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Blue Growth Circular Innovation

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ABSTRACT: Maritime sector's growth is defined and specified by Europe 2020 strategy for smart, sustainable and inclusive growth, Integrated maritime policy and Blue growth strategy. However, practical implementation of such positive regulations isn't so resultative, because Blue growth, same as overall EU zone economic development meets significant troubles. Blue growth methodology needs to be more certain and sustained in overall system of EU development approaches. Here is highlighted, that further growth is possible in several areas: aquaculture, coastal tourism, marine biotechnology, ocean energy, seabed mining. Majority of core maritime activities as industry, logistic and infrastructure hasn't provided as valuable in reason of methodological understanding of a growth in terms of physical and economic growth. Applied author Circular economy 3.0 methodology discovers sense of qualitative growth of holistic maritime economy system what enforces all maritime branches by advanced growth abilities of CleanTech, HealthTec and SmartTech approaches. This opens panel for discussion with business, politicians, communities on matter of improvement EU Blue growth strategy towards radicalisation of EU growth trends.

1 INTRODUCTION

Maritime sector's growth is specified by EU Integrated maritime policy [6] and Blue growth strategy[7]. 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. The 'blue' economy represents roughly 5.4 million jobs and generates a gross added value of almost €500 billion a year. However, further growth is highlighted within **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. **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.

Not seeing to great attention and optimism of European Commission to Blue growth [2] overall state of EU growth and partially maritime sector not shows rapid changes towards smart, inclusive and sustainable growth. Real annual GDP growth still in decelerating trend, what according to Virtualics [12]

[6] https://ec.europa.eu/maritimeaffairs/policy_en
[7] https://ec.europa.eu/maritimeaffairs/policy/blue_growth_en

results disintegration, migration and other challenges of this the best of all times project (Figure 1.).

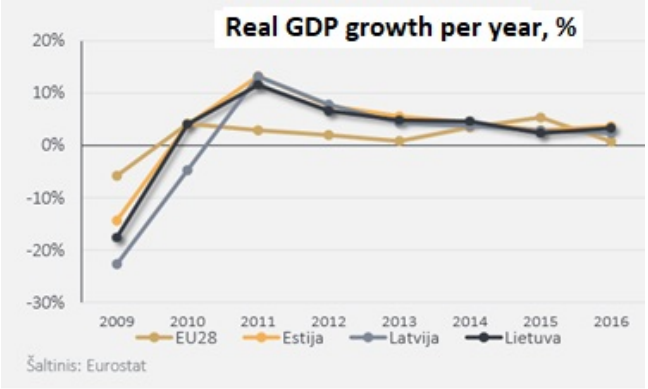

Figure 1. Real GDP growth in Baltic countries and EU28 (Source: Eurostat)

Blue growth methodology isn't enough certain and sustained in overall system of EU development approaches and needs of more deep understanding [18]. Frequently it's directly linked to green and environmental issues of economy. However, clean technologies as resources of green growth aren't enough highlighted as strong priority. Term of sustainability frequently used as synonym of green growth by use marine resources [11]. Human health role in maritime economy still not fixed as crucial in second level of human demands growth pyramid (A.Maslow). Smart growth is used in sense of smart decisions, but not as qualitative stage of Blue growth.

Undoubtful advanced Blue growth approach need to be clarified and detailed in terms of EU2020 strategy. The Eu Global Peace strategy could help to navigate EU towards accelerating growth [12]. The task is to assure transition to accelerating growth of GDP asap firstly by introduction of opportunities of maritime sector, which undoubtful has the most significant potential for growth. This could be reached by social innovation of Blue growth [16]. Applying innovative methodological approach Circular economy 3.00 enabled to frame many buzzword initiatives and approaches in to clear and constructive growth system [14].

The main aim of the article is to frame Blue growth on the ground of author Circular Economy 3.00 methodology.

Main tasks are:

1 To apply Circular Economy 3.00 growth methodology to maritime sector.
2 To present circular model of maritime cluster.
3 To describe circular system of blue growth.

Analysing methodology is continuation of forth decade developing methodology of virtual modelling [13] and it is applying in maritime sector. Practical applications related to author participation in activities of South Baltic programme projects CleanTech International [8], CIRTOINNO and INTERMARE.

[8] https://www.southbaltic-cleantech.eu/

2 CIRCULAR ECONOMY 3.00 AS BLUE GROWTH METHODOLOGY

Faced to stagnation and destruction challenges European Union second decade composes strategic methodologies, programmes and tools, which targeted to increase growth and competitiveness of EU in global market. The Lisbon strategy for last decade and current strategy EU2020[9] is targeted to become European Union smart, sustainable and inclusive growing community, which uses innovations as sustainable development engine. However, here is lack of understanding of holistic system and structure of EU growth methodology in qualitative and time scales. „Green", "environmental", "sustainable", "inclusive", "smart", "circular economy" and overall blue growth frequently are interpreting as buzzwords, hawing not significant sense and impact to practical EU growth. Their disposition one to other frequently varies in outlooks of different authors and especially in practice of innovations and business actors.

Innovative approach to EU Circular economy 1.00 and 2.00 strategy enabled recognise it as ground for frame growth initiatives on the basis of synthesised by author of this article Circular economy 3.00 methodology [14]. „A circular economy[10] is a regenerative system in which resource input and waste, emission, and energy leakage are minimised by slowing, closing, and narrowing material and energy loops. This can be achieved through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, and recycling. This is contrast to a linear economy which is a 'take, make, dispose' model of production."

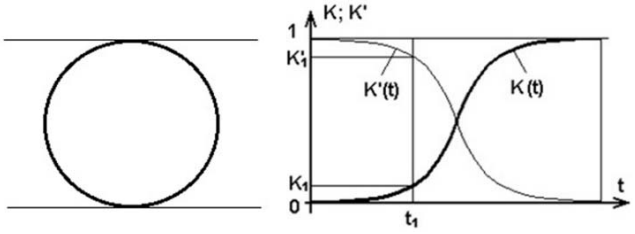

Figure 2. The circle and its projection in to time scale on basis of dichotomic virtual model (S. Paulauskas)

where: K'(t) – Linear economy quality; K(t) – Circular economy quality, K(t)=1-K'(t)

However, the state of development of Circular economy concept is enough draft and partial, because it accents only two circles – loops of material and energy resource flow. These loops can't be excluded from loops of other business resources, like time (human, communication, etc.), finance, legislation, knowledge and other. Practical implementation of CE solutions requires to consider also other business cycles. As an analogy: not a disease, but a person needs to be treated.

Circular economy as business activity firstly is smart, because it is grounded on feed-back loop

[9] E U R O P E 2 0 2 0 A European strategy for smart, sustainable and inclusive growth, http://ec.europa.eu/europe2020/index_lt.htm
[10] http://ec.europa.eu/environment/green-growth/index_en.htm

activity cycle. Businessmen is involved in such cycle as innovator, interested to increase profitability of business.

Deeping into sense of Circular economy gives opportunity to see its internal qualitative steps as historic paradigms of human economic activity (Fig. 3). The historical path from Linear economy to Circular economy goes through Physical, Economical, Environmental (Green), Sustainable and Smart steps. From ancient times physical deals with material things during production of other things hasn't unified methodological frames. Only individual human smartness was a handbook for economic activity in natural economy.

Some hundreds year ago occurred economic theories enabled to change physical language of natural economy to economical language of value and large system of quantitative and qualitative micro and macroeconomic indicators. Environment or ecological and Green economy paradigm occurred in end of last century as antithesis to polluting economy. Sustainable development paradigm synthesised economic, environmental and social priorities with responsibility against future generations. Smart growth paradigm was declared in EU2020 strategy as official strategic methodology of European community in current decade.

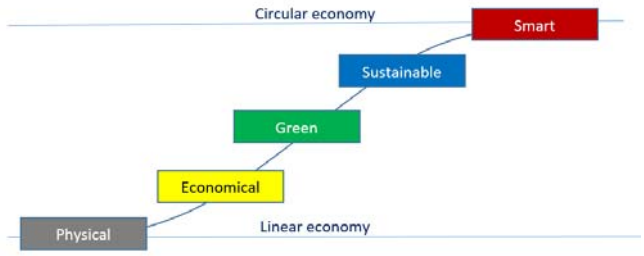

Figure 3. Qualitative leap of circular economy paradigms (S. Paulauskas, 2017)

One of the most significant feature of growth loops is spreading of business resources (Table 1). For physical level materials and energy are main resources of business. Economical paradigm adds to them office and manual work. Green growth is impossible without clean technologies. Sustainable growth requires of health technologies. Artificial intelligence is necessary for smart quality of circular economy.

Different economy paradigm forms different understanding of economy growth. Here is the reason of some misunderstanding in contacts between people and overall countries used different economy paradigms, including scientists and developers. European community take care for common understanding of current paradigm through strategic documents, which are obligatory for all actors of EU. Achieving of highest Smart growth methodology is the main benefit of Circular economy.

3 CIRCULAR APPROACH TO MARITIME CLUSTERS

According to general principles of circularity and life cycle, we composed structure of Maritime economy on basis of a Self-Management cycle, which consist of four steps: a) Programming -Development service, b) Decision-making – Maritime council, c) Implementing - Administration and d) Control – market feed-back (Figure 4).

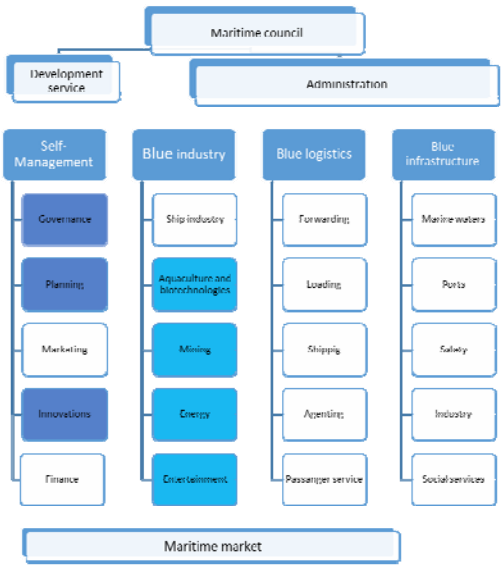

Figure 4. Maritime economy structure according to life cycle principle (S. Paulauskas, 1999).

Table 1. The matrix of growth by paradigms

Paradigm	Physical	Economic	Green	Sustainable	Smart
Resources	Materials and energy Manual work	Marketing Materials and energy Manual work	Clean technologies	Health technologies	Smart technologies
Applications	Production and consumption	Marketing	Wind, solar, electricity, smart houses, modular load, etc.	Wellness, gene enginery, organ regeneration	Artificial intelligence, robotics virtual reality
Indicators	No	Economic	Ecologic Economic	Responsibility Social Ecologic Economic	Happiness of people
Feed-back	long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, recycling, and upcycling	Profit	Climate change	Life span of people	Happiness
Finances	EU, State	Business	Business	Business	Business

Not seeing, that Blue growth strategy gives priority to main five activities, another 16 are also necessary for functioning of overall Maritime system. Qualitative growth of overall Maritime economy requires and consist of growth of all its constituents.

Table 2. The matrix of Blue growth content

	Quality	Physical	Economic	Green	Sustainable	Smart
1	Self-Management					
1.1	Governance	Free market	Large business	Environment protection	Sustainable development	Strategic Self-Management
1.2	Planning	Territorial land planning	Economic growth planning	Environmental, targeted to save nature	Sustainable, oriented to public wellness	Smart, grounded on virtual modelling
1.3	Marketing	Search for clients	Profit oriented	Oriented to clean environment	Oriented to wellbeing of people	Virtually based self-marketing
1.4	Innovations	Take a free niche	Inventions and applying of novelties	Clean Technologies (wind, solar, smart house, electric transport)	Health technologies (wellness, organ regeneration, gene engineering)	Smart technologies (artificial intelligence, internet, robotics, democracy)
1.5	Finance	State or EU support	Business income	Clean Technologies	Health technologies	Smart technologies
2	Blue industry					
2.1	Ship industry	Universal - constructs everything	Specialised construction	Specialised to pollution free construction	Uses modular construction technologies	Robotic construction
2.2	Biotechnologies	Fishing	Industrial fishery	Recreational fishery	Aquaculture	Marine biotechnologies
2.3	Mining	Oil	Gas	Sea bottom cleaning	Mineral and rare metals	Smart robotic mining
2.4	Energy	Oil, gas	Renewable - recovering	Not polluting – wind, solar	Electric at all	Smart at all
2.5	Entertainment	Sailing and coastal rest	Cruise shipping	Ecologic - pollution free shipping	Electric shipping	Virtual tourism
3	Blue logistics					
3.1	Forwarding	At care of cargo owner	Specialised forwarding service	Green forwarding service	Sustainably forwarding	Virtual self-forwarding
3.2	Shipping	Universal cargo	Specialised cargo	Pollution free	Sustainable shipping	Smart crew-less
3.3	Loading	Universal loads	Specialised terminals	Modular (Container and ro-ro)	Sustainable loading	Smart – robotic load
3.4	Agenting	Crew care	Specialised services	Clean technologies used	Sustainable agenting	Virtual self-service
3.5	Passenger services	No service	Business service	Clean service	Sustainable passenger service	Smart self-service
4	Blue infrastructure					
4.1	Marine waters	Shipping and fishing	Mining of oil and gas	Use for clean technologies	Sustainable use of marine waters	Smart planning and responsible use
4.2	Ports	As universal for all kinds of cargo	Specialised for a sort of cargo	Green – pollution free	Sustainable ports	Smart – operating on artificial intelligence and robotics
4.3	Safety	Safety of technics	Work safety	Safe Environment	Sustainable safety	People wellness
4.4	Coastal industry	Physical - new constructions, larger production and service	Economical - more income and less costs	Clean technologies - electric transport, wind and solar energy	Sustainable - increasing of wellness and life span of people	Smart - transition to artificial intelligence, internet and robotics
4.5	Social services	Physical - new constructions, larger production and service	Economical - more income and less costs	Clean technologies - electric transport, wind and solar energy	Sustainable - increasing of wellness and life span of people	Smart - transition to artificial intelligence, internet and robotics

4 BLUE GROWTH QUALITATIVE MATRIX

Circular economy 3.00 approach was applied to each maritime activity and here was tried to specify development sense by qualities of growth: physical, economic, green, sustainable and smart (Table 2). Here we don't pretend to final definition of content of each cell – this is aim of our further investigation of South Baltic maritime sector market research and strategic planning during implementation of South Baltic programme project INTERMARE. The most important is to fix differences between each quality of growth, what should give use better understanding of overall scope of Blue growth instrumentation and opportunities.

The matrix enables to understand, that maritime industry is faced to such variety of growth approaches and opportunities. However, priorities and best scenarios for efficient growth, what is the most important for nowadays EU, aren't defined. In some Baltic countries we can expect surplus of attentions to physical growth with use State's and EU support. Green and sustainable ports still accepted as trouble, which could stop physical growth of non-modular loading. Sustainable maritime is contradictory in opposite aims to improve wellness of people and reduction of manual work places. Smart robotic maritime and crew-free shipping signalised about reduction of employment in maritime sector, what isn't accepted as progressive for coastal societies.

However, the point of change of attitudes to blue growth is come and it is evident, if we want to keep EU and defend our communities from disintegrative forces. Answer to question, to which quality of blue growth we must give priority is evident: as higher as you can - smart growth. It's also evident, that smart blue growth is impossible without active involvement of business and communities. Business must be oriented to advance technologies by clear EU Blue growth strategy, which must be modified in nearest time. Coastal communities must be interested in smart growth despite reduction of jobs in maritime sector. For that special undisclosed basic income (UBI) and undisclosed basic dividend (UBD) tool must be actualised as it's declared in the New European deal[11]

5 CONCLUSIONS

European Blue growth strategy as undoubtfully positive EU growth initiative meets troubles of practical application and turning up growth trends due to uncertainty and lack of clear growth methodology.

Author Circular economy 3.00 methodology enabled to frame EU and Blue growth accordingly to clear qualitative growth stages: physical, economic, green, sustainable and smart. Presented matrix of growth enabled to recognise and separate growth features and construct clear prioritised leap of possible approaches.

Existing amorphous liberal set of possible growth opportunities must be transferred into clearly defined target strategy with clear understanding of supporting and resisting forces of Blue growth. The smart growth must be accepted as defined priority of Blue growth including its social innovation – democratisation of communities.

Special attention must be given to take common business and communities towards smart blue growth by introduction unavoidable initiatives of inclusion of all participants into target interests like undisclosed basic income, undisclosed basic dividends, green investments and other initiative of progressive New European deal.

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