



SOUTH BALTIC BLUE GROWTH INDEX

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Abstract

Blue Growth is the long-term strategy to support sustainable growth in the marine and maritime sectors. Seas and oceans are drivers for the European economy and have great potential for innovation and growth. It is the maritime contribution to achieving the goals of the Europe 2020 strategy for smart, sustainable and inclusive growth. During implementation of South Baltic programme INTERMARE, dedicated to internationalisation of South Baltic maritime economy, by application of author Circular Economy 3.0 methodology was created Blue growth qualitative index concept and their measurement tool. Expert poll enabled to measure Blue growth qualitative index in South Baltic countries: Germany, Denmark, Lithuania, Poland and Sweden. It demonstrates development of growth qualities transiting Physical, Economic, Ecologic, Sustainable and Smart growth stages. This index will be used for composing SB maritime economy marketing strategy. Created blue growth index and its measurement tool is enough universal and could be easy used for assessment of Blue growth state in other Seas and regions. Worked out recommendations could be useful for EU Blue Growth and maritime development issues towards 2030/2035 year.

KEY WORDS: blue growth; qualitative index; South Baltic; circular economy 3.00.

Introduction

Seas and oceans are drivers for the European economy and have great potential for innovation and growth, what is the biggest nowadays challenge [3, 15]. The 'blue' economy represents roughly 5.4 million jobs and generates a gross added value of almost €500 billion a year. Maritime sector's growth is specified additionally by EU Integrated maritime policy¹ and Blue growth strategy². It is the maritime contribution to achieving the goals of the Europe 2020 strategy for smart, sustainable and inclusive growth³. Blue Growth was accepted in 2012 and is the long-term strategy to support sustainable growth in the marine and maritime sectors. According to the strategy, further growth is possible in several areas which are highlighted within the strategy.

The strategy consists of three components: 1. Develop sectors that have a high potential for sustainable jobs and growth, such as: a. aquaculture, b. coastal tourism, c. marine biotechnology, d. ocean energy, e. seabed mining; 2. Essential components to provide knowledge, legal certainty and security in the blue economy: a. marine knowledge to improve access to information about the sea; b. maritime spatial planning to ensure an efficient and sustainable management of activities at sea; c. integrated maritime surveillance to give authorities a better picture of what is happening at sea; 3. Sea basin strategies to ensure tailor-made measures and to foster cooperation between countries: a. Adriatic and Ionian Seas, b. Arctic Ocean, c. Atlantic Ocean, d. Baltic Sea, e. Black Sea, f. Mediterranean Sea, g. North Sea.

The main problem. During initiation and implementation of South Baltic programme project

“INTERMARE – Internationalization of South Baltic maritime economy“(2017-2020), seeking to work out this region Blue growth, marketing strategy was prepared and made market research, during which were recognised significant methodological and practical problems of Blue growth strategy generally and lack of reliable data for assessment the state of Blue growth. Concentration to only 5 specified fields of maritime activities isn't in accordance to holistic approach, which requires to assure growth of all scope of interconnected 20 main maritime activities. For example, not assuring clean marine waters it's difficult to talk about aquaculture development. Use of quantitative indexes for assessment of Blue growth meets with lack of reliable maritime statistics, why it's very difficult to evaluate dynamics of Blue growth, which is qualitative phenomenon at first. Here is lack of qualitative indexes of Blue growth. In scientific literature and development practice we hear many uncertain initiatives and strategies, as green, circular economy, blue, smart, sustainable, inclusive growth, which frequently are understanding as buzzwords difficult applicable as methodological and operational tools for practical growth.

During implementation of South Baltic programme project CIRTOINNO, dedicated to applying circular economy principles to green and blue tourism SME's in South Baltic area, author of this article composed Circular economy 3.0 methodology [14], which was applied to Blue growth strategy. Composed Blue growth index was used for assessment of the state, potential and strategic targets of Blue growth in South Baltic region [13].

Main subject of the article is localisation of South Baltic region Blue growth index on the qualitative leap of smart

¹ https://ec.europa.eu/maritimeaffairs/policy_en

² https://ec.europa.eu/maritimeaffairs/policy/blue_growth_en

³ <https://www.eea.europa.eu/policy-documents/com-2010-2020-europe-2020>

growth by use Blue growth index and provide It's growth strategy.

Main aim of the article is to assess Blue growth state, potential and strategic targets by use qualitative Blue growth index virtual self-assessment poll.

Main tasks of the article are:

1. To describe Blue growth index assessment technics and characteristics.
2. To present South Baltic common Blue growth index values.
3. To analyse Blue growth index values by maritime branches, activities and countries.
4. To synthesise Blue growth strategic qualities.

Blue growth index assessment technics and characteristics

Quantifiable indicators of blue growth composed as the matrix of Blue growth indicators with short characteristic of each maritime economy activity and by qualities of growth: physical, economic, green, sustainable and smart [13] (Table 2). Here taken care, that each characteristic is relevant to the activity and growth quality. They also must be short, clear, as much as possible equal understandable by developers, experts and readers of the research report.

The expert virtual poll method is chosen for measure of Blue growth indicators by South Baltic (SB) region countries: Lithuania, Denmark, Sweden, Poland and Germany [11]. Experts were people from maritime industry and their expertise was grounded on different options: Common understanding, Work practice in maritime sector, Business practice in maritime sector, Scholar knowledge of maritime sector, Scientific research of maritime sector practice. In the poll was provided to help experts to justify on equal understanding of main qualities of growth by asking them - What is your priority stage of growth: 1. Physical - new constructions, larger production and service; 2. Economic - seeking for bigger income and less costs; 3. Green - introduction of clean technologies; 4. Sustainable - increasing of wellness and life span of people; 5. Smart - transition to artificial intelligence, internet and robotics.

A set of general and comparative indicators were introduced into questionnaire: Country growth priority; Maritime sector growth priority; Availability of a country blue growth or like maritime growth strategy. Correlation between values of evaluation of different experts helped to recognise level of understanding and abilities of correct evaluation of indicators, what was especially important in the stage of design of editions of questions and answers.

The questionnaire was implemented in qualitative mode with quantifiable evaluation of investigating features with provided Deformalisation its back to qualitative sense. Many questions of questionnaire constructed in pentatomic (n=5) mode and consist of five quantifiable variants of answers with weight coefficients: "Physical" - 1, "Economic" - 2, "Green" - 3 "Sustainable" - 4, "Smart" - 5. The weighted average measure of feature is calculating using equity (1).

$$Ki = \sum_{j=1}^N \frac{k_j n_i}{n} \quad (1)$$

This equity is appropriate to measure Blue growth index by a region and a country. Deformalisation of quantifiable measure K to verbal mode is implementing by placing K into appropriate interval. In the questionnaire were introduced geographical coordinates of South Baltic countries, what enabled to present result of the state of the market on map visually and comparative. Defined values of indicators were placed on maritime activities qualitative leaps. This was useful on planning of their values in strategic points of a future.

The poll was implemented by project INTERMARE team with participation of Polish, German and Lithuanian partners. 100 experts were attracted from all South Baltic programme countries. Biggest number of experts were from Lithuania, Poland and Germany.

Assessment results reflects average quality of understanding of real situation in maritime sector of South Baltic region - weighted quotient is 0,54. Only 18% of expert's knowledge grounded on common understanding of maritime growth state. One third of experts is from maritime practice: 22% has maritime work practice and 11% are maritime businessmen. Scholar and scientific research knowledge in maritime sector consist 44% of all assessments. This gives ground to accept assessments and evaluations as enough acceptable for guidance.

Experts are enough equally distributed by qualities of growth priority. One third of them - 28% belongs to the past qualities - physical and economic growth. One third - 36% - represents green and sustainable growth supporters. The last third - 30% of experts orients to the most modern - smart growth priorities. Further we will see how average expert's growth quality 0,60 corresponds to qualities of growth in South Baltic region, countries and maritime sector growth priorities.

Common Blue growth index values of South Baltic region

The direct assessment by experts of a country and separate maritime sector growth priorities discovered significant and important disproportions on attention giving by countries and by their governments to maritime sector growth. Going from East to West of SB region evident transition from economic to green and sustainable growth priorities (table 1). When Lithuania still try to grow economically, Poland and Sweden prefer to grow in green way. More ewer Germany and Denmark leads in a quality of sustainable growth. As common disproportion is evident less on 11% growth quality in maritime sector comparing to common growth culture by all countries from 8% in Lithuania till 15% and 16% in Germany and Poland. This difference corresponds to South Baltic programme aims to liquidate disproportions in development of continental and seashore regions.

Table 1. Direct assessment of the state of growth by countries and SB region

Index No.	Indicator	Lithuania	Poland	Sweden	Germany	Denmark	SB region average
0.1.	Country growth priority	0,34	0,46	0,60	0,69	0,73	0,48
0.2.	Maritime sector of a country growth priority	0,26	0,30	0,50	0,54	0,63	0,37
	<i>Difference</i>	0,08	0,16	0,1	0,15	0,1	0,11

Distribution of experts by answers concerning knowledge related to Blue growth strategy in a country shows significant challenge (table 2). Each EU country is obligatory to apply EU Blue growth strategy to maritime sector and coastal region. However, is very clear that in Lithuania this strategy wasn't worked out yet and this

important EU strategic document isn't implementing here. In Poland some ideas of Blue growth together with Smart specialisation orienteers are introduced in regional development programmes. Germany is one of the most active countries, who uses Blue growth strategy in national and sea-coast regions.

Table 2. Distribution of experts by knowing is it here in a country Blue growth or similar strategy

Question	Yes	Maybe	No	Don't know	Other	K
Is it here in country Blue or similar strategy?	27	27	15	28	3	0,59

First limited assessment of state of growth indicators in South Baltic region enabled to recognise distribution of growth culture by indicators in interval from physical till green growth. Sustainable growth level was recognised in governance only. It means, that here are variety of programmes and projections of sustainable growth. However, in practice sustainable growth quality wasn't recognised no in one maritime activity.

Expert poll enabled to assess and measure Blue growth indexes by countries and overall South Baltic region through evaluation of growth priorities in each of 20 activities in 4 branches. (Figure 2). Blue growth index

of South Baltic region in firsts half of 2019 year defined as 0,40 and reflects limit of economic growth quality.

Using virtual modelling methodology Virtualics, the Blue growth process was imagined as quality leap from Physical in 2010 till Smart in 2035 year (Figure 1). It's optimistic, that expert's personal priority growth rate is 0,60 and it is significantly higher comparing to assessments of SB country and maritime sector growth rates: 0,48 and 0,37. It shows, that experts give negative assessment of SB countries and maritime growth priorities. This made impact on this, that direct countries maritime sector growth rate 0,37 was lower as indirectly assessed SB region Blue growth index 0,40.

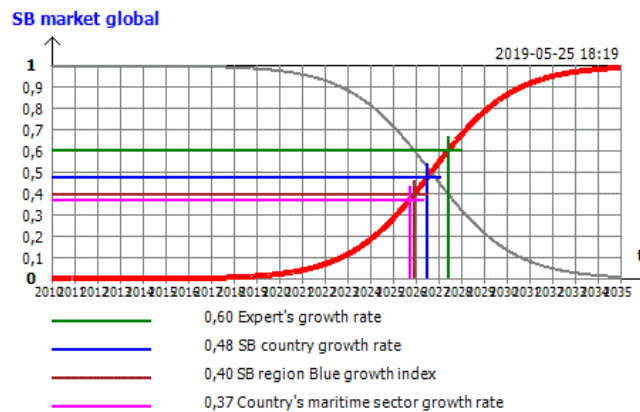


Fig. 1. Localisation of Blue growth results on the quality leap of Smart growth

The model gives right to state, that defined by EU 2020 strategy the quality of smart growth in maritime sector of SB region needs of significant efforts to be achieved not in 2020, but as optimistic case in 2035 year.

Assessment of Blue growth qualities by maritime branches, activities and countries

By SB region average growth quality indexes (table 3) maritime branches and activities marked as transiting from economic (yellow colour) to green (green colour) and to sustainable growth (blue colour). Due to aged

economic management maritime sector growth is not homogenous. Unseeing, that European Union supply modern – green Blue growth strategy and ecological regulations, planning, marketing and finance qualities still economic, what makes troubles seeking to rise quality of growth of all maritime sector.

Maritime industry still in old economic traditions and not demonstrate signs of qualitative growth towards green, sustainable and smart. Exclusion is Biotechnologies sector, where SB countries achieved significant success in aquaculture and marine biotechnologies.

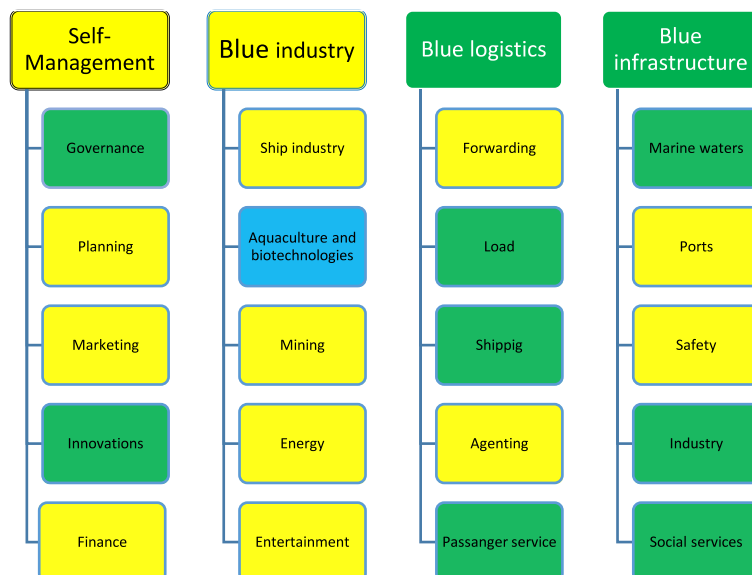


Fig. 2. SB maritime branches and activities marked by growth qualities. Yellow – economic, green – green, blue – sustainable

SB maritime logistics demonstrates green quality of growth in loading, shipping and passenger services, related to transition to modular container and “ro-ro” cargo. However, logistics supporting activities as forwarding and agenting still in economic quality, what limits overall qualitative growth of this branch. Maritime infrastructure as whole and its activities related to marine waters, coastal industry and social services demonstrated

positive links to green growth under impact of EU marine spatial planning regulations and more developed onshore activities.

Blue growth indexes of Lithuania and Poland are economic – consequently 0,37 and 0,36 (Table 3). Sweden, Germany and Denmark characterised as green growth maritime countries with indexes: 0,44; 0,41 and 0,56.

Table 3. Growth culture distribution by South Baltic countries
Countries Lithuania Poland Sweden Germany Denmark SB region average

Blue growth index	0,37	0,36	0,44	0,41	0,56	0,40
1 Self-Management	0,34	0,36	0,43	0,44	0,56	0,39
1.1 Governance	0,45	0,63	0,53	0,73	0,75	0,56
1.2 Planning	0,25	0,35	0,48	0,43	0,53	0,35
1.3 Marketing	0,29	0,26	0,38	0,34	0,43	0,31
1.4 Innovations	0,38	0,43	0,55	0,48	0,63	0,44
1.5 Finance	0,34	0,12	0,2	0,22	0,48	0,28
2 Blue industry	0,36	0,32	0,37	0,36	0,49	0,37
2.1 Ship industry	0,3	0,25	0,28	0,27	0,45	0,3
2.2 Biotechnologies	0,62	0,71	0,83	0,63	0,68	0,67
2.3 Mining	0,33	0,28	0,18	0,46	0,55	0,34
2.4 Energy	0,33	0,22	0,45	0,2	0,48	0,31
2.5 Entertainment	0,23	0,16	0,13	0,22	0,28	0,21
3 Blue logistics	0,41	0,40	0,40	0,44	0,54	0,42
3.1 Forwarding	0,39	0,33	0,38	0,53	0,48	0,4
3.2 Shipping	0,35	0,35	0,4	0,54	0,6	0,41
3.3 Load	0,4	0,49	0,4	0,35	0,58	0,43
3.4 Agenting	0,35	0,31	0,31	0,48	0,45	0,36
3.5 Passenger services	0,57	0,5	0,53	0,32	0,58	0,52
4 Blue infrastructure	0,36	0,36	0,55	0,41	0,65	0,42
4.1 Marine waters	0,38	0,35	0,59	0,52	0,68	0,44
4.2 Ports	0,28	0,17	0,47	0,44	0,6	0,33
4.3 Safety	0,33	0,46	0,42	0,25	0,68	0,4

4.4	Coastal industry	0,41	0,36	0,58	0,43	0,6	0,44
4.5	Social services	0,39	0,46	0,67	0,41	0,68	0,47

It has sense to talk about real existing social units related to maritime sector. At this point of view South Baltic region could be accepted as real if it has social organisation attributes as governance, planning, marketing, innovations and finances. Nowadays the institutional status of South Baltic region society not exist. It's used for paint geographical borders by South Baltic programme only. However, this not make troubles to overview the quality of implementing Self-Management functions of the region by participating countries or international organisations.

Expert poll shows, that South Baltic region Management/ Self-Management has economic quality with index value 0,39. Lithuania and Poland accepts this region of area for economic growth. Sweden Germany and Denmark – as area for green growth.

Blue or maritime industry has old historic paths. Nowadays are seen significant changes in approaches to operation and growth of maritime same as on its resources. European Union gives great attention to qualitative growth of maritime sector. Integrated maritime policy (from 2006) and European Blue growth strategy (from 2012) recognised only five main fields of prospective maritime: coastal and marine tourism, aquaculture, marine biotechnologies, sea bad mining and marine energy. This is related to transformations and synthesis of many traditional maritime activities and business. However, green, sustainable and smart growth approaches enable significantly exceed such 5 Blue growth activities, because in all branches of the unavoidable maritime complex are efficient green, sustainable and smart solutions. Expert assessed blue industry growth quality as economic, index – 0,37. In all SB countries, excluding Denmark, blue industry is of economic quality. In Denmark blue industry is accepted as green. It's evident, that here is lack of advanced green, sustainable and smart approaches.

Maritime transport is occupied in logistics of goods through marine waters and ports from ancient times. Traditionally logistic operations consist of purchase, sells, storage and transportation of goods. Maritime logistics elements are forwarding, load, shipping, agenting and passenger services. Blue logistics in SB maritime was assessed by experts as green, index value 0,42. This quality level is similar in all SB countries.

Necessary resources of Blue growth are marine water, ports, safety facilities, industrial and social infrastructure. In different stages of growth not equal attention is giving to such unavoidable resources. Experts assessed quality of maritime infrastructure services as green, index value 0,42. Lithuania and Poland characterised as economic, Sweden and Germany – green and Denmark as sustainable.

South Baltic Blue growth potential and strategic targets

In terms of EU 2020 strategy for smart, sustainable and inclusive growth South Baltic maritime growth potential could be assessed as 0,6 comparing to achieved 0,4 trough quality leaps of physical, economic, green, sustainable and smart growth.

Until isn't formed legal SB region maritime unit or cluster, it's useful to compose some set of recommendations to EU and SB countries' authorities on homogenisation and harmonisation of development for strategic period till 2030/2035 years. It means, that smart value of SB Blue growth index must be reached 1,0 in all maritime branches and activities in 2030/2035 year.

EU Blue growth strategy was accepted as common guidelines for overall EU countries and maritime regions in 2012.⁴ As shows our made market research for 7 years Blue growth in SB maritime still waiting to be improved. As it was made concerning Mediterranean region, EU could work out growth strategy for South Baltic/ Baltic region too trough framing homogenous growth standards in all maritime branches and activities.

Made research and assessment gives ground to state, that exclusion of 5 Blue growth priority fields and try to develop them leaving without attention of rest 15 destroys overall system of maritime internal links and connections. What don't let achieve Blue growth strategy wishes and make bad impact into overall maritime economy. The concept of Blue growth must be improved by returning to homogenous development of all branches and activities and growth qualities in all countries. This could be achieved by introduction of composed during this research Blue growth index.

EU principle of equal opportunities requires to shorten differences between maritime economies of different countries, especial in axis „East-West“ countries. It's evident, that Lithuania and Poland as more East countries are significantly less developed towards Blue growth qualities. In Lithuania don't exists any Blue growth strategy not talking about its implementation. Maritime cluster isn't formed here. Not efficient centralised management of coastal maritime activities more stops than support development of this branch.

Maritime industry of SB region as ship industry, marine biotechnologies, marine mining, marine energy, marine and coastal entertainment must move towards smart till 2030/2035 according to natural development trends. It needs of significant efforts from EU and SB region country authorities. However, its necessary, considering growing pressure of foreign competitors from Asia and USA. Ship industry cycle consists of marketing, ship design, construction, exploitation, maintenance, repair, modernisation and utilisation. All this process and its elements must be developed through quality steps of physical, economic, green, sustainable and smart growth

⁴ <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52012DC0494>

qualities. It means Global marketing, virtual design, autonomous navigation, preventive/initiative maintenance, waste free utilisation. Majority of such functions are implementing in ship yards, which must access smart growth level and be specialised on smart autonomous ships design and construction.

It's evident, that traditional fishing and fish industry is replacing by recreational fishing, aquaculture and marine biotechnologies. High development level of marine biotechnologies in SB countries give priorities to continue and spread this activity in overall SB region. At sustainable development stage health and beauty needs forms high demand for cosmetics, nutrition, supplements and medicines which could be produced by use marine biotechnologies. Obligatory conditions for aquaculture and marine biotechnologies is clean waters near cost line and harbours. So, clean waters and clean ports are needed for this.

Abandonment of fossil fuel consumption will reduce and stop extraction of oil and gas from sea bed. However, investigation, searching and extraction of rare minerals and metals from Sea bed same as investigation, monitoring and extraction of chemical weapons and mines will be operated by robots.

Specific for marine areas kind of energy is offshore wind power. Many research and investigations show, that SB region has great opportunity to install hundreds of GW of offshore wind power and cover all demands of countries on energy needs in electricity production, heating of individual and block-houses, also transport. This is in accordance to inappropriateness of combusting (oil, gas, biofuel, biomass, etc.) kinds of energy in relation to climate change and negative impact into human's health and life span. Smart electricity grids just provided to construct along, and cross SB marine area and they will transfer offshore wind energy to coastal consumers. Offshore wind power stations are automatically working, and their maintenance needs are reducing by introduction robotic service solutions like air and underwater drones. The future of autonomous shipping energy belongs to big capacity electric batteries and use of solar, wind and hydrogen energy.

Sailing, coastal and cruise shipping will become electric and clean. Large cruise ships will change combusting engines to electric. Small cruise ships till 300 passengers has trend to growth in Baltic Sea and SB region. Circular economy approaches let's reduce and avoid pollution of marine waters from marine entertainment facilities.

Maritime forwarding, shipping, loading, agenting and passenger service will be significantly changed towards smart, grounded on artificial intelligence, quality. Specialised forwarding services will be replaced by virtual Self-forwarding technologies. Any owner of a cargo will be free to use virtual portal, which will propose and assures to choose and deliver goods from one to other place without intermediary service. Smart shipping will be implemented by autonomous electric ships without crew. Ports will adopt infrastructure for autonomous shipping. Smart loading will be implemented by robotic container terminals. "Ro-ro" ferries will be also loaded by robotic tugs. Autonomous shipping will avoid supply of materials, goods, water, etc. for needs of a crew.

Connection of autonomous ship to port electricity, water, waste, information systems will be operating automatically. Smart passenger service will be grounded on virtual communication means. Transport mean will recognize a passenger from face or mobile device. Passenger with luggage will be transported inside of ship by use of autonomous electric wheelchair.

Marine water, port cities, marine safety, coastal industry and social services will be smart. They assure services by reducing manual work and information processing by consumer. Marine waters together with coasts are main infrastructure attributes of maritime activities. A smart virtual spatial modelling of marine water use including underwater monitoring will assure efficient and responsible use of water and provide un wished changes as rise of Sea level, destroying of coasts, etc.

Only democratically Self-managing port-city society can assure sustainable development by coordinating economic, ecologic and social priorities with responsibility against future generations. In case if port is managing by a business or outside/regional/governmental bodies, inhabitants hasn't means to assure clean environment and healthy life conditions in a harbour. So why ports must be owned by port society.

The biggest value of a port-city is the earth near water and opportunity to access coasts of sea or a water basin. If the earth belongs to outside owners, they aren't interested to assure efficient and sustainable use of this area. In this reason ports hold large and very expensive areas for storing unpacked loads, they operate reload bulk and liquid materials, chemical goods, oil, coal, oil cox, fertilisers, etc., what pollutes air, water and make negative impact into health and life quality of near living people. Green and sustainable growth culture require to load in living areas only packed and modular/container loads. Store and reload of cargo from one to other kind of transportation must be operated out of port areas.

As mean for regulation of *load quality growth* is Index of earth use efficiency, calculating to 1 m² of port area and 1 m of quay. Sustainability of use of such measure means economical work productivity, ecologically – cleanness and socially – health of the loading activity. As higher is value of this index, as higher is load quality in a harbour. In smart port we see two kinds of water coast use: a) robotic modular load and cruise shipping terminals and b) free access of inhabitants to water areas. Safety always is safety of humans. So, both – physical and informational safety of a human must be assured in connection to maritime activities. Smart safety is complex concept, which takes together all technical, ecological, social and other risks for assure as longer as possible full-scale life span of a human. Permanent virtual monitoring of health parameters (hearth rhythm, blood pressure, oxygen level, etc.) and readiness of safety services come to help at every time and everywhere.

Smart coastal industry means production of goods without manual work. Smart social services mean opportunities to receive medical, informational, financial, accommodation, food, transportation service without intermediation of a human.

Conclusions

Made market research, composed and measured Blue growth index in South Baltic maritime sector enabled to do next conclusions:

Blue growth index of South Baltic region defined as 0,40 and reflects limit of economic growth quality in first half of 2019. Blue growth indexes are transiting from economic in Lithuania and Poland to green in Sweden, Germany and Denmark.

SB region average growth quality indexes by maritime branches and activities shows transiting from economic to green and sustainable growth qualities.

Not homogenous growth qualities in different branches and fields of SB maritime sector demonstrates lack of strategic Self-Management and responsibility of countries on implementation EU Blue growth strategy.

Maritime industry still in conventional economic traditions and not demonstrate signs of qualitative growth towards green, sustainable and smart. Exclusion is biotechnologies sector, where SB countries achieved significant success in aquaculture and marine biotechnologies.

SB maritime logistics demonstrates green quality of growth in loading, shipping and passenger services, related to transition to modular container and “ro-ro” cargo. However, logistics supporting activities of forwarding and agenting still in economic quality, what is limits overall qualitative growth of this branch.

Maritime infrastructure as whole and its activities related to marine waters, coastal industry and social services demonstrated positive links to green growth under impact of EU marine spatial planning regulations and more developed onshore activities.

The potential of SB maritime sector growth is related to development towards smart quality of growth in all branches and activities, to what must be oriented marketing strategy till 2030/2035 year.

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Stasys Paulauskas, Doctor of Philosophy (applied sociology), professor, establisher and head of Public Institution Strategic Self-Management Institute (from 1991). Author and innovator of methodological systems Virtualics, Anthropogeny, Sociogeny, Technogeny, Strategic Self-Management, Responsible Energy, Sustainable Innovation, Circular Economy 3.0, Blue growth index, which are applied to fields of education, maritime, ITC, energy, business, culture, etc. through large scientific research and innovations and participation in international programmes of UNDP GEF, Leonardo da Vinci, Erasmus, Interreg IIIa, South Baltic and Baltic Sea region. Main specialisation is introduction of Strategic Self-Management in different levels of social organisations. Baltijos pr. 123-61 LT-93224 Klaipeda, Lithuania; +370 655 39295. ssi@eksponente.lt, www.eksponente.lt