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TOWARDS INTEGRATION OF PERSPECTIVES IN THE TERMINOLOGY OF THE INTERDISCIPLINARY DOMAIN ‘SMART URBAN COASTAL SUSTAINABILITY’

In this paper, we aim to investigate the challenges of conceptual and terminological analysis in the process of the emergence of a new interdisciplinary field where terms from the existing domains like ecology, economy, tourism, biology, and geography are being used. The EU-CONEXUS project tackles the issue of Smart Urban Sustainable Coastal Development bringing together different types of stakeholders, specialists in various disciplines and technologies. This interdisciplinarity calls for the integration of knowledge from two or more disciplines so as to produce cognitive advancement. From the terminologists’ point of view, the interaction of disciplines is a necessary step towards the integration of (disciplinary) concepts as well as their organisation inside conceptual systems. This suggests that the interdisciplinary phenomena can be explained in new, more complex ways that single disciplines weren’t able to do before. In our analysis, we illustrated the process of extending the definition of concepts from the perspective of a single domain and adopting multiple interdisciplinary viewpoints on the same issue.

1. Introduction

Through the EU-CONEXUS project,[1] launched in 2019, nine universities covering all European coasts joined forces and formed the European University for Smart Urban Coastal Sustainability. The issue of *sustainability* comprises a network of heterogeneous participants, an exchange of discourses, and a transformation of knowledge covering several disciplines such as life sciences and biotechnology, environmental sciences and biodiversity, coastal engineering as well as social, cultural and human sciences. Cooperation between experts necessarily implies that an existing (abstract) network of concepts is influenced by other, neighbouring disciplines and includes a variety of discourses and participants. Depending on the degree of synthesis between disciplines and their level of integration, Aboelela et al. (2007) identify the differences between multidisciplinary, interdisciplinary, and transdisciplinary research. This differentiation contributes to our question about the possibility of creating a shared conceptual system between experts included in the EU-CONEXUS project. While multidisciplinarity implies the least degree of synthesis, interdisciplinarity implies a moderate degree of synthesis where team members often share a research problem "but still employ their respective disciplinary methods, conceptual frameworks, and languages" (Aboelela et al. 2007: 339). This means that the integration of disciplinary approaches happens on multiple levels such as the analysis of existing theories, their fundamental concepts, and underlying disciplinary assumptions. The most complex level of integration is transdisciplinarity where a new shared conceptual framework is developed. Kluger and Bartzke (2020: 2) also consider that the interaction and mutual integration of disciplines through research "ideally results in a new perspective that is more than the sum of its components". Our preliminary assumption about the interdisciplinarity of the EU-CONEXUS project aligns with the idea of cognitive advancement which consists of explaining phenomena in new and more complex ways that single disciplines weren't able to do before. At the same time, many traditional terminological concepts become problematic, such as the domain, the conceptual system, the choice of corpus, and especially the monosemy. In this article, we

[1] https://www.eu-conexus.eu/en/ (Accessed October 18, 2023).

will discuss their importance within the interdisciplinary approach embraced by the EU-CONEXUS project.

Documentary research is a primary and crucial point in terminology analysis as it determines the limits of the specialised domain for which a terminological analysis will be performed. In contemporary terminology theory, it is the socio-terminological approach that tackles the question of the domain as the coherent conceptual system and opens the question of artificial boundaries between disciplines or domains. Once the specialised language research focused on the discourse and social factors or aspects of communication as objects of the analysis, the traditional Wusterian terminological theory and its three pillars, i.e. a term, a definition and a domain, needed to be redefined (Temmerman 2000) in line with the sociolinguistic approach that questions terms as stable, monoreferential units belonging to one domain whose definition is independent of the type of discourse, its objectives and its participants.

According to Tress et al. (2005), understanding the concept of sustainability was the first one that demanded an integrated view of environmental problems, combining social, economic, and ecological perspectives. Other previous research about the environmental field also suggests the necessity for a multidisciplinary approach. Kötter and Balsiger (1999: 91) claim that "what is absolutely essential is a new integral or holistic concept of the environment that permits the transgression of disciplinary boundaries." Biros (2013: 51) considers that the environmental domain is an interdisciplinary domain by nature and that "specialists from different disciplinary fields need to build bridges between their different perspectives, otherwise the means to solve environmental problems will remain beyond reach." In her article about mapping the environmental field with the help of library classification systems, she concludes that environmental protection dictionaries are not classified inside one section of the Dewey classification but are presented as separate entities as the subject is tackled by specialists from different disciplinary fields. The analysis of environmental dictionaries in the BNC library confirmed the expansion of knowledge on environmental questions into subdomains like environmental economics, environmental engineering, environmental health, etc. The author suggests that the traditional classification of the domains, such as the Dewey classification system, needs to be rethought in

the age of communication development where the interdisciplinary exchange of information is encouraged.

The cooperation of experts and universities within the EU-CONEXUS network implies the intertwining of different subdomains and the efforts of scientists to explain, for instance, the problem of climate change that simultaneously affects the economy, urban development, reorganisation of coastal areas and tourism. Such a complex situation has inspired us to investigate the challenges of a conceptual and terminological analysis for terms that have already been defined as part of neighbouring domains but are now presented inside a new interdisciplinary perspective. The interaction of various disciplines and points of view creates a challenge for terminologists who need to redefine terms within a new, broader domain. In order to achieve this future goal, this paper reflects on the steps a terminologist needs to undergo: a) consider previous interdisciplinarity theories to understand the integration of several subdomains inside the EU-CONEXUS project 'Smart Urban Sustainable Coastal Development'; b) use the corpus methodology for corpus compilation and extraction of key terms, definitions, and knowledge-rich contexts; c) achieve a greater and common understanding of concepts and their place inside conceptual systems by comparing definitions and contexts reflecting various perspectives.

2. Interdisciplinarity and Terminology – literature review

According to Repko (2007), the first theories of interdisciplinarity were formulated at the end of the 1950s and then more intensively from the 1970s onwards, with authors emphasising the need for collaborative communication and integration of disciplinary elements such as concepts, methodologies, terminology, etc. Unlike generalist interdisciplinarians, who reject or minimise the importance of the integration of disciplines, integrationists emphasise the priority of integration and aim to elaborate the interdisciplinary research process. Repko (2007: 2–3) cites the definition of interdisciplinarity pointed out by the integrationists Newell and Klein (1997: 393–394):

> "The process of answering a question, solving a problem, or addressing a topic that is too broad or complex to be dealt with adequately by a

> single discipline or profession and drawing on disciplinary perspectives and integrating their insights by producing a more comprehensive understanding."

This more comprehensive understanding sought by two or more disciplines aims at producing "cognitive advancement" (Boix Mansilla 2010: 16). According to Newell (2001: 1), cognitive advancement can be shown in a complex system because frequent pairing of complexity and interdisciplinarity is not a coincidence: complex systems and phenomena are actually necessary conditions that justify an interdisciplinary approach. Complex systems consist of many subsystems that offer unique perspectives resulting in multi-faceted phenomena integrated by non-linear connections.

Other experiences from interdisciplinary projects emphasise the communication challenges tackled by the teams in order to resolve disciplinary conflicts by working towards a common terminology. Schnieder and Wegener (2010) point out that even when terms are defined by international standards, these standards often show ambiguity, inconsistency, semantic vagueness, and context dependence. To improve the communication in the project combining the domains of satellite-based positioning systems and rail transportation, they devised a Terminology Engineering Process supported by *iglos* or intelligent glossaries, which are a type of terminology management systems, enabling all stakeholders to participate in terminology standardisation. Kluger and Bartzke (2020) stress that interdisciplinary collaboration is perceived as the most comprehensive approach to solving complex environmental problems and proceed with a guideline proposing interdisciplinary integration in three phases: comparing disciplines, understanding disciplines and thinking between disciplines. When it comes to communication problems encountered during the project, they categorised them into three groups: "language (definition of terms, implicit assumptions), form (writing style, structure, organisation), and prejudice (overcoming stereotypes)" (id. 2020: 9). Language-based problems mainly involved different definitions of the same term in different disciplines, which led to lengthy but fruitful discussions. Hagget (2021) points out how different definitions of the terms "attitudes" and "behaviours" in sociology, psychology, geography, and economics affect the way a research problem is defined and investigated. She warns that the lack of precision and deficient definitions of the above-mentioned terms, when measur-

ing social responses to renewable energy technologies, makes research results hard to compare.

Madsen (2012) provides a critical examination of a conceptual framework for the Information field proposed by Zhang and Benjamin (2007). She draws on previous research and interdisciplinary theory, which posit that there is a continuum of increasing synthesis from multi- to inter- to transdisciplinarity, with common conceptual frameworks associated with transdisciplinarity. To create a shared conceptual framework, researchers need to know their points of departure, their respective disciplinary approaches, underlying disciplinary assumptions, and conceptual frameworks, keeping in mind that in such a framework it is the disciplines that interact.

Bearing in mind the complexity resulting from domain overlapping, the terminological analysis in an interdisciplinary project needs to consider the stability of a concept that is to be defined and, more precisely, the limits of its definition. Freixa and Fernandez Silva (2017: 157) argue that "the content of a concept, as a dynamic, flexible cognitive entity, cannot be exhausted, and that there are always new ways to approach it." They consider concepts to be unsaturable, which is in contrast to the objectivist tradition and its idea of universal concepts as "units of thought, created by a unique combination of characteristics" (ISO 1087-1 2000).

In this paper, we follow the idea of the situated nature of specialised knowledge and the prototype theory, which take into account the nodes of knowledge having "different levels of complexity depending on how detailed the understanding is or needs to be in a specific situation" (Temmerman 2000: 36). Starting from the point that context influences the static conceptual structures, we adopted a two-level analysis which consists in comparing the definitions from the .eu domain web corpus with knowledge-rich contexts extracted from the specialised corpus consisting of research papers, books, and reports.

3. Data and Methodology

3.1. Corpus design

In this research, we applied a corpus-based methodology in order to identify key terminology of the interdisciplinary domain we want to explore. According to the Communicative Terminology Theory (Cabré 1995), specialised knowledge is structured in units that can only be understood and described through collections of textual material, that is, linguistic corpora. The texts in a corpus are examples of genres in which the conventions set by the discourse community are shown. Therefore, a corpus can be considered the basic source when extracting relevant information for the description of terms used in a specialised field. This paper is going to focus on two corpora: the focus corpus and the .eu domain web corpus.

3.1.1. Focus corpus

The focus corpus was compiled using five keywords found in the description of the EU-CONEXUS project: *coastal management, coastal engineering, sustainable (maritime) tourism, blue economy, protected areas, biodiversity, urban and semi-urban coastline* and is composed of the following genres presented in Table 1.

Table 1. Corpus composition

Type of document	**Number**
Research papers	55
Reports[1]	8
Bachelor and master theses	2
Scientific books or book chapters	3
Total	**68**

[2] Different reports prepared by experts for public bodies and international organisations, such as the United Nations Environment Programme, the World Bank, the European Commission, the European Parliament, the Asian Development Bank, and the Organisation for Economic Co-operation and Development, (e.g. Croatia, Cost of Environmental Degradation, prepared by the World Bank, Sustainable Blue Economy – Questions and Answers, prepared by the European Commission)

These genres represent different levels of specialisation, thus covering a diverse range of registers: expert-to-expert communication, such as research papers published in scientific journals, and expert-to-general public communication, e.g. reports disseminated by public entities such as the European Parliament.

The corpus (totaling 1,013,243 words) was processed with the help of the Sketch-Engine terminology extraction function (Baisa 2017) to obtain a list of keywords (single-word items) and a list of terms (multi-word items). The English Web 2020 (enTenTen20) was used as a reference corpus by default, as it is currently the largest English language corpus available on SketchEngine. Furthermore, we set the minimum frequency at 3 occurrences in the corpus, and the keyword attribute at lemma.

(items: **12,923**)

Word	Word	Word	Word	Word
1 msp	11 sdg	21 aquaculture	31 ecosystem	41 frazão
2 iczm	12 ecol	22 maritime	32 nature-based	42 transboundary
3 neum	13 gva	23 environ	33 abnj	43 biodiversity
4 mpas	14 msfd	24 ccma	34 sectoral	44 pollut
5 coastal	15 unep	25 manag	35 unwto	45 marpol
6 tourism	16 crossref	26 marine	36 intertidal	46 socio-cultural
7 ecosystem-based	17 varna	27 sea-level	37 nbs	47 msw
8 ehler	18 spatial	28 lsi	38 mpa	48 conserv
9 douvere	19 zaucha	29 urbanization	39 hutovo	49 land-sea
10 megacitie	20 croatia	30 unclos	40 fairbourne	50 cide

Figure 1: Keyword list

The keyword list contains many abbreviations, names as well as nouns and adjectives that form multi-word term candidates. As shown in Figure 1, abbreviations that appear more frequently in the focus corpus than in the reference corpus (keyness score) are abbreviations of multi-word terms and names (e.g. MSP – maritimee spatial planning). The only single-word term candidate is *biodiversity,* which is ranked 43rd by keyness score. Other highly ranked nouns and adjectives (*coastal, tourism, SDG, spatial, maritime, marine, ecosystem*) from the keyword list are found in different combinations among the highest-ranked multi-word terms (*coastal tourism, SDG target, spatial planning, marine envi-*

ronment, maritime transport, marine ecosystem, coastal ecosystem) as shown in Figure 2 below.

(items: **172,128**)

	Word		Word		Word
1	blue economy	18	integrated coastal zone management	35	management approach
2	coastal tourism	19	msp process	36	coastal erosion
3	tourism development	20	integrated planning	37	maritime transport
4	spatial planning	21	marine ecosystem	38	coastal environment
5	coastal zone	22	coastal ecosystem	39	environmental degradation
6	coastal management	23	marine area	40	tourism sector
7	sustainable tourism	24	social sustainability	41	marine resource
8	ecosystem service	25	sea-level rise	42	living resource
9	blue growth	26	offshore wind	43	tourism planning
10	ocean economy	27	protected area	44	urban ecology
11	coastal area	28	carrying capacity	45	sustainable development
12	marine spatial planning	29	beach user	46	sdg target
13	municipality of neum	30	coastal zone management	47	coastal protection
14	marine policy	31	cost of environmental degradation	48	coastal community
15	sustainable tourism development	32	natural capital	49	ecosystem approach
16	spatial plan	33	sustainable use	50	marine litter
17	marine environment	34	zone management		

Figure 2: Highest-ranked multi-word terms

3.1.2. .eu domain web corpus

In the second phase of our analysis, the .eu domain web corpus was used for extracting definitions of key terms. Two main sources of definitions were the Glossary of the European Environment Agency and GEMET (General Multilingual Environmental Thesaurus), updated by the European Environment Agency (EEA), and the European Environment and Observation Network (GEMET). Additional definitions were found on the European Commission web pages explaining different policies like the one shown in Figure 3.

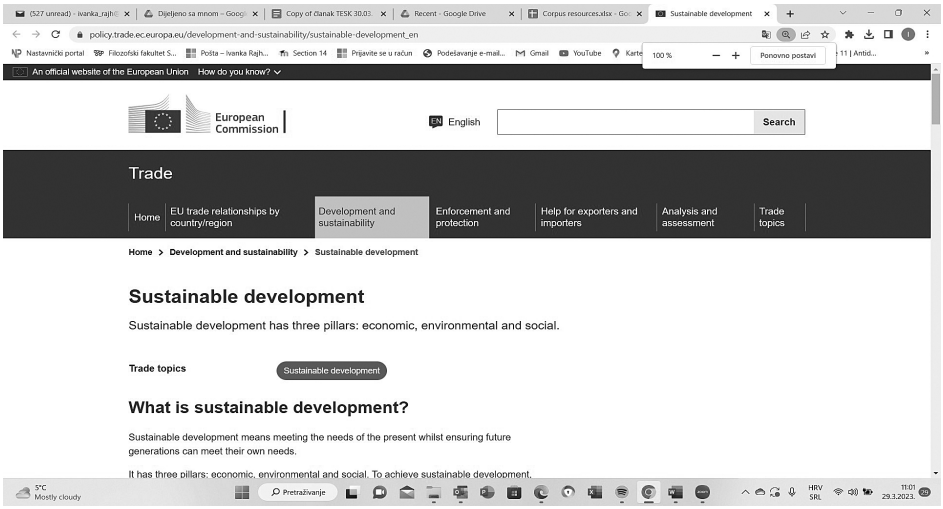

Figure 3: The European Commission's website on sustainable development

The third group of sources consisted of different working documents and reports prepared by experts for the European Parliament and other bodies, e.g. Research for the Transport and Tourism Committee on sustainable tourism development as shown in Figure 4.

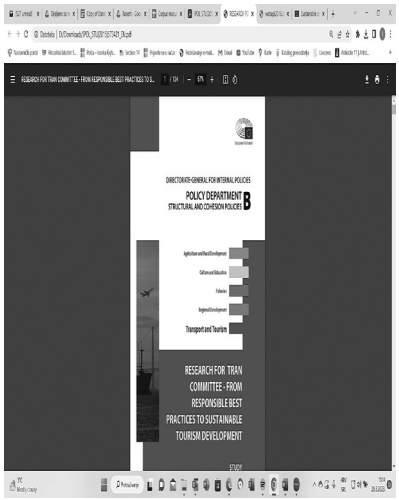

Figure 4: Research for Transport and Tourism Committee on sustainable tourism development (2016)

The fourth group of sources were the reports of the scientific research projects or groups, e.g. the webpage of the ERA-NET consortium explaining marine ecological terms in the area of Marine Biotechnology. The final group of sources included different types of EU legal acts e.g. Proposal for a Directive of the European Parliament and of the Council on energy efficiency.

3.2. Research Methodology

A bottom-up approach was used to arrive at a list of terms by starting from available data in the specialised corpus. After the quantitative analysis performed with the SketchEngine tools, we proceeded with a comparative analysis of definitions and knowledge-rich contexts. The qualitative analysis of knowledge-rich contexts from our focus corpus aimed to detect possible additional aspects and differences in meaning. The comparison of definitions from the .eu domain web corpus and knowledge-rich contexts from our focus corpus confirmed the need for the integration of disciplinary and interdisciplinary perspectives of key terms. The following chapter shows the results of the analysis of 5 key terms: *sustainable development, blue economy, blue growth, ocean economy, coastal ecosystem,* and *coastal tourism*.

4. Results

4.1. *Sustainable development*

Sustainable development ranks 45th by keyness score in our corpus. The definition of this key concept of many international policies since the 1980s is still rather vague as demonstrated in the definition published by the United Nations, "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland Report 1987: 41), or the one proposed by the European Commission's Glossary on regional policy: "The concept of *sustainable development* refers to a form of development policy which seeks to satisfy society's economic, social and environmental needs in terms of well-being in the short, medium and – above all – long term. It

is founded on the assumption that development must meet today's needs without jeopardising the welfare of future generations. In practical terms, this means creating the conditions for long-term economic development whilst ensuring due respect for the environment."[3]

Examples from our corpus show concrete realisations of this term in different areas of the Smart Urban Sustainable Coastal Development, covered by the EU-CONEXUS project. As can be seen below, in the context of urban coastal areas, *sustainable development* includes different aspects of management (context 1), fisheries (context 1), legal policy (contexts 2 and 3), conservation of biodiversity (context 3), shipping (context 4), beach management (context 5) and new technologies (context 6).

(1) The ICZM (integrated coastal zone management) can be defined as a management process to maintain sustainable development, conservation of coastal areas, and conservation of biodiversity. In this respect, with an **effective management approach embedded in sustainable development,** it aims at the best use of coastal areas (Coastal Union Germany 2009) and spatial planning seems to be one of the optimal tools to achieve this goal (Dede and Ayten 2012: 434).

(2) Also, the overview of the national policy showed that the municipality is provided with the **legal tools for sustainable development**. However, the actions taken so far are not enough a condition to ensure them. For instance, the operational programmes for the waste management activities, renewal of the WWTP and limitation of the harmful air emissions are in place, but the efforts made did not succeed in completing the plans aiming to renew and improve the facilities (Mladenova 2014: 52).

(3) This paper concludes with the view that better integration of environmental concerns into the Common Fisheries Policy is needed to strengthen the link between environmental legislation and fisheries regulations, and that the existing policy landscape, particularly the Marine Strategic Framework Directive, already provides a **legal framework for ecosystem-based marine spatial planning.** Such a framework is consistent with the recognition that **ecosystem conservation underpins other pillars of sustainable development** and provides the foundation for cross-sectoral marine planning and management (Qiu and Jones 2013: 182).

[3] https://ec.europa.eu/regional_policy/policy/what/glossary/sustainable-development_en.

(4) Shipping is the safest, most secure, most efficient and most environmentally sound means of bulk transportation. Shipping is subject to the first ever global and legally binding CO2 regulations for an entire economic or industrial sector. **International shipping contributes to the main pillars of sustainable development**. Further greening of the sector is nevertheless desirable and achievable (Kathijotes 2013: 11).

(5) In order to contribute significantly to beach management and to **the sustainable development of beaches**, the data-driven approaches shown in this research can be increased and scaled to longitudinal, site specific research carried out annually, the results being published as an open database (Magaš et al. 2018: 295).

(6) Another crucial measure is **development of new technologies and investing in science** (research and development). Their embodiment in the process is **vital for sustainable development of the tourism industry** of the 21st century. The inventions of the technological world, which are expected to consume less natural resources, pollute less, and be more safe and efficient economically, should be used for the sake of coastal management (Zubritckaia 2015: 26).

Figure 5 taken from Bange et al. (2017: 146) shows different elements of coastal management and includes all of the aspects mentioned in the contexts above and many more. Taking into account the above definition of *sustainable development* by the European Commission as a "development policy," the below figure shows different domains within which "conditions for long-term economic development whilst ensuring due respect for the environment" must be created.

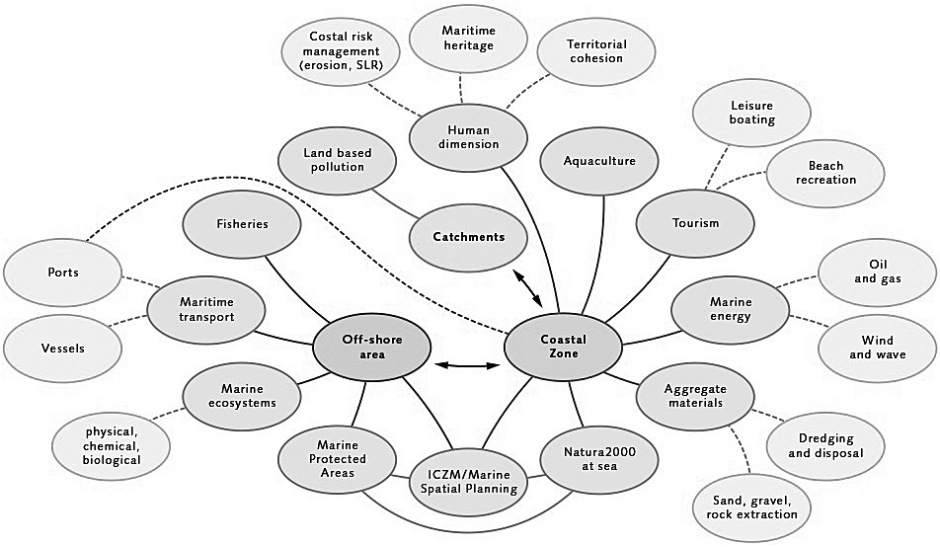

Figure 5: Issues to consider in the management process to achieve sustainable development in coastal zones (Bange et al. 2017: 146).

Based on the above figure and knowledge-rich contexts from our corpus, we were able to position the concept of *sustainable development* within the context of urban coastal zones and propose a framework comprising different disciplines that contribute to and interact in the process of long-term economic development (Figure 6).

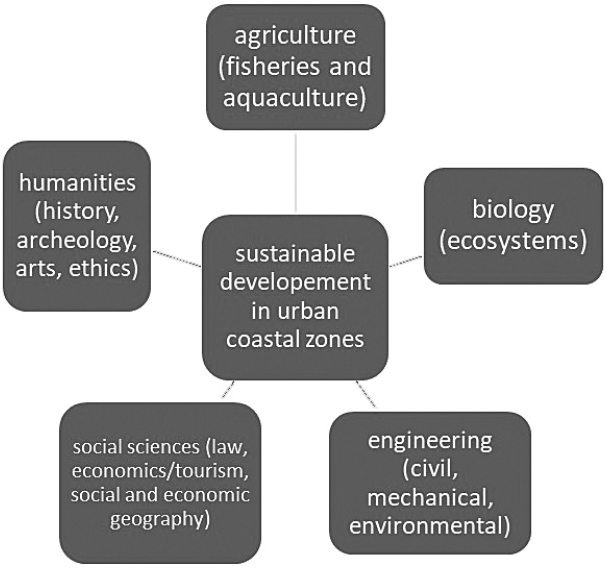

Figure 6: A disciplinary framework of *sustainable development in urban coastal zones*

4.2. Blue economy, blue growth and ocean economy

Blue economy, blue growth and *ocean economy* are among the highest-ranked terms by keyness score, i.e. taking first, ninth and eleventh place respectively, and they seem to be very close in meaning. The comparison of definitions and contexts reveals that different actors propose different definitions, whose extension of the meaning is subject to change in short periods of time. The European Commission, as a political body, in the definition below from 2018, focuses only on the economic aspect of the *blue economy*, while experts and scientists warn of the importance of social and environmental aspects in the context of sustainability. Not only shall we try to illustrate the dynamic process of conceptualisation by comparing definitions and contexts, but also show the correlation between the *blue economy* and the other two terms *blue growth* and *ocean economy.*

According to the European Commission, *blue economy* refers to "all economic activities related to oceans, seas and coasts. It covers a wide range of interlinked established and emerging sectors" (2018: 5). The following contexts from the

corpus reveal the extent of the concept *blue economy* (context 7), as well as the difficulty of defining all its components (context 8).

(7) For the purpose of this Report, the EU's Blue Economy encompasses all sectoral and cross-sectoral economic activities based on or related to the oceans, seas and coasts:

Marine-based activities: include the activities undertaken in the ocean, sea and coastal areas, such as Marine living resources (capture fisheries and aquaculture), Marine minerals, Marine renewable energy, Desalination, Maritime transport and Coastal tourism

Marine-related activities: activities which use products and/or produce products and services from the ocean or marine-based activities like seafood processing, biotechnology, Shipbuilding and repair, Port activities, technology and equipment, digital services, etc (European Commission 2021: 2).

(8) On the other hand, the activities selected to estimate the Blue Economy sectors may be incomplete owing to the difficulty of identifying all the economic activities throughout the value chain and assessing their maritime shares; for this reason, turnover, GVA and the other indicators could be underestimated (European Commission 2021: 34).

The corpus reveals that in many cases *blue growth* refers to paper titles and names of different EU programs and documents as most of the examples are capitalised: "European policy on Blue Growth," "the Blue Growth Strategy," "the Blue Growth Agenda." As further examples show, *blue growth* produced negative effects (contexts 10 and 11) and was replaced by the *blue economy* concept (context 9), which encompasses the concept of *environmental sustainability*.

(9) The **Blue Growth** strategy has now been **replaced by** the new Sustainable **Blue Economy** strategy. The term Blue Growth is no longer used and is only included here to signal that the paragraph is in relation to the old strategy (European Commission 2021: 110).

(10) Growth in marine tourism is now furthered through the **'blue growth' imperative, which this article problematises**. The paper argues that there are already existing **sustainability issues** related to the marine tourism sector (Leposa 2020: 1233).

(11) As shown in the paper, **blue growth can lead to social and environmental injustices**. Moreover, the distribution of gains and losses depends on the context, type, and form of marine tourism. According to this review, the negative consequences of blue growth appear most prevalent in cases of cruise tourism (Leposa 2020: 1242).

In the European Commission documents, the term *blue ocean economy* is used as a variant or a synonym of the term *blue economy*, as in this news headline: "EU Blue Economy report: ocean economy fuels European green transition." Judging by the context from Patil et al. (2018) below, the *blue economy* is considered as a sustainable ocean economy (unlike the *brown economy*), with the social dimension being especially emphasised (context 12).

(12) Perhaps more succinctly, the essential feature of the **blue economy concept is that it aims to balance both the economic opportunities and environmental limitations** of using the ocean to generate wealth–in one sense aiming to do more with less (Colgan 2017a and Colgan 2017b). The ocean economy term simply refers to a group of economic activities, linked by their relationship to the ocean (in many cases with ocean ecosystems services as inputs), but provides no measure or indication of the environmental sustainability of these activities. Using the metaphor of colours, an unsustainable ocean economy is "brown," while a **sustainable one is "blue."** At the same time, some organisations have also emphasised **the social dimensions of the ocean economy in their definitions of a blue economy, following the three dimensions of the concept of sustainable development** (Patil et al. 2018: 33).

Finally, we may conclude that the term *blue growth* was replaced by the term *blue economy* in order to underline the sustainability aspect of the concept.

Interestingly, Figure 7 below describing the Blue Economy Policy Framework proposed by Patil et al. (2018: 47) contains almost the same economic sectors as the above Figure 5 from Bange et al. (2017: 146) focusing on coastal management. This makes us believe that the *blue economy* is synonymous with *sustainable development* in the context of urban coastal zones.

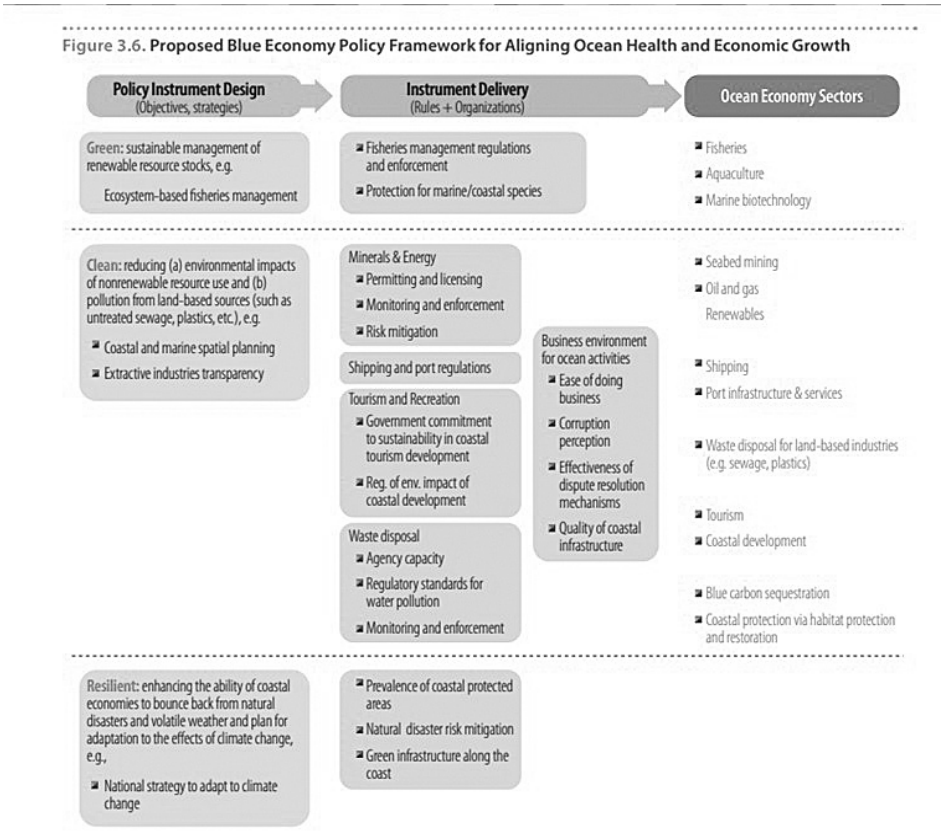

Figure 7: The Blue Economy Policy Framework (Patil et al. 2018: 47)

Indeed, further literature survey shows that the *blue economy* is part of a wider sustainable development policy. Lee, Noh and Khim (2020) have found that the *blue economy* is highly associated with four of the United Nations' Sustainable Development Goals (SDGs), namely SDGs 14 to 17, relating to sustainable use of oceans (14), terrestrial ecosystems (15), promotion of inclusive societies (16), and the Global Partnership for Sustainable Development (17). Smith-Godfrey (2016: 62) points out that "the concept of 'Ocean Economy' or 'Blue Economy' is recent and originated from the United Nations Conference on Sustainable Development held in Rio de Janeiro in 2012." He goes on to analyse definitions proposed by different bodies in order to find one "that is easy to remember, easy to apply, easy to manage and easy to measure." Arguing that it is necessary to define the Blue Economy in measurable and calculable terms, he proposes and

tests his own definition: "Blue Economy is the sustainable industrialisation of the oceans to the benefit of all."

Titles of scholarly articles contain the following co-occurrences: "sustainable blue economy," "sustainable development of a/the blue economy," "sustainable blue economy development." Our corpus, on the other hand, confirms examples such as "sustainable development at the coast," "sustainable development in coastal areas," "sustainable development of the blue economy," "sustainable development of marine areas/ energy sectors/ tourism resources/ ocean economy/ coastal areas," etc. The concordance of "blue economy" provides examples such as "Bangladesh or Bangladesh's / China or Chinese/ EU blue economy," "sustainable blue economy," "blue economy indicators/ industries/sectors." Consequently, we may conclude that the *blue economy* is the materialisation of *sustainable development goals* in coastal areas.

4.3. Coastal ecosystem, marine ecosystem, ecosystem services

Among the highest-ranked two-word items in our corpus are *ecosystem services*, *marine ecosystems,* and *coastal ecosystems*. The challenge of defining the concept of *ecosystem* resides in the interdisciplinarity of the ecology domain dedicated to solving environmental problems based on the inputs from several disciplines as shown in Figure 8 taken from Carpenter et al. (2009: 8).

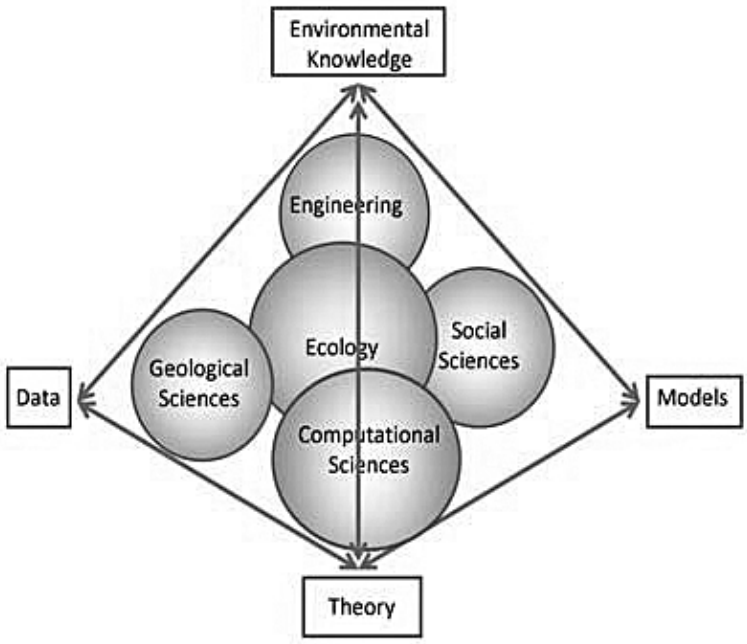

Figure 8: The interdisciplinarity of the ecology domain

The search for definitions of *marine ecosystems* and *coastal ecosystems* in the glossary EIONET refers to the same entry, in which geological aspect is emphasised:

> "(...) marine environments bounded by the coastal land margin (seashore) and the continental shelf 100-200 m below sea level. Ecologically, the coastal and nearshore zones grade from shallow water depths, influenced by the adjacent landmass and input from coastal rivers and estuaries, to the continental shelf break, where oceanic processes predominate. Among the unique marine ecosystems associated with coastal and nearshore waterbodies are seaweed-dominated communities, coral reefs and upwellings." [4]

[4] https://www.eionet.europa.eu/gemet/en/concept/1516.

The definition of *ecosystem services* in the same source is much shorter and more vague: "ecological or ecosystem processes or functions which have value to individuals or to society." To determine what *ecosystem services*, *processes* or *functions* really mean, we searched for knowledge-rich contexts in the corpus and found examples showing different perspectives pertaining to human activity and manmade environments. The corpus examples below contain ecological (context 13), economic (contexts 14 and 15) and urban planning (context 13 and 15) perspectives, which we marked in bold for emphasis**.**

(13) Coastal ecosystem services, such as **flood protection, biodiversity, and fisheries**, may come under pressure from human actions such as the expansion of ports and coasts (Schipper et al. 2021: 1).

(14) The main source of coastal ecosystem services are currently **agricultural areas** (34% of total) followed by **wetlands** (29%) and **forests** (20%). Within a 10 km coastal zone of the EU-27 countries, almost €400 **billion worth of services** was generated in 2018 (European Commission 2021: 132).

(15) Increasing consumption per person, multiplied by a growing population, are the root causes of the **increasing demand for ecosystem services**. The main anthropogenic drivers of coastal ecosystem change are related to development activities on land, particularly in areas adjacent to the coast. **Physical demand for coastal space is increasing, and urban sprawl, resort and port development, as well as aquaculture** are leading to changes in factors directly affecting ecosystems (Satta et al. 2009: 63).

The *coastal ecosystem* and potential services deriving from it are well illustrated in the infographic below by the European Environment Agency. While below we see three types of services, other sources divide "regulation and maintenance" into two separate categories "regulating" and "supporting."

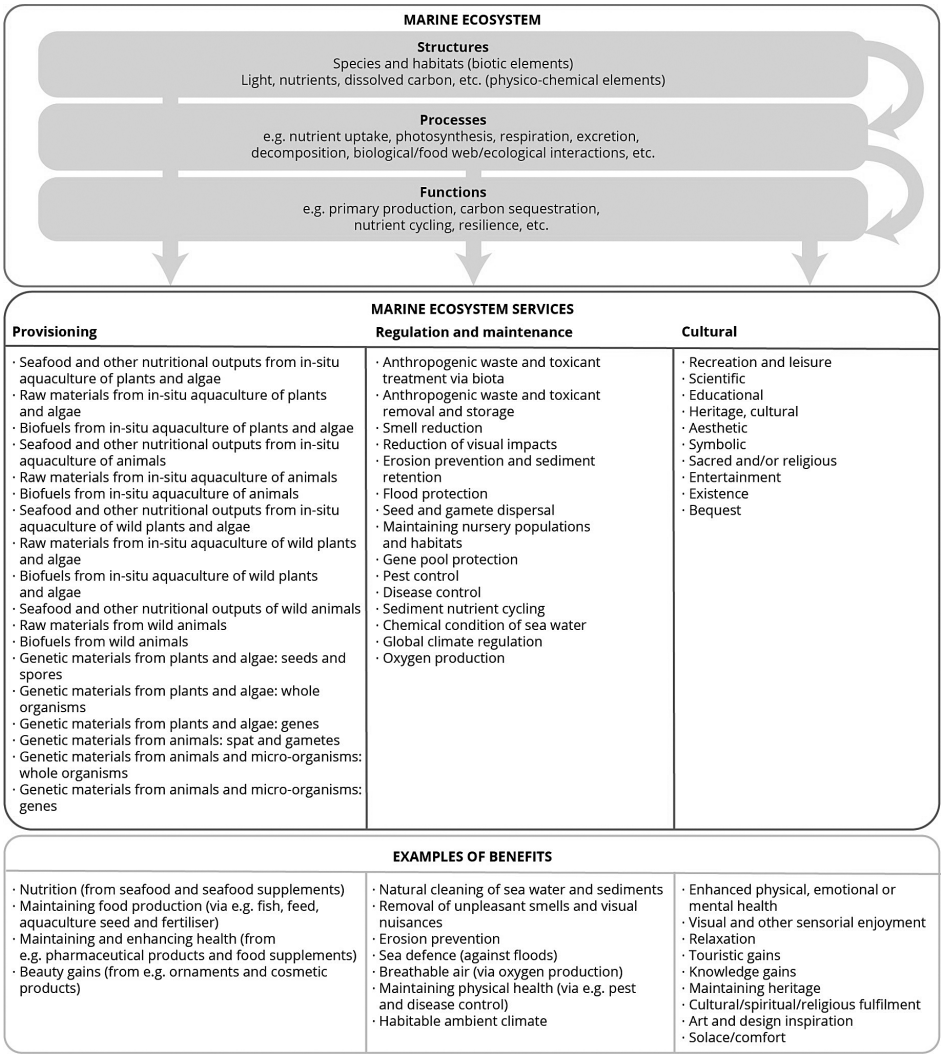

Figure 9: Marine ecosystem services and examples[5]

The interrelation of human activities and related disciplines with provisioning and cultural ecosystem services is easily perceived from the figure above, while regulation and maintenance services of ecosystems become obvious when they are altered by e.g. infrastructural projects (like dam construction), which can affect the local climate. Figure 10 below is our attempt at showing the conceptual

[5] https://www.eea.europa.eu/media/infographics/marine-ecosystem-services-and-examples/image.

framework for *marine ecosystem services*. While ecosystems are essentially a subject of biology, their services provide benefits to societies, requiring the involvement of different types of specialists.

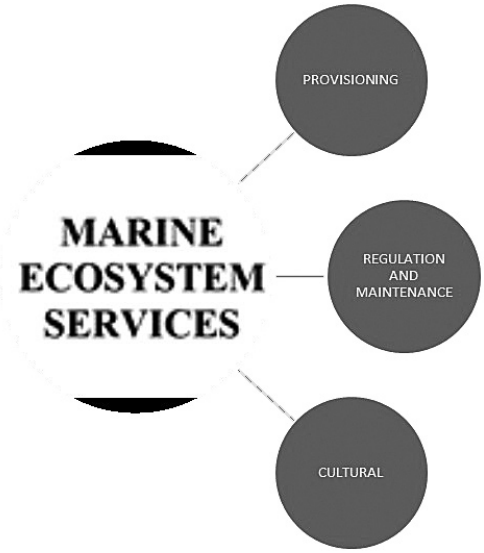

Figure 10: A conceptual framework for *marine ecosystem services*

4.4. Coastal tourism

The term *coastal tourism* ranks 2nd by the keyness score. The definition found on the website of the European Maritime Spatial Planning Platform clearly focuses on the economic aspect of the concept:

> "Coastal tourism covers tourism in the coastal area as well as the supplies and manufacturing industries associated with these activities."[6]

While we didn't find examples of the types of supplies and manufacturing industries in the corpus, we did find an example of the types of companies (context 16). However, context examples from the corpus reveal additional aspects of

[6] De Swart, Linette; Van der Haar, Anna; Skousen, Bodil; Diletta Zonta. 2018. *Technical Study: MSP as a tool to support Blue Growth. Sector Fiche: Coastal and Maritime Tourism.* https://maritime-spatial-planning.ec.europa.eu/sites/default/files/sector/pdf/mspforbluegrowth_sectorfiche_tourism.pdf (Accessed March 13, 2023).

coastal tourism, namely health (context 17), urban planning (context 18), as well as natural and cultural aspects (context 19).

(16) Coastal tourism is **labour-intensive**, and often run by **small or medium-sized local or family businesses**; it is widespread along the entire EU coastline (European Commission 2021: 19).

(17) There are two important principles to consider: (1) Coastal tourism and well-being are inextricably linked. Blue space has restorative **therapeutic properties** for human health (Jarratt and Davies 2020: 429).

(18) After analysis of the main factors favouring and restraining the marine and coastal tourism development, it can be noted that the main problem is **poorly developed peripheral infrastructure** (Stryzhak et al. 2020: 6).

(19) Coastal tourism is strongly dependent upon **natural** (climate, landscape, ecosystems) and **cultural** (historic and cultural heritage, arts and crafts, traditions, etc.) **resources** (Satta et al. 2009: 11).

Based on the above definition and contexts we can propose the following conceptual framework (Figure 11), which includes different sciences or domains involved in materialisation of the *coastal tourism* concept.

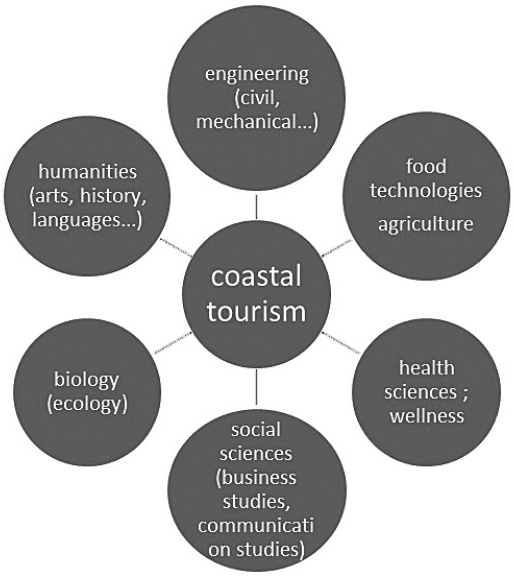

Figure 11: Disciplines participating in the *coastal tourism* conceptual framework

5. Discussion

As demonstrated in the analysis above, our aim was to combine the prescriptive and descriptive approaches. The corpus analysis clearly shows that once contextualised, concepts acquire wider meaning than the one captured by a definition. Those additional aspects reflect different realities of a concept penetrating new domains and disciplines.

As was previously noticed by Schneider and Wegener (2010), definitions produced by international or, as in our case, European networks are often ambiguous, showing semantic vagueness. Therefore, specialists from different disciplines, or sub-systems, need to understand each others' approaches and conceptual frameworks so they can reach common ground, create a complex system and a shared conceptual framework, which will enable them to elaborate the interdisciplinary research process producing results that shall be comparable across all participating disciplines or sub-systems (Haggett 2021; Madsen 2012; Repko 2007; Newell and Klein 1997).

One of the greatest challenges of our research was to discern the disciplinary assumptions behind the chosen key terms. Namely, the results showed that concepts frequently cross domain boundaries, extending towards the integration of disciplinary and interdisciplinary perspectives of key terms. Depending on the context, the issue of sustainable development is approached with different objectives: some measure its impacts while others try to calculate its costs, describe its content or hold the authorities accountable for negative effects. The concepts are therefore more frequently described than defined, which makes it difficult to suggest one, comprehensive definition in line with terminological standards. Terminology management needs to take into account that a term's definitions are not only discipline-oriented but also textually dependent because their use in different types of contexts influences their definition as well. Apart from that, terminologists have to bear in mind that even inside one single discipline there might be different definitions of terms depending on the point of view of the author. That is why Delavigne and Guespin (1992) suggest that the domain should be understood on two levels: firstly, on the level of external heterogeneity taking into account the multiplicity of disciplines present inside one domain and, secondly, on the level of the internal heterogeneity given the multiplicity

of different points of view existing inside one domain. This socioterminological approach is in line with our comparison of definitions and knowledge-rich contexts, which takes into account heterogenous participants and calls for a conceptual system that doesn't guarantee the monosemy but can handle the polysemy of meanings.

In cases where concepts are borrowed from different disciplines and their definitions are discipline-oriented, it is necessary to consider a transdisciplinary approach that can offer a synthesis of perspectives. Bearing this in mind, we illustrated the importance of subdomains or disciplines that are actively participating in the creation of new knowledge around the issue of sustainability.

6. Conclusion

Since the issue of sustainability is the subject of many EU documents, laws and regulations, of scientific ecological research but also of wider environmental activist platforms, we conclude that it cannot be limited to one stable conceptual system. The examples from our corpus showed that one concept's denotations in different disciplines are semantically connected, e.g. *blue economy* denotes sustainability of marine-based or marine-related economic activities but this sustainability is defined differently depending on the point of view of the particular discipline/economic activity and its conceptual system. This demonstrates that the extension of the concept depends on the conceptual systems but also on the communicative and social factors that are a constitutive part of the specialised communication.

Starting from the terminological premise where a domain is represented by the stability of its conceptual system and its classification in coherent subdomains, we investigated the possibilities for developing a shared interdisciplinary integrative framework that strives towards a new transdisciplinary domain resulting in cognitive advancement. The results confirmed the need to consider a multilayered interdisciplinary conceptual system where concepts could be defined more vastly by encompassing several disciplinary perspectives. Future work should be oriented towards the organisation of conceptual mapping that would enable us to present terminology across disciplines.

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Prilog objedinjenju perspektiva u nazivlju interdisciplinarnoga područja *pametna urbana obalna održivost*

Sažetak

U radu se istražuju izazovi konceptualne i terminološke analize u procesu nastanka novoga interdisciplinarnog područja u kojem se koriste nazivi iz postojećih područja poput ekologije, ekonomije, turizma, biologije i geografije. Europski sveučilišni projekt EU-CONEXUS bavi se pitanjem pametne urbane obalne održivosti povezujući brojne sudionike, raznovrsne predmetne stručnjake i tehnologije. Ovakav interdisciplinarni projekt podrazumijeva integraciju znanja iz dviju ili više disciplina s ciljem postizanja kognitivnoga napretka. S terminološkoga stajališta interakcija disciplina neophodan je korak prema integraciji (disciplinarnih) pojmova i njihovoj organizaciji unutar pojmovnih sustava. To podrazumijeva da se usko specijalizirane pojave i pojmovi mogu objasniti na nov, složeniji način nego unutar pojedinačne discipline. U radu se ilustrira proces širenja definicija izlazeći izvan granica jedne discipline i zauzimajući višestruka interdisciplinarna gledišta na istu problematiku.

Keywords: Smart Urban Coastal Sustainability, interdisciplinarity, integration, terminology
Ključne riječi: pametna urbana obalna održivost, interdisciplinarnost, integracija, terminologija

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