GENERATION BALT

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

FORESIGHT STUDY (LITHUANIA)

Project: Generation BALT

Program: South Baltic program

Component: No 3. Preparation of Supplementary Study Programme

Made by: Rima Mickeviciene, Tatjana Paulauskiene, Sigita Paulavičienė, Rasa Rasa Baužytė

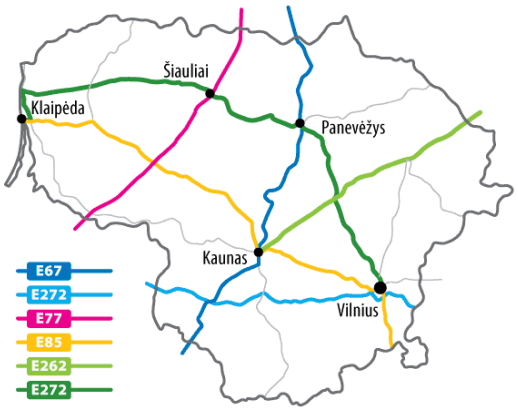
Date: 15 MAY 2012

South Baltic PROGRAMME

Part-financed by the European Union
(European Regional Development Fund)

NATIONAL POLICIES (LITHUANIA)

Introduction



Lithuania lies between latitudes 53° and 57° N, and mostly between longitudes 21° and 27° E. It has around 99 kilometres of sandy coastline, of which only about 38 kilometres face the open Baltic Sea and which is the shortest among the Baltic Sea countries; the rest of the coast is sheltered by the Curonian sand peninsula. Lithuania's major ice-free sea port Klaipeda lies at the narrow mouth of the shallow Curonian Lagoon (Lithuanian: Kuršių marios) extending south to Kaliningrad. It caused that all marine/maritime industry as well as education institutions related to marine/maritime are located in West part of Lithuania.

Lithuania is a marine state crossed by two major international transport corridors of European significance. Klaipeda port (Fig. 1) proceeds with the general development tendencies of other sea ports, although, but due to the insufficient interaction of research and business, financial and economic crisis many innovative projects tend to develop slower as compared to other countries.

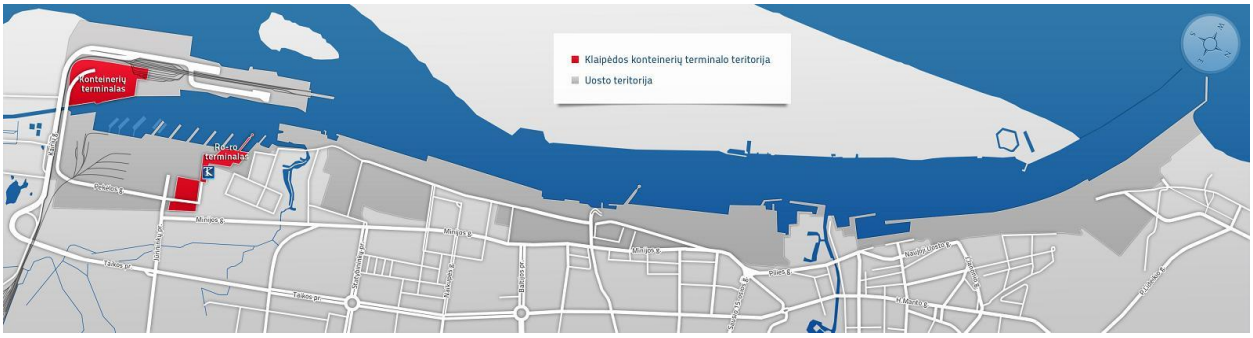


Figure 1. Plan of Klaipeda sea port

The Lithuanian marine sector is an active participant of the EU maritime policy initiatives:

- The Association of Lithuanian Stevedoring Companies is a member of Federation of European private port operators (FEPORT);
- Lithuanian shipowner‘s association is a member of European Community Shipowners associations (ECSA);
- Association of Lithuania Shipbuilders and Repairers is a member of corresponding International European Association (CESA);
- Lithuanian Fisheries Producers’ Association is a member of Baltic Fishermen’s Association (BFA), Advisory Committee for Fisheries and Agriculture, International Baltic Sea Fishery Commission.

South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

Seeking unified global competition and coordination on the European level, in 2003, the European Commission approved the report LeaderSHIP 2015 of the CESA (Community of European Shipyards'Associations) aiming to develop the shipbuilding sector. In January 2005, following the LeaderSHIP 2015 recommendation, WATERBORNE Technological Platform (WTP; WATERBORNE TP is an initiative that came forth from the Maritime Industries Forum (MIF) and its R&D committee in 2005 and is making strident efforts to regularly update R&D requirements for European competitiveness, innovation and the meeting of regulations like safety and environment. The stakeholders include EU associations covering deep and short sea shipping, inland waterways, yards, equipment manufacturers, marine leisure industry, research and university institutions, classification societies etc. The so-called stakeholder Support Group is matched by a Mirror Group of government appointed delegates. The WATERBORNE TP is one of the some 30 technology platforms in the EU and where appropriate possibilities for exchanges or other ways of cooperation are investigated).

The WTP presented the VISION 2020 project and the working plan Strategic Research Agenda (SRA), in which the activities were planned in three major directions:

- Safe, sustainable, and effective water transport and its exploitation;
- Competitiveness of the EU marine industry;
- Observation of the world population and of the changes in the labour market.

In 2007, the Lithuanian Intermodal Transport Technological Platform (LITTP) was established, that plans to cover by its activities the research and experimental development topical for the ship building and repair sector.

South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

3 Framework conditions Lithuania

3.1. National policies influencing higher education and maritime labour market

3.1.1. Law on higher education of the Republic of Lithuania

The State policy of science and studies of Lithuania has been forming by the Parliament (Seimas) and implementing by the Government of the Republic of Lithuania, the Ministry of Education and Science and other ministries, the Research Council of Lithuania, the State Studies Foundation, and the Centre for Quality Assessment in Higher Education, and etc.

In Lithuania, study programmes are provided by 23 colleges (10 of which are private) and 23 universities (eight of which are private).

2.4 billion litas (1 € = 3.4528 litas) of EU structural funds were planned to be allocated for the development of Lithuanian higher education and research in the period from 2007 to 2013.

Education in Lithuania is based on the key values of the nation, Europe and global culture: the unrivalled value and dignity of an individual, love of our fellow, the natural equality of people, the human rights and freedoms, tolerance, and declaration of democratic relations in the society. Education is developing determination and ability of an individual to follow these values in all walks of life and activity. Education is also based on the general principles of humanity, democracy and renewal.

» **National Education Strategy 2003–2012 (adopted by resolution No. IX-1700 of 4 July, 2003 of the Parliament (Seimas) of the Republic of Lithuania (2003, No. 71-3216))**

On 12 November 2002 the Parliament of the Republic of Lithuania passed a resolution to approve the Long-Term Development Strategy of the State. The Strategy projects development of Lithuania, as a future EU member state, by identifying three priority areas: knowledge society, secure society and competitive economy.

The purpose of the Provisions for the National Education Strategy 2003–2012 (hereinafter referred to as the Strategic Provisions) is to provide the framework for implementation of the vision of education in Lithuania, and to provide the citizens of Lithuania, their interest groups and state institutions with the possibility to continue public discussions and to agree on the methods of implementation of this vision.

The Strategic Provisions outline the vision of implementing the above mission. Development of the Provisions is based on the Long-Term Development Strategy of the State, the Economic Development Strategy of the Republic of Lithuania until 2015, the European Memorandum of Life-Long Learning, the European Employment Strategy, the Bologne Declaration 1999, the most important aims raised by the EU Commission for development of the education systems in the member states until the year 2010. The Strategic Provisions herein follow the draft Education Development Guidelines (2002). Implementation of

South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

the Provisions shall be co-ordinated with other structural reforms of the country and common priorities of the EU education policy.

» **Law on education (17 March 2011 No XI-1281)**

Education is an activity intended to provide an individual with a basis for a worthy independent life and to assist the individual in the continuous cultivation of abilities. Every person has an inherent right to learn. Education is a means of shaping the future of an individual, the society and the State, based on the acknowledgement of the indisputable value of the individual, his right of free choice and moral responsibility, as well as on democratic relationships and the country's cultural traditions. Education protects and creates national identity, guarantees continuity of the values that make a person's life meaningful, grant social life coherence and solidarity, and promote development and security of the State. Education serves its purpose best when its advancement leads the overall development of society. Education is a priority area of societal development that receives State support.

» **Law on higher education and research (30 April 2009 No XI-242)**

The mission of higher education and research is to help ensure the country's public, cultural and economic prosperity, provide support and impetus for a full life of every citizen of the Republic of Lithuania, and satisfy the natural thirst for knowledge. The Lithuanian policy on higher education and research guarantees the quality of higher education and research, the equal access to higher education for all citizens and favourable conditions for the best of them to conduct their research, and to seek academic and creative perfection; the said policy ensures that the system of higher education and research satisfies the demands of society and the economy, supports its openness and integration in the international sphere of higher education and research. A cohesive system of higher education and research is the foundation of the development of knowledge society, the strengthening of knowledge-based economy and the sustainable development of the country, a dynamic and competitive life of national economy, and social and economic well-being; such a system cultivates a creative, educated, dignified, morally responsible, public-spirited, independent and entrepreneurial personality, fosters the civilizational identity of Lithuania, supports, develops and creates national and global cultural traditions.

Lithuania as well as other EU member states ratified number of conventions related to education:

- European convention on the equivalence of diplomas leading to admission to universities (Paris, 1953);
- European convention on the equivalence of periods of university study (Paris, 1956);
- European convention on the academic recognition of university qualifications (Paris, 1959);
- European convention on the general equivalence of periods of university study (Rome, 1990)
- Convention on the recognition of qualifications concerning higher education in the European region (Lisbon, 1997);
- Convention on the recognition of studies, diplomas and degrees concerning higher education in the states belonging to the Europe region (Paris, 1979).

South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

It's also important to mention, that there is no special legislation on marine/maritime education and VET in Lithuania. Only support Programme of Integrated Science, Studies and Business Centre (Valley) for the Development of Lithuanian Maritime Sector was approved by the Government of the Republic of Lithuania by way of Resolution No. 786 in 2008.

3.1.2. THE PROGRAMME OF INTEGRATED SCIENCE, STUDIES AND BUSINESS CENTRE (VALLEY) FOR THE DEVELOPMENT OF LITHUANIAN MARITIME SECTOR

The purpose of the Programme of Integrated Science, Studies and Business Centre (Valley) for the Development of Lithuanian Maritime Sector (hereafter referred to as "the Programme") is to create a cluster of maritime knowledge-based economy by consolidation of the existing potential and promoting integration of maritime research, academic studies and businesses. The aims of the Programme include creating a modern infrastructure for the general needs of Lithuania's maritime research, academic studies and technological development; encouraging more active application of scientific output in production and business; promoting new economic entities that have technological bias and are oriented towards practical application of scientific output; opening possibilities for cooperation between knowledge-demanding maritime businesses, academic institutions and research teams; strengthening the competitiveness of Lithuanian maritime research and technologies on international markets; creating conditions for attracting more foreign investment to business and research activities within Lithuania's maritime sector. The Integrated Science, Studies and Business Centre (Valley) (hereafter referred to as "the Valley") therefore shall be established for the benefit of Lithuanian maritime sector.

For the purposes of this Programme, "Lithuanian maritime sector" shall mean an integrated system covering various maritime businesses (maritime transport, ports and their infrastructure, industry based on the coastal zone resources, recreational industry, etc.), fundamental and applied maritime studies, and the system of education and training of experts for the corresponding business and research sectors.

The Programme has been drafted in pursuance of the Concept of Establishment and Development of Science and Business Centres (Valleys) approved by Resolution No. 321 of the Government of the Republic of Lithuania of 21 March 2007 (Valstybės žinios (Official Gazette), No. 40-1489, 2007), the High Technology Development Programme 2007-2013, approved by Resolution No 1048 of the Government of the Republic of Lithuania of 24 October 2006 (Valstybės žinios, Official Gazette No. 114-4356, 2006); and in line with Order No. ISAK-207/4-33 of the Minister of Education and Science and the Minister of Economy of 29 January 2008 on the Call for Projects within the Programmes for the Development of Integrated Centres (Valleys) of Science, Studies and Business Official Gazette No. 22-828, 2008) as well as the General National Complex Programme approved by order No.ISAK-2336 of the Minister of Education and Science of 3 December 2007 (Valstybės žinios (Official Gazette) No. 7-262, 2008).

Creation of the Valley relates to EU incentives which are consolidated in the Commission Communiqué COM(2007)575 of 10 October 2007 on Integrated maritime policy for the EU and the Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (Official Journal 2004, special edition, Chapter 15, Volume 5, p. 275).

South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

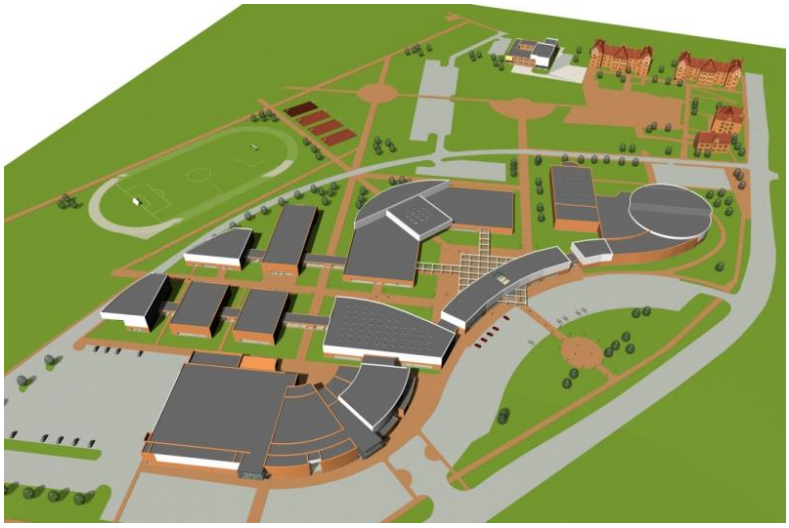


Figure 2. Location of Lithuanian integrated marine science, studies, and business centre (valley)

Aim of the Lithuanian integrated marine science, studies, and business centre (valley) (Fig. 2): to establish a nucleus of maritime knowledge economy by concentrating territorially scattered and functionally non-integrated academic marine research-oriented institutions and their divisions, to optimize institutional co-operation by means of the development of the common infrastructure, and to create conditions for a closer interrelationship of the marine research, studies, and business.

In accordance with the envisaged EU action plan (late 2007) for the maritime policy, each member state, including Lithuania, should prepare its own vision of maritime policy. Moreover, the establishment of the valley will contribute to the implementation of other EU directives:

- EU Water Framework Directive implementation in transitional and coastal waters;
- integrated coastal zone management;
- thematic strategies: sea, earth, population;
- biodiversity protection (NATURA 2000 marine territories);
- strategic environmental impact assessment and environmental impact assessment (Arhus Convention);
- safe navigation, marine pollution prevention;
- integration of planning and environment.

The concept of the Valley was created in accordance with the Long-Term State Development Strategy, Lithuanian Industrial (Economy) Development Strategy (till 2015), Long-Term RTD Strategy, National Implementation Plan for the Lisbon Strategy, Lithuanian High Education System Development Plan (2006-2010), High Technology Development Programme (2007-2013), Economical Growth Factor Programme, and Lithuanian Regional Development Policy Strategy (until 2013).

Fast economic development of the coastal region, increasingly intensive management of marine resources, and the priorities of the sustainable development of the state demand the integration of research and business on a regional dimension. The establishment of the Valley shall contribute to the implementation of the following priorities in the national sustainable development strategy:

- combating the environmental impact of the maritime complex and other major industries;

South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

- sustainable use of natural resources and waste treatment;
- combating the global change and its consequences;
- better protection of the biological diversity;
- better landscape protection and sustainable management;
- increasing the role of science and education;
- development of the alternative energy resources (geothermal waters, wind, and wave energy).

The high qualification of personnel necessary for the Lithuanian marine sector can be divided into three categories:

- direct participants of the marine business activities (navigation, ship building and repair, port technologies, marine fishery and aquaculture);
- graduates of marine specialties whose study programmes are based on an exclusively marine direction (marine environment engineering, oceanography, and marine biology);
- graduates of other specialties whose study programmes include specific marine themes-related courses (hydrology, geology, ecology, archaeology, recreation and tourism, etc.).

Within framework of the development Baltic Valley, a few parallel projects have been proceeding by Klaipeda University:

- Development of the Marine Valley Nucleus and Renewal of Study infrastructure (JURA);
- Development of Study Infrastructure;
- Development of the Laboratory of the Fishery and Aquaculture;
- Development of the Engineering Networks and Communications;
- Development of the Infrastructure of Klaipeda Science and Technology Park;
- Strengthening of the Association “Baltic Valley” (BALTIJA);
- Development and Upgrade of the 1st and 2nd Level Programmes for Maritime Studies (JUREIVIS);
- Upgrade of the doctoral studies, qualification of academic staff and stimulation of Mobility (JURININKAS);
- Establishment of the National Centre for Marine Science and Technology;

Project JURA aims to develop research infrastructure for fundamental and applied sciences and facilitate the link between science, studies and business. Two activities as well as directions of scientific research and experimental development of the Valley are suggested: marine environment and marine technologies. It was decided considering the system of Lithuanian maritime sector and on the basis of the assessment of the potential of the initiators of the Valley, their partners, participants, and their demand for scientific knowledge and innovations. In the intersection of the development directions, the main objectives of the Project to be implemented are:

- creation of the open access modern scientific research infrastructure;
- integration of science, studies and business and creation of a favourable environment to apply maritime scientific knowledge and technologies in the business;
- improvement of the education quality;
- increase of competitiveness of the Lithuanian maritime science and technologies in the international market of maritime services.

South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

The project consists of:

- construction of scientific laboratory building (approx. 5000 m2) with four fully equipped scientific laboratories: Marine Ecosystems, Marine Chemistry, Waterborne Technologies and Reliability of Maritime Structures;
- construction of multifunctional research vessel with modern field equipment for basic oceanographic research;
- renewal of the equipment for study laboratories of Klaipeda University;
- renovation of two field stations of the Nature Research Centre: hydrobiological field station Silute district, Vente village and coastal biological field station Kalno str. 22 Neringa city. Adjustment of these stations for the studies;
- update of the study facilities of Lithuanian Maritime Academy.

Updated and newly established laboratories have to be provided by researchers, engineers, and technicians. For it are responsible other projects JURININKAS and JUREIVIS. Within JURININKAS doctoral students are studying in Lithuanian universities because Klaipeda University is not able to prepare required number of researchers for newly developed laboratories during so short time.

JUREIVIS aims to update 5 existing (Ecology and environment sciences; Sea environment engineering; Ship fleet operation; Ship electrical equipment and automation; Naval Architecture and shipbuilding) and develop 2 new (Geoinformatics; Ichthyology and aquiculture) Master level studies programmes according to the needs of marine/maritime sectors of Lithuania. As young graduates do not have enough practical skills, for every master level student of JUREIVIS project the placements in foreign and Lithuanian research laboratories and business or industry enterprises are planned, too. University professors and lecturers working with students of updated or newly developed programmes have possibility for the foreign internships, as well.

Within mentioned above activities, existing expertise in marine environment and maritime technologies shell be increased. The gap between industry and university shell be reduced due to employment of graduates from newly developed and updated Master level study programmes in maritime related business enterprises and other structures.

South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

5. Reports by SB region / country (LITHUANIA)

5.1. General situation and consequences

Lithuanian maritime sector consists of many fields of economic activity but the most important are these: shipping and port activities, shipbuilding and ship repair, fishing, aqua culture and fish processing, energetic, recreation and tourism. Subsectors are analyzed according to the national classifier of economic activity:

- Shipping and port subsector includes transportation of passengers and goods, cargo storage and security, handling, agency, freight forwarding and etc.
- Shipbuilding includes building of all type ships, floating structures and etc. Also it includes the repair of metal structures, machines, auxiliary and other ship equipment.
- Fishing, aquaculture and fish processing subsector includes sea fishing and aquaculture. Fish processing industry is very closely related to fishing therefore also is attached.
- Energetic subsector consists of the subjects of Klaipeda County producing electricity, search and mining of natural gas, oil.
- Recreation and tourism sector includes accommodation and catering, travel agencies and tour operators as well as artistic, entertainment and recreation activities.

The main indicators of the maritime sector in the Klaipeda County and country in whole

In total 31,3 million tons of cargo were handled at Klaipeda port in the year 2010, i.e. by 12,2 % more than in the year 2009 and by 5,7 % more than in the year 2008 (second highest result in the history of port) (Figure 3).

23,6 million tons of cargo was loaded onboard and 7,7 million tons unloaded from ships in 2010. Thus, exported cargo amounted to 75,5 % of the total cargo turnover.

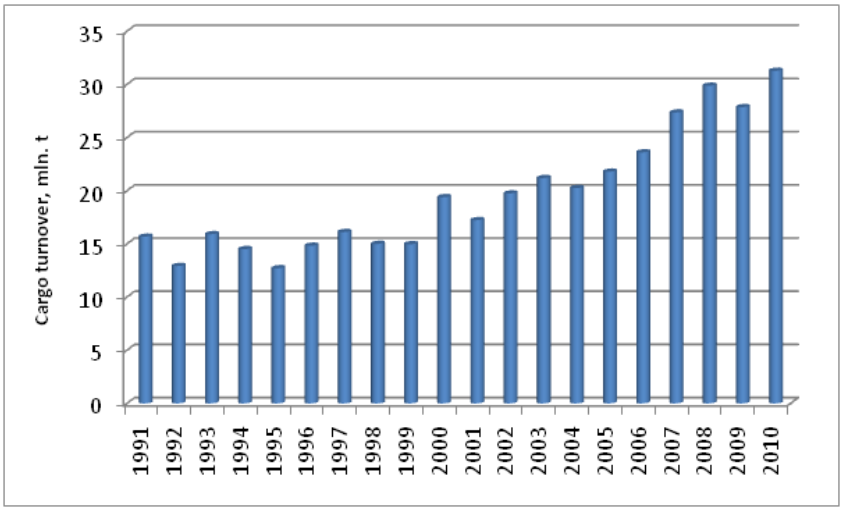


Figure 3. Cargo turnover in Klaipeda port in the years 1991–2010

South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

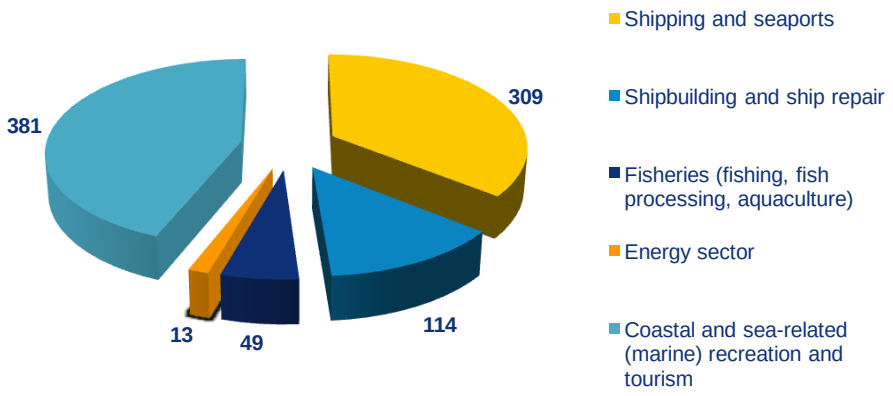


Fig. 4. Number of companies in sea related sectors, 2010

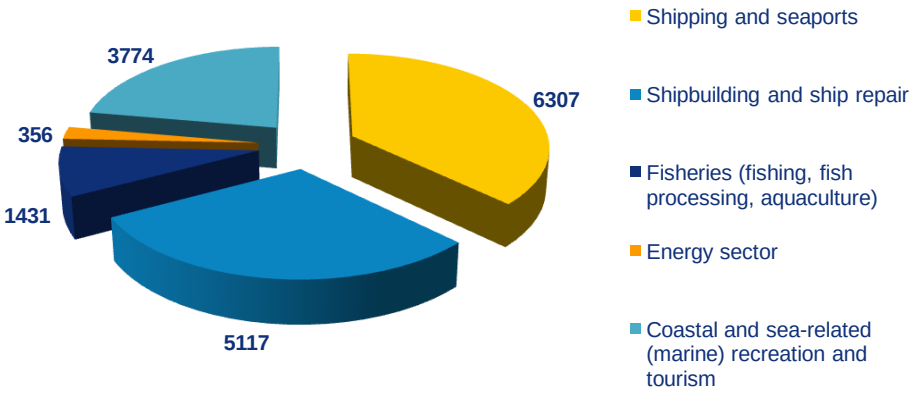


Fig. 5. Number of employees in sea related sectors, 2010

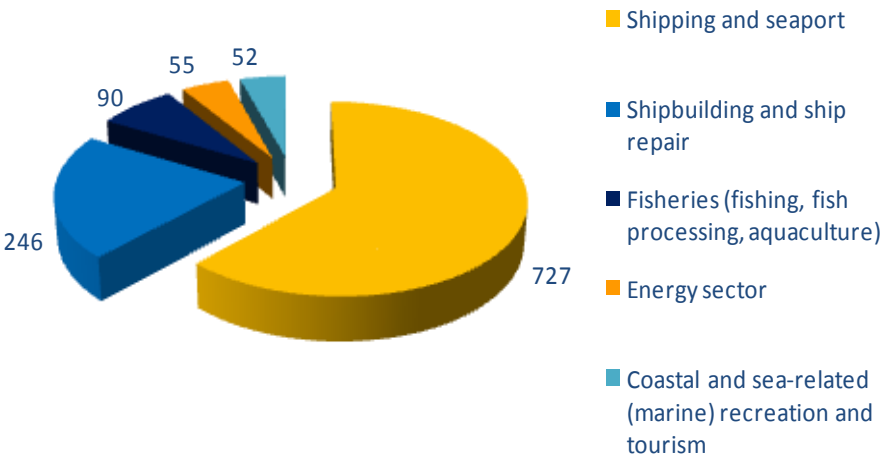


Fig. 6. Turnover, million EUR, 2010

South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

Table 1. Current situation in the Republic of Lithuania

Current situation in the Republic of Lithuania (the sea related sectors)	
1. Shipping and seaports - cargo shipping - shipping related storage - logistics - water transport services - cargo-handling - other transport services	Number of companies: 309 Number of employees: 6307 Turnover: 2,51 billion Lt (1 EUR = 3,4528 LTL)
2. Shipbuilding and ship repair - ship technical survey, all types of ship repair - construction of ships and floating sections - repair of metal constructions - other repair works	Number of companies: 114 Number of employees: 5117 Turnover: 0,85 billion Lt
3. Fisheries (fishing, fish processing, aquaculture) - maritime and inland fishing - aquaculture - processing and preserving of fish, crustaceans and molluscs	Number of companies: 49 Number of employees: 1431 Turnover: 0,31 billion Lt
4. Energetic - electricity production - crude oil production	Number of companies: 13 Number of employees: 356 Turnover: 0,19 billion Lt
5. Coastal and sea-related (marine) recreation and tourism - accommodation - food and beverage service - libraries, archives, museums and other cultural activities - travel agencies, tour operators and related activities - sports activities and amusement and recreation activities	Number of companies: 381 Number of employees: 3774 Turnover: 0,18 billion Lt

Impact of Lithuanian maritime industry to the economy and employment

Table 2. Marine sector turnover in 2009

Subsector	Turnover, kLTL/kEur	Part of turnover, %	
		In Klaipeda district	In Lithuania
Shipping and seaports	2.506.441/725.915	11,54	1,52
Shipbuilding and ship repair	848.952/245.880	3,91	0,51
Fisheries (fishing, fish processing, aquaculture)	311.112/90.104	1,43	0,19
Energetic	186.843/54.113	0,86	0,11
Coastal and sea-related (marine) recreation and tourism	176.787/51.201	0,81	0,11
Total:	**4.030.136/1.167.208**	**18,55**	**2,44**

South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

Table 3. Number of employees in the maritime sector in 2009

Subsector	Turnover, kLTL/kEur	Part of turnover, %	
		In Klaipeda district	In Lithuania
Shipping and seaports	6.307	6,49	0,78
Shipbuilding and ship repair	5.117	5,26	0,63
Fisheries (fishing, fish processing, aquaculture)	1.431	1,47	0,18
Energetic	356	0,37	0,04
Coastal and sea-related (marine) recreation and tourism	3.774	3,88	0,46
Total:	**16.985**	**17,47**	**2,08**

The Association of Lithuanian shipbuilders and shiprepairers consists of 29 members. The largest members are Western shipyard and Klaipeda shiprepair yard. These shipyards employ 3682 or 67 % of all employees of LLSRA; their turnover reaches 80 % of total LLSRA. During 8 years of LLSRA activity, the turnover of its members grew up by 143 % and reached 214 mln. EUR in 2010 in compare to 2003 when turnover was just 88,05 mln. EUR. In 2010, it was produced 57768 CGT of metal constructions. More than 90% sales of LLSRA members are for export.

In 2010, there were built 9 vessels and repaired 195 vessels.

Table 4. Dynamics of the turnover and employment of LLSRA in 2003-2010

Year	Turnover (mio EUR)	Number of employees	Dynamics of the turnover (%)
2003	88	5092	
2004	131	5030	49
2005	140	4464	7
2006	172	4525	23
2007	186	4832	8
2008	249	4452	34
2009	236	4111	-5.5
2010	214	3682	-10

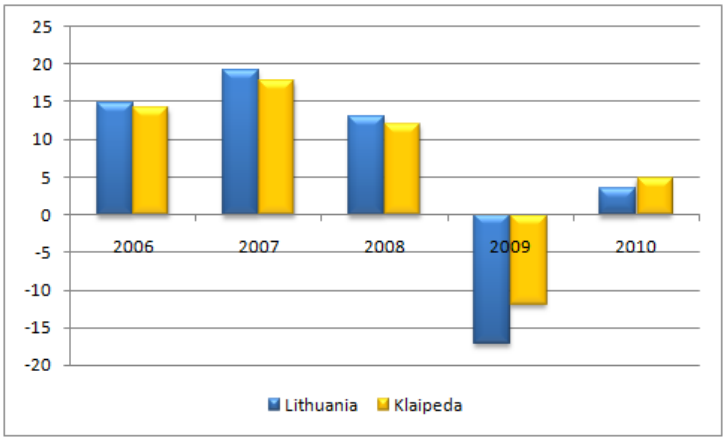
The main fields of activity of LLSRA members are as follows:

- Shipbuilding;
- Ship maintenance, repair, modernisation, conversion;
- Yacht repair and port fleet repair;
- Manufacturing of metal constructions.

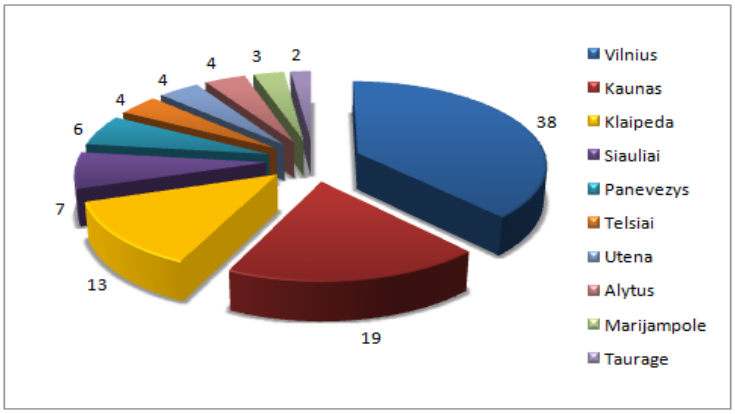
South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

5.2. Analyses of maritime labour market in Lithuania

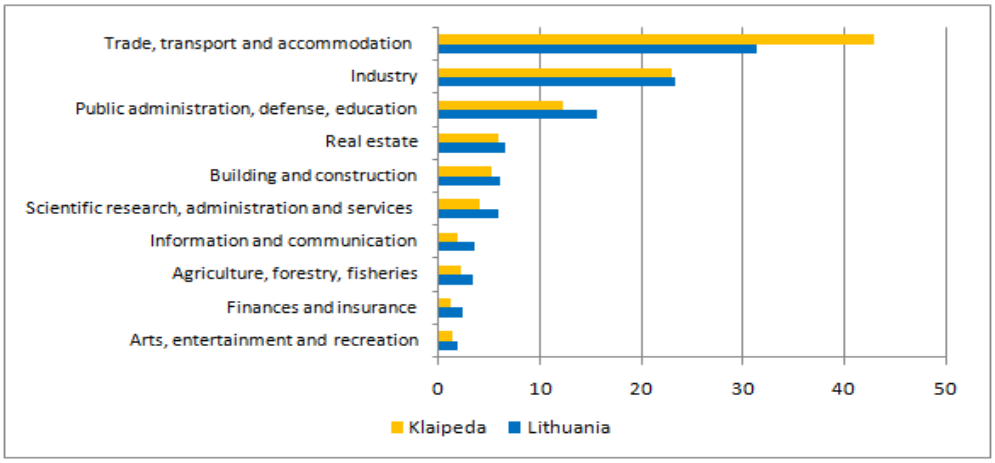
GDP, 2006–2010:



GDP by county of Lithuania, 2010:

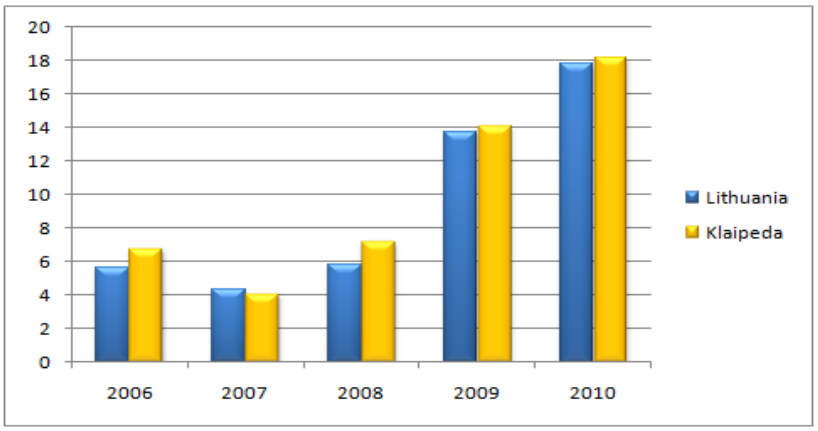


GDP by sectors, 2010:



South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

Unemployment (%) structure, 2006-2010:



According data of Lithuanian Job Centre, graduates from Business management, Law, Economics, and Bookkeeping Graduates study programmes are in majority among unemployed in Lithuania during the last 4 years. At the same time, the majority of employed in 2010 consisted from sales managers, administrators, engineers, business managers and accountants. In 1st February 2012, there were registered 7.5 thousands unemployed graduates from high education institutions: 2.6 thousands – from universities, 1.9 thousands – from colleges and 3 thousands – from VET schools. In the end of 2011, young people until 25 years old totalled 31% of all unemployed people in Lithuania. It is fourth worst result in EU among 17 members.

Situation in Klaipeda, the third Lithuanian city with well-developed maritime industry, is a bit better: in May, 2012 Klaipeda Territorial Job Centre registered 1019 people of various background wishing to work in the maritime sector.

Statistical data from Lithuanian Labour Exchange under the Ministry of Social Security and Labour

Officers of Klaipeda Territorial Job Centre assured that they cannot provide statistical data on the situation of the qualified specialists of the marine sector of the labour market and situation concerning labour supply and demand because such statistical data is not collected. During the period of six recent months the only job offer for steersman was registered.

South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

Distribution of individuals wishing to work in the maritime sector, by occupation:

Occupation	Number	Occupation	Number
Seafarers	260	Ship electricians	7
Navigator	87	Cookers	6
Ship mechanic	65	Ship hull painters	5
Ship repairers	32	Engineer of ship equipment	4
Cooks	26	(Senior) Assistant of ship captain	4
Adjuster of ship equipment	22	Metalworker of ship diesels	4
Steam boiler operators	22	Ship hull builder and repairer	4
Mechanics of ship systems	19	Technician of the naval ship equipment	2
Adjuster of metal ship constructions	18	Assistant of the captain (skipper)	2
Ship agents	16	Assembler of Ship diesel	2
Ship pipe layers	16	Sailors	2
Seafarers - Welders	15	Ship electricians	2
Shipbuilding engineers	10	Fitter of metal ship hulls	2
Captains	10	Ship power plant engineer, Shipbuilding technician, Ship radio mechanic, Chief mechanic, Ship electro mechanic, fisherman, builder of wooden ships	15
Ship woodworkers	8		

The background of individuals looking for job in maritime industry is as follows:

Background	
Secondary school with professional qualification	300
Higher	126
Secondary school	75
University or equal	68
Higher non-university	51
Basic with professional qualification	47
Basic	9
Primary with professional qualification	6
Primary	5

South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

Gained profession of unemployed individuals wishing to work in the maritime sector:

Gained profession	Number	Gained profession	Number
Seafarer	188	Cook	36
Navigator	61	Ship electrician	23
Shi hull repairer	51	Fitter of ship construction	20
Adjuster of ship equipment	36	Ship woodworker	16
Ship mechanic	31	Shipbuilding engineer	8
Mechanic of ship systems	29	Ship electro mechanic	7
Steam boiler operator	27	Shipbuilding technician	7
Ship pipe layers	27	Adjuster of ship electrical equipment	6
Seafarer - Welder	25	Captains	2
Ship hull builder and repairer	25	Others for shipbuilding, repair and operation	62
Adjuster of metal ship constructions	24		

Background of unemployed individuals wishing to work in maritime sector:

Background	Number
Secondary school with professional qualification	473
Higher	111
Basic with professional qualification	105
University or equal	39
Higher non-university	15
Secondary school	10
Primary with professional qualification	6
Primary	1

The majority of people prefer to work according to their profession.

Currently offering job places in Klaipeda:

Adjuster of metal ship constructions	51
Shipbuilding engineer	3
Ship pipe layer	1
Shipbuilding technician	1
Ship diesel metalworker	1

South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

The highest demand for labour in relation to the marine sector in the labour exchange is in the field of cruise ship services (barmen, waiters, cleaners, cooks etc.). In 2011 there were only several qualified workers, namely ship engineering, seaport engineering and marine mechanical engineering specialists.

Major databases on the marine sector qualified labour supply and demand in Lithuania are accumulated in the private sector, i.e. private employment agencies.

The representatives of websites (databases of job/employee seeking persons), namely www.cv.lt, www.cvonline.lt, www.cvmarket.lt, www.cvbankas.lt, www.manager.lt, state that during the period of 2011-2012 in Klaipėda the highest labour supply was in the field of seaport and logistics and ship industry (ship construction and repair, mechanical engineering).

According to the Novikontas SCM UAB which is situated in Klaipėda and renders seamen employment services, the highest demand for employees is not the demand for specialists with the highest qualification: sailors, motorists and employees of other professions without higher education who have finished vocational schools or seamen's courses. The range of qualified specialists with higher education (diploma of the Maritime Institute or Klaipėda University), high qualification and work experience in the areas of mechanical engineering, electromechanical engineering or welding work and who would know the English language is not great in Klaipėda or they get employed through other channels. The company employs qualified specialists from Russia, mainly from Kaliningrad and Leningrad Oblast.

5.2. Educational offer, graduates and specialization at the universities in Lithuania (2011)

Klaipeda is the only seaport of Lithuania, thus all main educational institutions closely related to maritime activities are situated in Klaipeda. High quality specialists for the Maritime Labour Market are educating in Klaipeda University, Maritime institute and Lithuanian Maritime Academy. Number of graduates in 2006-2011 is shown in Table 5 and Fig. 7.

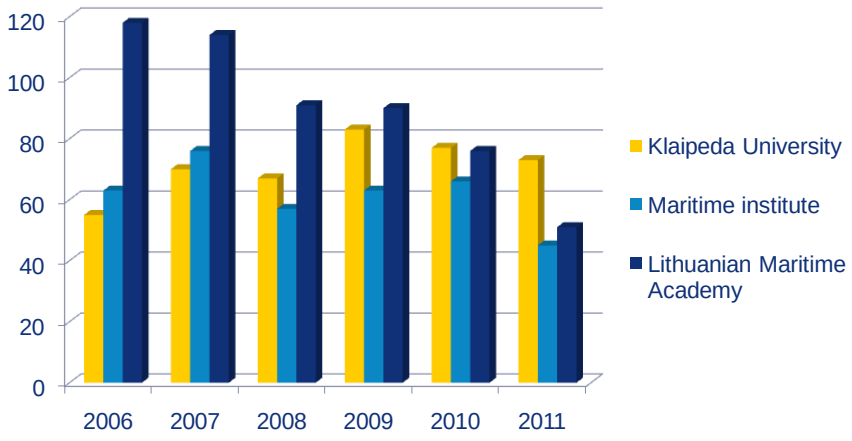


Fig. 7. Number of graduates in 2006-2011

South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

Total number of graduates related to maritime sector reduced by 28 per cent during last 5 years, mainly in Maritime institute and Lithuanian Maritime Academy (LMA), while number of Klaipeda university graduates slightly increased. It mostly has happened because of financial and economic crisis that reduced the number of part-time students (adults working and learning in parallel), worsening demographic situation, and high numbers of emigration. According to the new strategic plan to close Ship plant operation and Ship navigation study programmes in Maritime Institute and replace those by the new related to port and coast plant engineering in the future the number of students of LMA should increase or keep constant, at least.

Table 5. Number of graduates in 2006-2011

Organization	Study programme	2006	2007	2008	2009	2010	2011
Klaipeda University, Faculty of Marine engineering	Ship Engineering/Bachelor	7	14	13	19	21	17
	Seaport engineering/Bachelor	19	23	20	18	20	25
	Ship design and shipbuilding /Master	5	7	5	6	4	4
	Seaport management/Master	14	13	12	17	16	7
	Chemical engineering/Bachelor	10	11	7	12	12	10
	Sea environmental engineering/Master	-	2	10	11	4	10
	Total:	55	70	67	83	77	73
Maritime institute	Ship plant operation/Bachelor	19	21	21	22	17	17
	Ship plant operation Engineer	7	8	5	9	11	-
	Ship navigation/Bachelor	23	23	19	25	22	14
	Ship navigation Engineer	11	15	7	4	11	10
	Management of fleet operation/Master	2	6	-	3	1	3
	Fleet operation Master	1	3	5	-	4	1
	Total:	63	76	57	63	66	45
Lithuanian Maritime Academy	Marine Navigation	53	36	35	47	38	29
	Marine engineering	40	41	23	27	29	22
	Marine Navigation*	20	28	23	16	9	
	Marine engineering*	5	9	10			
	Total:	118	114	91	90	76	51
Total:		**236**	**260**	**215**	**236**	**219**	**169**

*** Short-time course of Professional Bachelor (higher non university education) for graduates of Maritime school**

Pursuant to the data provided by Klaipėda University (see Table 1), during the period of 2006-2011 the majority of the graduates at the Faculty of Marine Engineering of Klaipėda University chose the Bachelor's studies of ship engineering (17 students) and seaport engineering (24 students). During the period of 2006-2011 the major part of students at the Maritime Institute chose the Bachelor's studies of ship plant operation (17 students) and ship navigation (17 students). During the period of 2006-2011 at the Lithuanian Maritime Academy the most promising specialties were as follows: marine navigation (29 students) and marine engineering (22 students).

Bachelor level "Seaport engineering" and Master level "Seaport management" study programmes have the biggest total impact rate on competitiveness of Lithuanian maritime sector.

South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

Despite the fact that Bachelor level "Ship engineering" and Master level "Naval architecture and shipbuilding" study programmes of Klaipeda University and Professional Bachelor level "Ship plant operation" study programme of Lithuanian Maritime Academy are not the most popular and marketable study programmes, the biggest shipyard SC Western Shipyard started to support the best students by providing them scholarships. Executive team of the shipyard decided to attract the best students and solve the problem of engineering human resources for building of technologically advanced vessels.

Due to EU Strategic document Energy 2020, engineering personnel for renewable energy sector also have to be required. Klaipeda University has been preparing a new master level study programme Geothermal engineering that was asked by business partners of Klaipeda County.

The main subjects that are necessary to improve competitiveness of the Lithuanian Maritime industry are as shown in coloured green lines in the table:

Research on seaport navigable safety
Compatibility of transport means and their capacities
Optimisation of cargo handling
Design and improvement of cargo handling equipment
Design of seaport infrastructure
Design of ship propulsion equipment
Development of the system for ship maintenance in the seaport

It may be concluded that currently the specialists trained at Klaipėda University and the Lithuanian Maritime Academy does not adequately satisfy the current demand of the maritime sector companies in terms of the number of trained specialists and their specialisation. It has been noticed that the lack of specialists in the marine sector with the highest qualification, namely mechanical engineering, electromechanical engineering specialists, welders in the field of marine sciences/researches whose requalifying is complicated becomes more and more significant and there are no trainings for the afore-mentioned specialists.

Table 6: Educational offer, graduates and specialization at the universities in Lithuania

Specialisation	Qualification defined in the curricula
Klaipeda University (Klaipėdos universitetas), Faculty of Marine engineering	
Ship Engineering First degree /Engineering 25 graduates per year	Bachelor of Naval Architecture has a grasp of the essential principles of technological science. Bachelor understands the fundamentals of marine design, including flotation, stability, ship and marine technology, resistance and propulsion, ship structures, design theory and practice, management subjects. Naval Architecture aims to develop engineering designers with a capacity for the creative synthesis of science, engineering, technology and business. Together these factors are the key to the design, construction, operation and maintenance of all types of ships, boats and other fixed and floating marine structures: from supertankers to sailing yachts, and from fast ferries to offshore wind turbines and oil platforms.

South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

Mechanical engineering First degree /Engineering 28 graduates per year	Bachelor in Mechanical Engineering has: a grasp of the essential principles of mechanical engineering the ability to apply basic engineering principles and analytical techniques to problem formulation and solution, an understanding of the engineering design process at both the conceptual and detail levels, a familiarity with the key factors in the business environment such as marketing skills, financial awareness, investment appraisal and a range of transferable skills including communication, numeric use of information technology, project management and team working.
Sea port engineering First degree/ Engineering 25 graduates per year	Transport engineering specialist, who is oriented as an engineer and higher qualification specialist in maritime industry to organise and use different technological processes, create, designing, operation of technological equipment for the optimization and avoiding any possible damage to environmental protection.
Chemical engineering First degree/ Engineering 20 graduates per year	Graduate has the knowledge of fundamental chemistry (organic, inorganic, physical, analytical) mechanics, materials science, chemical engineering and technology, has fundamentals of economics and management, be able to use achievements of information technology, to understand new chemical technologies, to design technological equipments and analyze its working conditions, to work safely with chemical materials and technological equipments.
Sea port management Second degree/ Engineering 17 graduates per year	The acquired qualification gives an opportunity to work at Port Administration, cargo handling storage operations, cargo forwarding, stevedoring and other Maritime industry Companies and institutions, take a part on Master's Degree studies.
Marine environmental engineering Second degree/ Engineering 13 graduates per year	The program is designed to prepare Environmental Engineering with knowledge of the ecological processes of change, the modeling of marine transport on the environment, new technologies for the marine environment, coastal zone planning and management of secure, sustainable development, energy conservation, waste management, the latest scientific achievements. Future Masters in Environmental Engineering will be able to analyze the current and forecast the possible situation of the marine environment, develop and implement new, innovative environmental technologies, the planning of preventive measures for reducing pollution, use of information technology in the practice. Acquired skills can be successfully applied to scientific work independently as well as the continuation of doctoral studies. Masters can work in marine infrastructure enterprises, environmental management and control bodies, research centers, universities, the acquisition of managerial and practical experience to work in business or department heads.
Ship design Second degree/ Engineering 4 graduates per year	The naval architect and marine engineer is prepared to employ both art and science in the design and construction of various ships and machinery. Naval architects and marine engineers are also called upon for other conversion and repair of existing ships, and actively engage in research and development activities related to their specialties, in developing and technological process managing especially in building and maintaining of marine technology engineering, in activity of classification and supervisory institutions and other operations from the wider field of shipbuilding and marine technology engineering i.e. sea-keeping.
Ship electrical equipment and automatic Second degree/ Engineering 34 graduates per year	Master in Electrical Engineering of Ship Electrical Equipment and Automation has: a grasp of the essential principles of electrical engineering the ability to apply basic engineering principles and analytical techniques to problem formulation and solution, understanding of the engineering design process, at both the conceptual and detail levels a familiarity with the key factors in the business environment such as marketing skills, financial awareness and investment appraisal and a range of transferable skills including communication, numeric use of information technology, project management and team working.

South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

Technical information systems engineering Second degree/ Engineering 10 graduates per year	Graduates have fundamental knowledge and research skills in Information System (E150) and Software Engineering (E160a) subjects; theoretical informatics engineering basics, statistical data analysis and information extraction, scientific research methodology, operations research, application of artificial intelligence in information systems, automatic control, information system security, modeling of organization activities, modern software engineering, mathematical modeling of engineering systems, knowledge of project and quality management, understanding design methodologies of virtual models and real prototypes, competently carry out independent analysis of the engineering and scientific research works, using known data acquisition, analysis, reliability and assessment techniques. Technical Information System Engineering Masters programme (E150) is aimed at preparing high quality information system engineers, who are able to solve complex theoretical and practical problems independently and creatively; lead and conduct engineering and scientific research projects efficiently and competently. This Masters study programme deepens the fundamental knowledge of Information Systems (E150) and Software Engineering (E160a) further developing research skills. In a different programme practical skills to develop hardware and software tools of disease identification for health security are being developed. Informatics Engineering Master course graduates can either pursue their PhD studies at any other university or work in various Lithuanian or foreign companies providing telecommunication and IT services, or in medical diagnostics centers as IT project managers or information systems analysts, who are able to analyze, organize, design and manage projects.
Klaipeda University (Klaipėdos universitetas), Maritime Institute	
Operation of marine power plant First degree/ Engineering 17 graduates per year	The student receives all necessary professional skills according to the requirements IMO (International Maritime Organization), The International Agreement on Standards of Training, the Certificate and Watchkeeping for Seafarers (STCW 78/95) and directives of Europe Parliament and Council at operational and management level, and professional competence which allow to carry out function of the trainee - the marine engineer. The acquired engineering skills gives the opportunity to work in companies associated with machinery, mechanics, energetic products production, services and operation. Continuing studies by "Operation of Ship Power Plants" speciality will receive professional competence which allow to carry out function of an engineer officer.
Ship navigation First degree/ Engineering 24 graduates per year	A person who has acquired the qualification of *ship navigation engineer* should: – be able to determine a ship's coordinates, use radio navigation devices and radio locators, observe international agreements and conventions regarding safety of navigation and environmental protection, and handle bookkeeping. – know the history and theory of Lithuanian navigation, basics of navigation management, basics of geography, safety requirements for passengers and crew, problem-solving methods, basics of medicine and cargo transportation technologies; – be able to work in team, think quickly, and act decidedly and responsibly.
Management of fleet operation Second degree/ Engineering 3 graduates per year	Programme is designed to educate Transport Engineering specialists of high qual. for the work at top managing positions at ship repair and building yards, shipping companies and other subjects of marine complex and administrative bodies with the basic economy of transport energy plants. Education of specialists having deep and universal knowledge of transport engineering and transport power fields, able to apply the mathematical computer modelling methods of systemic and statistical analysis; to optimise the characteristics of marine propulsion plants; to plan and manage operation of diesel equipment; renovation and modernisation of operating power plants; implementation of innovative technologies; planning and carrying out applied scientific research.

South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

Fleet operation Second degree/ Engineering 1 graduates per year	The programme is designed to educate Transport Engineering specialists of high qualification for the work at top managing positions at ship repair and ship building yards, shipping companies and other subjects of marine complex and administrative bodies with the basic economy of transport energy plants (diesel, turbo devises). Education of specialists having deep and universal knowledge of transport engineering and transport power fields, able to apply the mathematical computer modelling methods of systemic and statistical analysis; to optimise the characteristics of marine propulsion plants; to plan and manage operation of diesel equipment; renovation and modernisation of operating power plants; implementation of innovative technologies; planning and carrying out applied scientific research. The professional education of the "Marine power equipment operation" (MPEO) study programme of the second university cycle provides graduates with an exceptional right to be employed in the management positions in the strategic structures of the Lithuanian marine complex: Lithuanian Maritime Safety Administration, Klaipeda State Sea Port Authority, Navy, etc. For the acquiring of the profession the entrants have to have the Bachelor qualification (Prof. Bachelor) degree in MPEO or "Marine and port power plant Engineering" specialities and basic professional senior staff seamen's training in compliance with the requirements of the international standard convention STCW 78/95.
Lithuanian Maritime Academy (Lietuvos aukštoji jūreivystės mokykla)	
Marine Navigation First degree/ Engineering 29 graduates per year	A person acquired the qualification of *marine navigator* should: – be able to manage the ship and crew, perform the ship's cargo handling operations, to navigate ships under any weather conditions, follow the international conventions on human life and environmental security; – know manoeuvrable and technical data of the ship, ship's theory and stability, survivability and viability, safety requirements for sea-going vessels, the Lithuanian and international legal regulations for marine vessels; – be able to take responsible, critical, logical decisions, to resolve problems flexibly, to co-operate with crew effectively and manage conflict.
Marine engineering First degree/ Engineering 22 graduates per year	A person acquired the qualification of *marine engineer* should: – be able to independently operate power plants, auxiliary mechanisms, equipment, and systems of ships: carry out diagnostics, eliminate disorders, and organise crew's work; – know national and international legal documents regulating work of seagoing ships; – be able to consistently express thoughts, flexibly solve problems, and effectively communicate and organize work of crew
Klaipeda State College (Klaipėdos valstybinė kolegija), Faculty of Technologies	
Road transport technologies First degree/ Engineering 30 graduates per year	Having acquired a specialty in Land Transport Engineering, an individual will be able to organize local and international cargo and passenger transportation by road and rail transport; to make decisions on transportation planning, organization, and cargo accumulation and storage; to ensure transportation quality and efficient vehicle operation; to select loading mechanisms; to organize work of a small transport service company; to perform transport-expeditionary operations; to prepare technical and technological transportation documentation; to carry out market research; to estimate business environment and individual activity outcomes; to collaborate with the employees of other institutions and business partners.

South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

References

Scientific research on Lithuanian maritime sector development (Feasibility study) /Lietuvos jūrinio sektoriaus vystymo galimybių studija. Prepared by JSC „Savvin“ for Association „Baltic valley“. 2011. 149 p.

Ž. Sinkevičius. Report on cargo handling in Klaipėda state seaport in the year 2010. 62 p. <http://www.portofklaipeda.lt/en.php/statistics/annual_reports/7746>.

The law on education. 17 March 2011 No XI-1281. < http://www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id=407836>

Law on higher education and research**.** 30 April 2009 No XI-242. < http://www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id=366717>

The national education strategy 2003-2012. Parliament of the Republic of Lithuania. No. IX-1700, 4 July 2003. < http://www.smm.lt/en/legislation/docs/Lithuanian%20Education%20Strategy%202003-2012.pdf>

Open Information, Counselling and Guidance System (AIKOS) http://www.aikos.smm.lt/aikos/lang.do?language=en

Qualification recognition. Center of Quality Assessment in Higher Education. < http://www.skvc.lt/en /content. asp?id=95>

Asociation „Baltic valley“. < http://balticvalley.lt/en/>

The Association of Lithuanian Stevedoring Companies. < http://www.asoc.lt/?ln=en&id=>

Lithuanian shipowner‘s association < http://www.llsa.lt/en/>

Association of Lithuania Shipbuilders and Repairers < http://www.llsra.lt/>

Lithuanian Fisheries Producers’ Association <http://www.fishsec.org/stakeholder/lithuanian-fisheries-producers% E2%80%99-association/>

L. Benedetti. WATERBORNE TP. Coordination and Best Practice for European Maritime Technological Platforms. WATERBORNE Secretariat – Brussels. Community of European Shipyards’ Associations (CESA) – Brussels. < https://webgate.ec.europa.eu/maritimeforum/system/files/Presentation%20of%20L.%20Benedetti.pdf>

South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

Annex 1

Name of higher education institutions in national language	Name of higher education institutions in English	Faculty/ Department	Type of study	Specialisation	No of graduates per year	Qualification defined in the curricula
Klaipėdos universitetas	Klaipeda University	Faculty of Marine Engineering	First degree /Engineering	Ship Engineering	25	Bachelor of Naval Architecture has a grasp of the essential principles of technological science. Bachelor understands the fundamentals of marine design, including flotation, stability, ship and marine technology, resistance and propulsion, ship structures, design theory and practice, management subjects. Naval Architecture aims to develop engineering designers with a capacity for the creative synthesis of science, engineering, technology and business. Together these factors are the key to the design, construction, operation and maintenance of all types of ships, boats and other fixed and floating marine structures: from supertankers to sailing yachts, and from fast ferries to offshore wind turbines and oil platforms.
			First degree /Engineering	Mechanical engineering	28	Bachelor in Mechanical Engineering has: a grasp of the essential principles of mechanical engineering the ability to apply basic engineering principles and analytical techniques to problem formulation and solution, an understanding of the engineering design process at both the conceptual and detail levels, a familiarity with the key factors in the business environment such as marketing skills, financial awareness, investment appraisal and a range of transferable skills including communication, numeric use of information technology, project management and team working.
			First degree/ Engineering	Sea port engineering	25	Transport engineering specialist, who is oriented as an engineer and higher qualification specialist in maritime industry to organise and use different technological processes, create, designing, operation of technological equipment for the optimization and avoiding any possible damage to environmental protection.
			First degree/ Engineering	Chemical engineering	20	Graduate has the knowledge of fundamental chemistry (organic, inorganic, physical, analytical) mechanics, materials science,

South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

						chemical engineering and technology, has fundamentals of economics and management, be able to use achievements of information technology, to understand new chemical technologies, to design technological equipments and analyze its working conditions, to work safely with chemical materials and technological equipments.
			Second degree/ Engineering	Sea port management	17	The acquired qualification gives an opportunity to work at Port Administration, cargo handling storage operations, cargo forwarding, stevedoring and other Maritime industry Companies and institutions, take a part on Master's Degree studies.
			Second degree/ Engineering	Marine environmental engineering	13	The program is designed to prepare Environmental Engineering with knowledge of the ecological processes of change, the modeling of marine transport on the environment, new technologies for the marine environment, coastal zone planning and management of secure, sustainable development, energy conservation, waste management, the latest scientific achievements. Future Masters in Environmental Engineering will be able to analyze the current and forecast the possible situation of the marine environment, develop and implement new, innovative environmental technologies, the planning of preventive measures for reducing pollution, use of information technology in the practice. Acquired skills can be successfully applied to scientific work independently as well as the continuation of doctoral studies. Masters can work in marine infrastructure enterprises, environmental management and control bodies, research centers, universities, the acquisition of managerial and practical experience to work in business or department heads.
			Second degree/ Engineering	Ship design	4	The naval architect and marine engineer is prepared to employ both art and science in the design and construction of various ships and machinery. Naval architects and marine engineers are also called upon for other conversion and repair of existing ships, and actively engage in research and

South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

						development activities related to their specialties, in developing and technological process managing especially in building and maintaining of marine technology engineering, in activity of classification and supervisory institutions and other operations from the wider field of shipbuilding and marine technology engineering i.e. sea-keeping.
			Second degree/ Engineering	Ship electrical equipment and automatic	34	Master in Electrical Engineering of Ship Electrical Equipment and Automation has: a grasp of the essential principles of electrical engineering the ability to apply basic engineering principles and analytical techniques to problem formulation and solution, understanding of the engineering design process, at both the conceptual and detail levels a familiarity with the key factors in the business environment such as marketing skills, financial awareness and investment appraisal and a range of transferable skills including communication, numeric use of information technology, project management and team working.
			Second degree/ Engineering	Technical information systems engineering	10	Graduates have fundamental knowledge and research skills in Information System (E150) and Software Engineering (E160a) subjects; theoretical informatics engineering basics, statistical data analysis and information extraction, scientific research methodology, operations research, application of artificial intelligence in information systems, automatic control, information system security, modeling of organization activities, modern software engineering, mathematical modeling of engineering systems, knowledge of project and quality management, understanding design methodologies of virtual models and real prototypes, competently carry out independent analysis of the engineering and scientific research works, using known data acquisition, analysis, reliability and assessment techniques. Technical Information System Engineering Masters programme (E150) is aimed at preparing high quality information system engineers, who are able to solve complex theoretical and practical problems independently and creatively; lead and conduct engineering and

South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

						scientific research projects efficiently and competently. This Masters study programme deepens the fundamental knowledge of Information Systems (E150) and Software Engineering (E160a) further developing research skills. In a different programme practical skills to develop hardware and software tools of disease identification for health security are being developed. Informatics Engineering Master course graduates can either pursue their PhD studies at any other university or work in various Lithuanian or foreign companies providing telecommunication and IT services, or in medical diagnostics centers as IT project managers or information systems analysts, who are able to analyze, organize, design and manage projects.
Klaipėdos universitetas	Klaipeda University	Maritime Institute	First degree/ Engineering	Operation of marine power plant	17	The student receives all necessary professional skills according to the requirements IMO (International Maritime Organization), The International Agreement on Standards of Training, the Certificate and Watchkeeping for Seafarers (STCW 78/95) and directives of Europe Parliament and Council at operational and management level, and professional competence which allow to carry out function of the trainee - the marine engineer. The acquired engineering skills gives the opportunity to work in companies associated with machinery, mechanics, energetic products production, services and operation. Continuing studies by "Operation of Ship Power Plants" speciality will receive professional competence which allow to carry out function of an engineer officer.
			First degree/ Engineering	Ship navigation	24	A person who has acquired the qualification of *ship navigation engineer* should: – be able to determine a ship's coordinates, use radio navigation devices and radio locators, observe international agreements and conventions regarding safety of navigation and environmental protection, and handle bookkeeping. – know the history and theory of Lithuanian navigation, basics of navigation management, basics of

South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

						geography, safety requirements for passengers and crew, problem-solving methods, basics of medicine and cargo transportation technologies; – be able to work in team, think quickly, and act decidedly and responsibly.
			Second degree/ Engineering	Management of fleet operation	3	Programme is designed to educate Transport Engineering specialists of high qual. for the work at top managing positions at ship repair and building yards, shipping companies and other subjects of marine complex and administrative bodies with the basic economy of transport energy plants. Education of specialists having deep and universal knowledge of transport engineering and transport power fields, able to apply the mathematical computer modelling methods of systemic and statistical analysis; to optimise the characteristics of marine propulsion plants; to plan and manage operation of diesel equipment; renovation and modernisation of operating power plants; implementation of innovative technologies; planning and carrying out applied scientific research.
			Second degree/ Engineering	Fleet operation	1	The programme is designed to educate Transport Engineering specialists of high qualification for the work at top managing positions at ship repair and ship building yards, shipping companies and other subjects of marine complex and administrative bodies with the basic economy of transport energy plants (diesel, turbo devises). Education of specialists having deep and universal knowledge of transport engineering and transport power fields, able to apply the mathematical computer modelling methods of systemic and statistical analysis; to optimise the characteristics of marine propulsion plants; to plan and manage operation of diesel equipment; renovation and modernisation of operating power plants; implementation of innovative technologies; planning and carrying out applied scientific research. The professional education of the “Marine power equipment operation” (MPEO) study programme of the second university cycle provides graduates

South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

						with an exceptional right to be employed in the management positions in the strategic structures of the Lithuanian marine complex: Lithuanian Maritime Safety Administration, Klaipeda State Sea Port Authority, Navy, etc. For the acquiring of the profession the entrants have to have the Bachelor qualification (Prof. Bachelor) degree in MPEO or "Marine and port power plant Engineering" specialities and basic professional senior staff seamen's training in compliance with the requirements of the international standard convention STCW 78/95.
Lietuvos aukštoji jūreivystės mokykla	Lithuanian Maritime Academy		First degree/ Engineering	Marine Navigation	29	A person acquired the qualification of *marine navigator* should: – be able to manage the ship and crew, perform the ship's cargo handling operations, to navigate ships under any weather conditions, follow the international conventions on human life and environmental security; – know manoeuvrable and technical data of the ship, ship's theory and stability, survivability and viability, safety requirements for sea-going vessels, the Lithuanian and international legal regulations for marine vessels; – be able to take responsible, critical, logical decisions, to resolve problems flexibly, to co-operate with crew effectively and manage conflict.
				Marine engineering	22	A person acquired the qualification of *marine engineer* should: – be able to independently operate power plants, auxiliary mechanisms, equipment, and systems of ships: carry out diagnostics, eliminate disorders, and organise crew's work; – know national and international legal documents regulating work of seagoing ships; – be able to consistently express thoughts, flexibly solve problems, and effectively communicate and organize work of crew
Klaipėdos valstybinė kolegija	Klaipeda State College	Faculty of Technologies	First degree/ Engineering	Road transport technologies	30	Having acquired a speciality in Land Transport Engineering, an individual will be able to organize local and international cargo and

South Baltic PROGRAMME
Part-financed by the European Union (European Regional Development Fund)

						passenger transportation by road and rail transport; to make decisions on transportation planning, organization, and cargo accumulation and storage; to ensure transportation quality and efficient vehicle operation; to select loading mechanisms; to organize work of a small transport service company; to perform transport-expeditionary operations; to prepare technical and technological transportation documentation; to carry out market research; to estimate business environment and individual activity outcomes; to collaborate with the employees of other institutions and business partners.

South Baltic PROGRAMME
Part-financed by the European Union
(European Regional Development Fund)