maritime Chamber of Commerce joined initiative of “Triple Helix” undertaking of administration, business and R&D persons, representing the entities and their economic and non economic value added and added value. The Pomeranian Maritime and Vistula Catchment Basin Cluster Association was established. Together with the West Pomerania initiative it constitutes the Polish Maritime Cluster Platform, which is a member of the European Network of Maritime Clusters of 14 states.

Figure 8. Polish Maritime Cluster Platform (an idea)

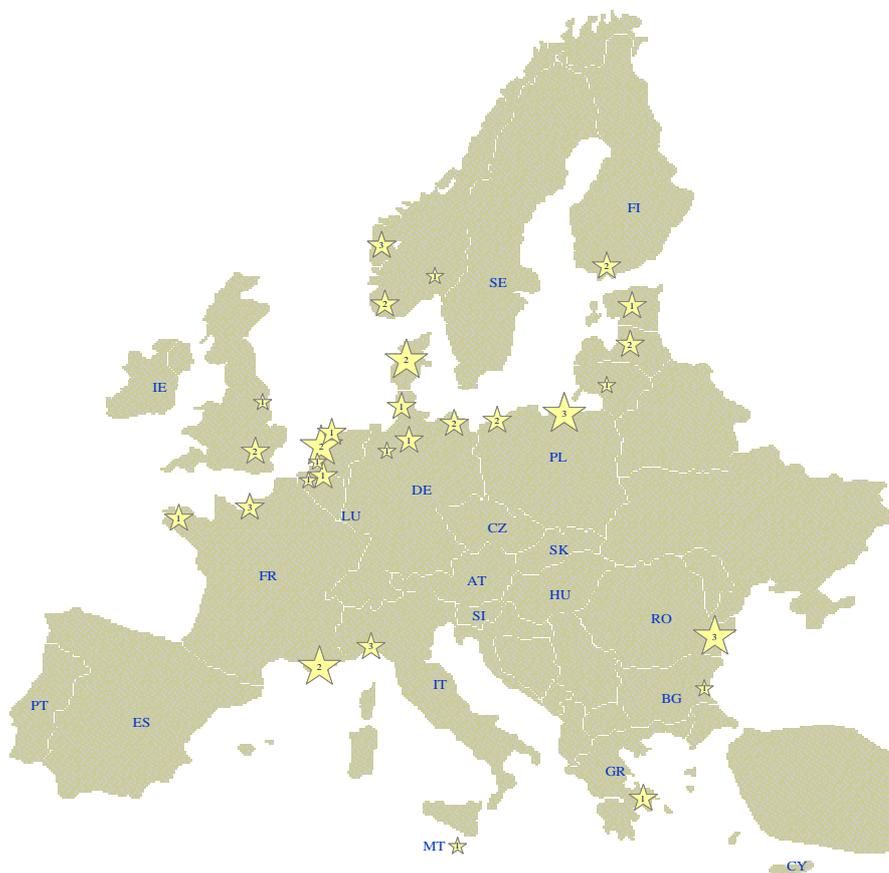


Source: Polish Maritime Cluster initiative

Maritime and Inland Waters Clusters in Poland will be concentrated in different regions along the coastline and in the hinterland. The structure can be either regional or sectorial, with different sectors and segments inside e.g.: The Polish Maritime Patrimony & Tourism Network, The Polish Network for Fisheries and Aquaculture Research, The Polish Network of Maritime & Inland Waters Education & Training, Gdansk Supply Chain Management Cluster, Gdynia Shipping, Port, Terminal Operators Logistic Network. The aggregate data will be gathered also centrally.

5.3. Strength of sectors and clusters

Figure 9. EU “Stars regions”



Source: O’Riordan P., European Commission Enterprise and Industry, “Maritime Clusters in Landlocked Countries”, Prague Conference, 27 April 2009

The research *The role of Maritime Clusters to enhance the strength and development of European maritime Sectors*²⁰ (commissioned by DG Mare in 2008) was a trial to examine how the maritime sectors and clusters influence EU economy – in European and country perspectives. “Star-Regions” were classified on a basis of estimation of their strength and impact on economies.

²⁰ *The role of Maritime Clusters to enhance the strength and development of European maritime Sectors, Report on results*, Commissioned by the European Commission (DG MARE), Policy Research Corporation N.V., November 2008

Chapter 6 – Central Public Maritime Administration

Once it is accepted the common, European wise understanding what is maritime and inland waterborne economy and its Gross Added Value, the EU Integrated Maritime Policy will be able to:

- create greater coherence between the different policy areas;
- develop better regulatory and cross-sectoral tools (integrated maritime surveillance, Maritime Spatial Planning (MSP), Integrated Coastal Zone Management (ICZM), building an integrated marine knowledge and data base, sea-basin strategies);
- use the potential of the sea and the maritime sector in a sustainable and efficient way, from an ecological and economic point of view;
- avoid duplication in the various national or regional authorities of the Member States in relation to regulatory powers;
- facilitate the necessary coordinated planning of competing activities at sea and strategic management of maritime areas;
- ensure the implementation of the ecosystem approach, which is laid down in the EU Marine Strategy Framework Directive.²¹

Apart of different definitions and a lack of complete maritime and waterborne statistic data, also the organizational structure of the central maritime administration is far from being comparable. In most of the cases these problems are dispersed among several ministries.

The member states should rather follow the EU example where economic and none economic activities are grouped in the European Commission for Maritime Affairs and Fisheries.

Finland

In Finland there is the Finnish Transport Agency, FTA, is the national body in charge of maintaining and developing the transport system, whereas at sea, on rail or the roads.

The Finnish Transport Agency was formed on 1 January 2010 as the waterways functions of the Finnish Maritime Administration, the Finnish Rail Administration and the central administration of the Finnish Road Administration merged.

²¹ Draft report on Integrated Maritime Policy (IMP) - Evaluation of progress made and new challenges (2010/2040(INI)), Committee on Transport and Tourism

The Finnish Transport Agency is a government agency operating under the jurisdiction of the Ministry of Transport and Communications and it is responsible for the maintenance and development of the transport system overseen by the government.

France

In France the Minister of Transport was merged with the Ministry of Ecology, Energy, Sustainable Development and the Sea and is responsible for the French maritime and inland waterborne Policy, safety, employment, intermodal transport, shipping, ports, spatial planning education, sailing.

Germany

In Germany in the Federal Ministry of Transport, Building and Urban Development there is a special Department responsible for:

1. Integrated maritime policy
2. Maritime Transport Economy (Maritime Verkehrswirtschaft) including the problems of:
 - Networked water
 - Inland water transport
 - Maritime transport
 - Water - more than just for transport
 - Maritime safety

Italy

In Italy the Ministry of Infrastructure and Transport sets forth guidelines and is responsible for the implementation of programmes, at national level, in the following fields: spatial planning, urban development, transport and energy networks, public housing, maritime works, ports, hydraulic works;

The Ministry also coordinates the development and implementation of national and international regulations in the field of passenger and freight transport (air, land maritime, urban transport, ports and logistics). Functions and duties in the following functional areas:

1. Planning the infrastructural networks and the works for the modal integration between the transportation systems
2. Housing construction, urban areas
3. Navigation and maritime transport; supervision on ports; maritime government property; safety navigation and inland water transport; civil aviation and air transport
4. Land transport, traffic and land transports safety
5. Air transport, discipline and rules, address, supervision of the sector institutions

The Ministry also looks out the National Agency for the Safety of Railways.

To carry out its functions, the Ministry is divided into eighteen General Directions, and in two departments:

1. Department of infrastructures, general affairs and human resources
2. Department of transports, navigation and informative and statistical systems.

Under the Ministry competence there are others nine Interregional Department for public works, five regional General Directions and the Port Authorities General Command.

Netherlands

Ministry of Infrastructure and the Environment (I&M) has several support agencies to ensure that the top political and civil service layers as well as the employees are able to perform their work: the Directorate-General of Public Works and Water Management (Rijkswaterstaat, RWS) ensures that policy is implemented. The Inspectorate for Transport, Public Works and Water Management and the VROM Inspectorate oversee compliance with statutory regulations by private individuals and companies. The Royal Netherlands Meteorological Institute (KNMI) gathers information on the weather, climate and seismology and performs research. The Directorate-General of Public Works and Water Management, the VenW Inspectorate, VROM Inspectorate, the Netherlands Emissions Authority, the Netherlands Environmental Assessment Agency and the KNMI are agencies of the ministry.

United Kingdom

In The United Kingdom Department for Transport works to ensure that the UK's shipping, ports and waterways are operated in an efficient, safe, secure and sustainable manner:

Passengers:

- Boating and travelling by water
- Ferry and riverboat services
- Leisure and the seaside
- Making a complaint about boat services
- Overseas travel by train or ferry for disabled passengers
- Transport for London - river services

Safety and security:

- Marine Accident Investigation Branch
- Maritime and Coastguard Agency
- River and sea safety
- Using pleasure craft safely
- Red Ensign Group
- Ships and cargoes
- UK ship register
- Working at sea

Inland waterways:

DfT promotes the use of waterways for freight in places where they are a practical alternative to roads. DfT is taking administrative care of:

- Boat moorings
- British Waterways
- Inland Waterways
- Using rivers and waterways

Navigation:

- Commissioners of Irish Lights
- Northern Lighthouse Board
- Trinity House Lighthouse Service

Ship registers:

- Fishing vessel register
- Large yacht register
- Merchant ship register
- Pleasure craft/small ships register
- Registering pleasure craft including yachts

Chapter 7 – Recommendations

The results of the study are intended to support future studies taking into account the development of maritime sectors – first of all Generation BALT foresight study for traditional and emerging sectors.

The study confirms that the economic activities connected with oceans, seas and inland waters environment create value added and by aggregating, compose Gross Maritime and Inland Waterborne Economy Product, being a part of Gross Domestic / European / regional / Ocean and Sea Basin / Inland Waters Product as a key for further studies in the field of the integrated maritime policy – strategy, spatial planning, sectoral studies and development of industries, including demand for competences and skills.

This concept can also be worked out on different levels: European Union, regional / national, having five objectives to be realized:

Objective 1.

Aim: Identification of The Maritime and Inland Waterborne Economy economic activities.

Result expected: The agreed economic activities identification in order that a formal framework should be developed in Europe in order to create EU-wide benchmarks for excellent performance. If there is a need to identify the complete set of sectors, so each of them should include the production, manufacture of goods and provision of services.

Objective 2.

Aim: Classification and codification (based on the EUROSTAT Rev.2) of the Maritime and Inland Waterborne Economy economic activities

Result expected: The standard statistical classification and codification will be proposed in order to create EU-wide benchmark for analysing the dimension and value of all economic and non-economic connected with the environment of oceans, seas and inland waters and its natural capital.

Objective 3.

Aim: Methodology of GVA to be applied for all named, classified and codified economic activities of the Maritime and Inland Waterborne Economy.

Result expected: Enabling precise identification of The gross value added of all economic activities composing areas, sectors / industries / services of the Maritime and Inland Waterborne Economy.

Objective 4.

Aim: The Gross Maritime and Inland Waterborne Economy Product related to GDP

Result expected: The % participation of the Gross Maritime and Inland Waterborne Economy Product in the Gross Domestic Product on: sectorial / regional / domestic / European and global levels in all EU countries.

Objective 5.

Aim: The Glossary of The Maritime and Inland Waterborne Economy economic activities.

Result expected: Creating the base to edit a Glossary, giving the tool for every stakeholder of the Maritime and Inland Waterborne Economy in order to speak the same economic language.

Further recommendations

It is recommended that also the International Maritime Statistic Forum and its members is informed of this study, asking of advise.

The results could also encourage rational and reasoned discussion within the International Association of Maritime Economists to facilitate the international exchange of ideas and research. Maritime economics includes study of all-economic activities and effects appearing in a maritime context, to promote the development of maritime economics as a distinct discipline.

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