BLUEAIR PROJECT

BLUE GROWTH SMART ADRIATIC IONIAN S3

D.T.2.3.2.

PILOT EDP FOR BLUE GROWTH

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Contents

List of Abbreviations

ADRION (AIR)	Adriatic-Ionian (region)
AP	Associated (project) partner
BA	Herzegovina Neretva Canton
BE	Blue Economy
BG	Blue Growth
BG-EDP	Blue Growth Entrepreneurial Discovery Process
BSI	Business Support Institution
EDP	Entrepreneurial Discovery Process
EC	European Commission
ERDF	European Regional Development Fund
EU	European Union
EUSAIR	EU Strategy for the Adriatic and Ionian Region
FVG	Region of Friuli Venezia Giulia
HEI	Higher Education Institution
IPR	Intellectual Property Rights
MR	Macro-region
NACE	Statistical classification of economic activities in the European Community
NGO	Non-governmental organization
PP	Project partner
PPI	Public procurement of innovation
RIS3	Research and Innovation Smart Specialisation Strategy
RTO	Research and Technology Organisation
RDI	Research, Development and Innovation
S3	Smart specialization strategy
SBE	Sustainable Blue Economy
SME	Small and Medium-sized Enterprise
WP	Work Package

Executive summary

- **The goal of the project's Pilot Blue Growth EDP is to validate, deepen and explore feasible Blue Growth areas within ADRION area**, to help identify comparative advantages based on proposed Blue Growth areas from the initial desk-research analysis phase. Blue Growth EDP intends to explore macro-regional economic and innovation assets diversity by analysing results of implemented Pilot BG-EDP survey exercises in 9 different administrations.

- **Dedicated BG-EDP survey** has been structured in nine modules each focused on a specific aspect and related to the Blue Growth domain in order to determine innovativeness and cooperation potential on macro-regional level. Total of 93 questions were created.

- **Feedback from the Pilot BG-EDP activity will serve as an important input for creating proposals for Macro-regional Blue Growth Innovation Strategy**, which offers support to policymakers in possible adjustments of innovation policies in regards to ADRION macro-region.

- **Target groups** and stakeholders eligible for BG-EDP survey were quadruple helix entities (industry entities, research communities and education, representatives of public administration, NGOs), involved in or connected to the Blue economy value chain activities

- Total of **2013 participants** have entered the survey fallowing provided links from the respective invitation letters received from implementing and supporting partners. **228 valid surveys** were collected across all 9 regions/countries giving the **response rate of 11%.**

- Most valid inputs have been collected from the **industry entities** (60%, 136 entities), followed by **higher education institutions & research institutions** (23%, 91 entities).

- **ADRION countries/regions are diverse and multifaceted, with significant disparities** in terms of socio-economic conditions and development. However, the region has a considerable potential for cooperative growth and development.

- There is a **need for increased technology transfer and public-private partnerships** between non-industry and industry surveyed entities in ADRION region.

- **Trends** in the field of Blue Growth are very diverse across ADRION.

- Surveyed entities in ADRION countries/regions share **similar innovation drivers** such as customers' needs and expectations, product quality, new market opportunities, management mindset and market trends.

- **Most limiting innovativeness and growth barrier is** access to finance for surveyed ADRION organizations.

- **New released RIS3 strategies for 2021-2027 period have better rating scores** than their 2013-2020 RIS3 counterparts.

- **Almost half of the surveyed entities in ADRION behave *proactively* to what happens on the market**. Entities are anticipating customers' needs and thus creating new products and services in that direction.

- **Intellectual Property Rights (IPR) are moderately used** by surveyed entities in ADRION.

- The **Internet** is a valuable resource for surveyed ADRION entities to gather information about innovation.

- The **affiliation with Blue Growth activities** in the ADRION region is **primarily focused on traditional sectors**. Identified sectors include waterborne transport and port activities, shipbuilding, coastal tourism and fisheries and aquaculture.

- **Collaboration** is a prevalent trend among surveyed entities in the ADRION region. Around two-thirds of entities forming some type of cooperation.

- **ADRION region shows a good level of complementarity among countries/regions in the newly created Blue Growth technologies**, with the most dominant technology being creation of **sensors and ICT solutions** related to Blue Growth. However, there is a need for additional efforts in the less represented area of marine biotechnology & bioprocessing, which has been identified as an important trend.

- Most surveyed entities in countries/regions in the ADRION are gradually recognizing the **importance of digital transformation**. Across the ADRION region level, waterborne transport and port activities are expected to benefit the most by gradual digital transformation followed by maritime surveillance, blue bioeconomy & biotechnology, public services and governance and coastal tourism closely behind.

- The **most important barrier to digital transformation** in the Blue Growth areas by surveyed entities across the ADRION region is the alignment of strategy and execution.

Document is structured into several parts. Introductory part gives an overview of the Pilot EDP rationale, activity implementation, survey structure, platform and methodology. Main part of the document represents macro-regional ADRION aspects and results (paragraphs 2-8), followed by survey findings. Annex A holds collection of surveyed entities data representing results in a form of graphs and charts for individual countries/regions based on topics from the BG-EDP survey. Annex B contain data on frequencies and statistical descriptions (including averages, percentages and standard deviations) obtained as export report from the BG-EDP platform (1KA application platform).

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1. Overview – Pilot EDP for Blue Growth

1.1. Introduction

The **main goal** of **BLUEAIR project** is enhancing *institutional capacities* of ADRION countries/regions in the definition of a common approach towards the implementation of the **S3 policy on Blue Growth** at macro-regional level. Blue Growth can represent a **space of opportunities** in the broader context of the **Blue Economy** where it is possible to achieve innovative growth on the principles of **sustainability** and **protection** of the seas. "EU's Blue Economy encompasses all sectoral and cross sectoral economic activities related to the oceans, seas and coasts, including those in the EU's outermost regions and landlocked countries. This includes the closest direct and indirect support activities necessary for the sustainable functioning and development of these economic sectors within the single market. It comprises emerging sectors and economic value based on natural capital and non-market goods and services"[1].

The entrepreneurial discovery process (EDP) is an inclusive and interactive bottom-up process in which quadruple helix participants from different environments are discovering and producing information about potential new activities, identifying opportunities potentially rich in feasible and attractive innovations that emerge through this interaction, while policymakers assess outcomes and ways to facilitate the realization of this potential. Traditional EDP surveys are usually aimed at wide S3 thematic priorities, consisting of wide array of thematic areas on socio-economic, technological and R&D&I topics. On the other hand, macro-regional Blue Growth EDP survey intends to be narrowly focused on thematic modules specific for BG domains in ADRION macro-regional area.

To identify such opportunities for Blue Growth in ADRION, the specific **BG-EDP Tool** (project deliverable T2.2.2.) has been developed to support an effective EDP process. Within the BG-EDP Tool methodology, a BG-EDP survey was created in form of a specific online modular multilingual survey executed in nine project partners' regions/countries.

This document – **Pilot EDP for Blue Growth**, presents results of analysis and findings of implemented Pilot EDP exercises in 9 different administrations.

The BG-EDP survey has been focused towards exploring, validating and/or revealing the innovation drivers, barriers, growth restrains, innovation and R&D capacities, management and innovation aspects, specific blue growth capacities and skills, position in the value chains. It is structured in nine modules, each of them focused on a specific aspect and related to the Blue Growth domain in order to determine innovativeness and cooperation potential on macro-regional level.

An optional customised module is intended to further assess potential specific and unique topics of the respective region/country in any economic or scientific sector of interest.

Feedback from the Pilot BG-EDP activity will serve as an important input for creating proposals for Macro-regional Blue Growth Innovation Strategy, which offers support to policymakers in possible adjustments of innovation policies in regards to ADRION macro-region.

[1] European Commission (2019). The EU Blue Economy Report. 2019. Publications Office of the European Union. Luxembourg.

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1.2. Blue Growth EDP rationale

To encourage cooperation, support of programmes such as the European territorial cooperation (Interreg), it is crucial to foster these collaborations from a policy-making perspective, thus enlarging regional actors' capacities. A common problem with Interreg projects is their short-term limited duration and limited budgets.

In order to overcome short-term transnational projects and resulting mediocre impacts, long-term sustainable macro-regional cooperation with visible impacts beyond project duration in BG areas based on aligned join macro-regional innovation strategies towards national smart specialization strategies may present **possible solution** to that problem.

The goal of the project's Pilot Blue Growth EDP is to validate, deepen and modify feasible identified Blue Growth areas within ADRION area, to help create lists of priorities and comparative advantages based on proposed Blue Growth areas from the initial desk-research analysis phase. Blue Growth EDP would need to exploit macro-regional economic and innovation assets diversity by finding complementarities at macro-regional value chain levels.

Feedback from the EDP task within the project will **serve as an input for creating Macro-regional Blue Growth Innovation Strategy** to enhance the competitive advantages and emerging market opportunities in Blue Growth of the ADRION Programme area. Through the development of Innovation Strategy and Action Plan on BG on macro-regional level, the project aims at enhancing the institutional capacity of AIR countries/regions in the definition of a common approach to explore implementation of S3 policy on Blue Growth at transnational/macro-regional level.

1.3. Implementing and supporting partners

According to the arrangements made during the project proposal definition stage, **9 implementing** partners (3 PPs and 6 APs), backed by **supporting partners,** have hosted the **Pilot EDP for Blue Growth** activities.

Table 1. Implementing and supporting partners

EDP IMPLEMENTING PARTNERS	SUPPORTING PARTNERS	Country
PP6 - Region of Central Macedonia		Greece
PP7- National Agency for Scientific Research and Innovation		Albania
AP13- Autonomous Region of Friuli Venezia Giulia,	LP- AREA Science Park	Italy
AP28- Sicilian Region - Presidency - Regional Planning Department,		
AP29- Ministry of Economy Herzegovina Neretva Canton,	PP11- Chamber of Economy of the Federation of Bosnia and Herzegovina	Bosnia and Herzegovina

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AP16- Croatian Ministry of regional development and EU funds,	PP2- Croatian Chamber of Economy	Croatia
AP23- Ministry of Economy of Montenegro	PP8- Innovation and Entrepreneurship Centre- Tehnopolis PP9- Chamber of Economy of Montenegro	Montenegro
AP25- Ministry of Education, Science and Technological Development of the Republic of Serbia	PP10- University of Belgrade	Serbia
AP26- Ministry of Education, Science and Sports AP19- Ministry of Economic Development and Technology	PP3-Technology Park Ljubljana	Slovenia

Source: Partners' Endorsement to the Project (with added PP9 under supporting partners)

1.4. Target group

Target groups and stakeholders eligible for BG-EDP survey were primarily SMEs involved in or connected to the **Blue economy value chain activities**, although large companies and peripheral-sector companies were also eligible. Peripheral-sector companies are companies related to other sectors or those that participate in different value chains but may share activities over peripheral links with primary companies within BG related value chains.

Along with the business sector actors, the survey included other quadruple-helix actors from research communities and education, representatives of public administration concerned with relevant programmes or NGOs involved or familiar with Blue Growth sector activities.

Selection criteria was based on NACE[2] codes related to Blue Growth activities according to the *EU Blue Economy Report 2021*[3], defined Blue Growth and BG related industries based on the *European Cluster Observatory Cluster mapping of related sectors report*[4] and set of additional ICT supporting NACE activities related to the Blue Growth based on authors' analysis.

NACE codes were grouped in the main and extended BG activities. Main BG activities were further divided into primary focus areas activities and secondary focus areas according to projects' *Identification of Blue Growth Areas* project document.

[2] NACE rev.2 – https://ec.europa.eu/eurostat/documents/3859598/5902521/KS-RA-07-015-EN.PDF Accessed on 13.12.2021.

[3] European Commission (2021). The EU Blue Economy Report. 2021. Publications Office of the European Union. Luxembourg.

[4] European Commission (2014). The European Cluster Observatory Report. Methodology and Findings Report for a Cluster Mapping of Related Sectors. Center for Strategy and Competitiveness, Stockholm School of Economics.

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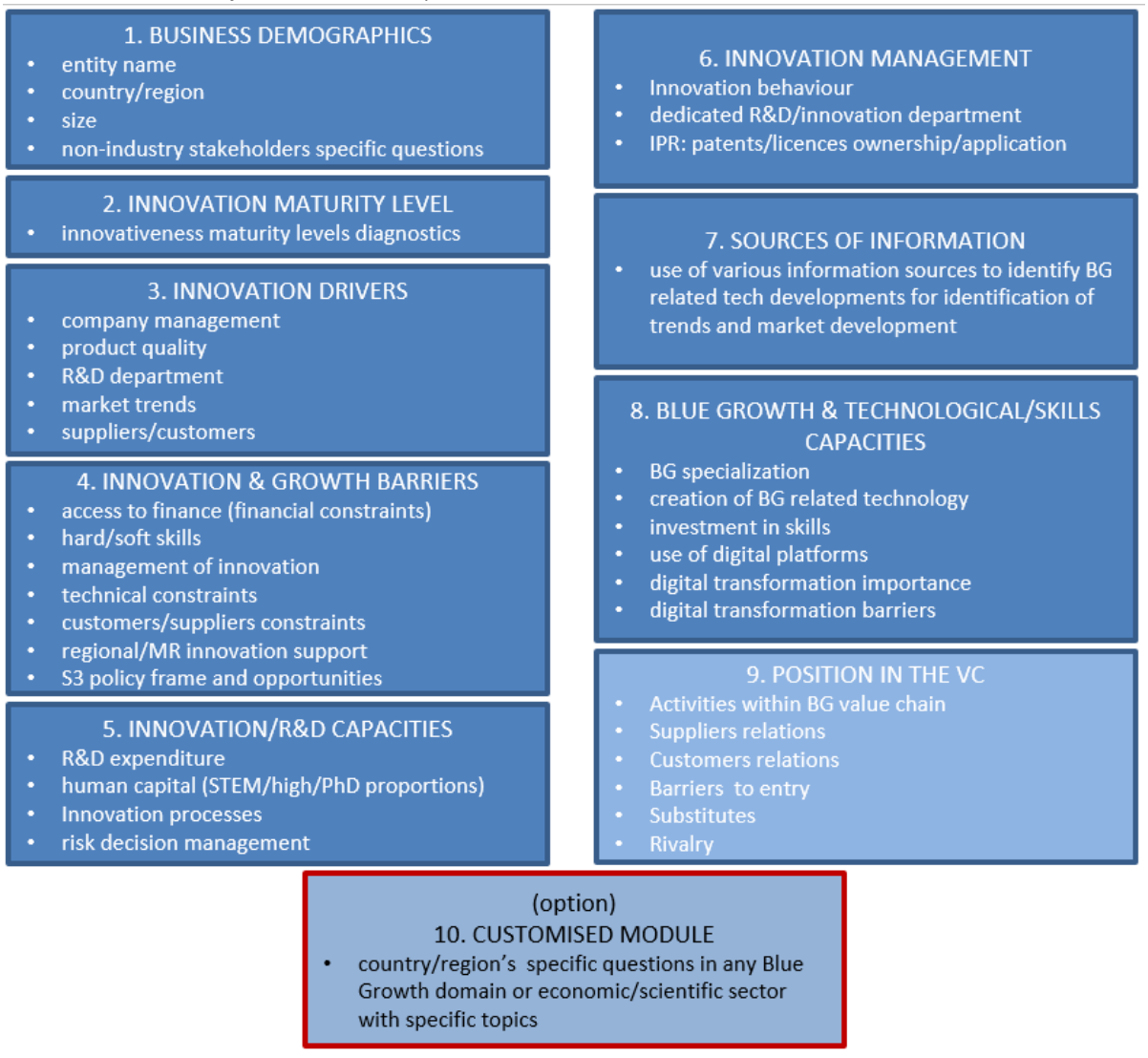
1.5. BG-EDP Survey overview

1.5.1. Structure

The questionnaire was designed using the modular approach focusing on the innovativeness capacities, drivers, barriers, processes, financial and other entity aspects related to the Blue growth domain in order to determine innovativeness and cooperation potential on macro-regional level.

Online questionnaire was structured in default 9 sets of modules, each of them comprising specific aligned question topics. First 8 modules were focused on Blue Growth domain, while additional module 9 is designed for acquiring information about the value chain positioning. Optional 10th customised module is intended for assessing specific topics for the concerned region or country in any Blue Growth domain or economic or scientific sector of interest. It is up to a country/region's dedicated project partner to design customised set of questions which fits into general survey design by covered topic, logic, goal, length and which is not in conflict or redundancy with other common modules within thematic groups of the main survey.

Figure 1. Modular structure of the online BG-EDP questionnaire



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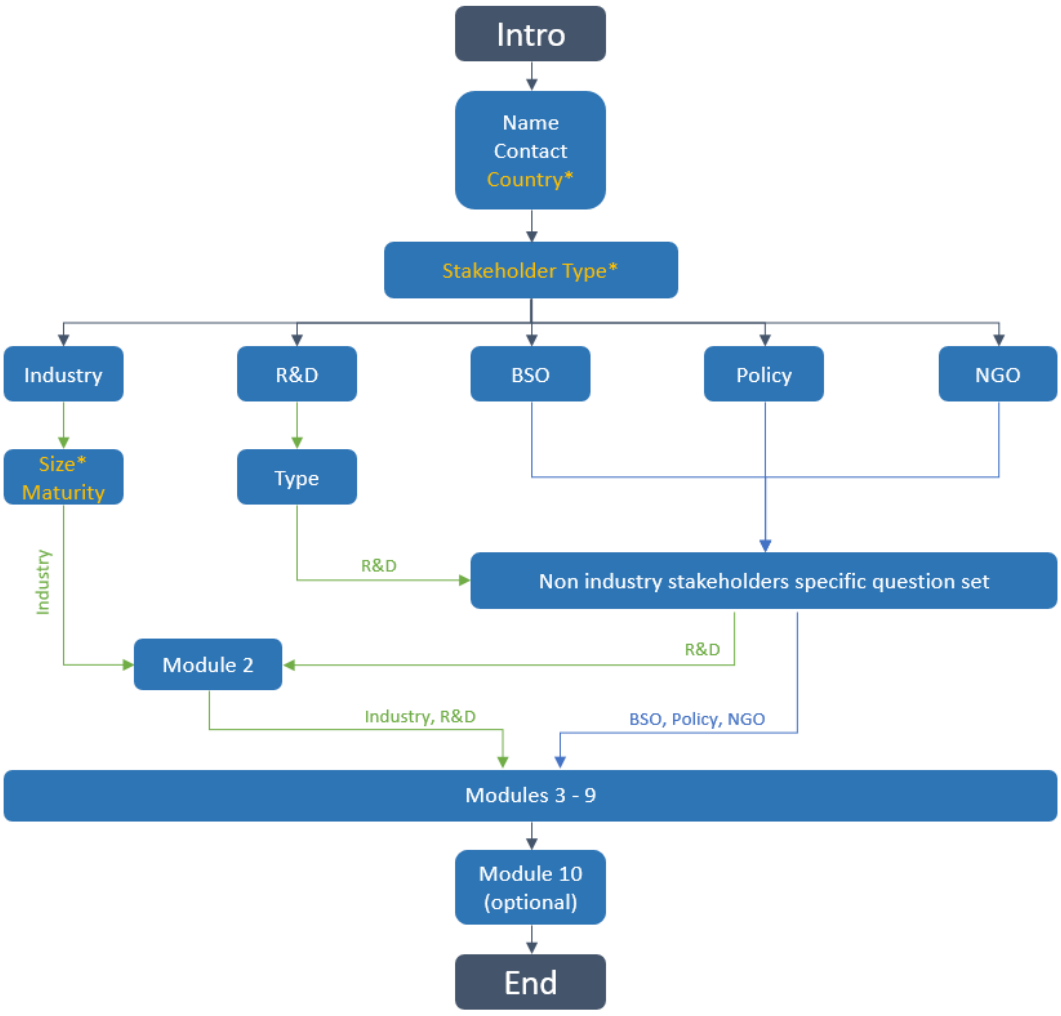
In order to separate relevance of each quadruple-helix actor and prevent answering on nonrelevant questions intended for specific type of actor, a separate set of questions was created.

Figure 2. Flow diagram of the online BG-EDP questionnaire



For the BG-EDP activity a total of 93 questions were created, structured into 9 default modules.

Slovenia has opted to include optional Module 10 consisting of additional 25 custom-tailored questions specific for Slovenia.

It should be noted that such customised national/regional parts of survey will be analysed separately in order not to obstruct integrity of the default part of the survey.

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1.5.2. Data collection timeframe

Data collection has started in mid-**September 2022 and lasted until the end of January 2023**.

For the purpose of conducting the BG-EDP surveys in 9 regions/countries, the **1KA** platform (www.1ka.si) was used. The 1KA (which is translated as 'One click survey') is an open source application that offers services for online surveys. 1KA is an online service (SaaS - Software as a Service) that combines support for following functionalities development, design and technical creation of an online questionnaire, compiling and analysing data and paradata.

1.5.3. Missing values in the survey

Missing values (as described below) have negative values in the database and **are excluded from the analysis** by default. Some analyses (e.g. averages) also do not take some other missing responses into account.

Missing values are in 1KA as: (-1) Not answered; (-2) Skipped (condition); (-3) Drop-out; (-4) Subsequently added question; (-97) Not applicable; (-98) Refused; (-99) Don't know.

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2. BG-EDP results overview

2.1. Surveyed entities

Results from following 9 regions/countries involved in Pilot BG-EDP exercise are presented:

1) Slovenia
2) Serbia
3) Region of Central Macedonia (Greece)
4) Herzegovina Neretva Canton (Bosnia Herzegovina) – (marked with an abbreviation ***BA***)
5) Albania
6) Sicilian Region (Italy) – (marked Sicily)
7) Autonomous Region of Friuli Venezia Giulia (Italy) – (marked with an abbreviation ***FVG***)
8) Croatia
9) Montenegro

Please note that when interpreting the analysis and results, it refers to the surveyed individuals or groups within the countries/regions, and not to the countries/regions themselves as a whole.

2.1.1. Response rate

Total of **2013 participants** have entered the survey fallowing provided links from the respective invitation letters received from implementing and supporting partners. **228 valid surveys** were collected across all 9 regions/countries giving the **response rate of 11%.**

Figure 3. Total surveyed and valid responses, response rate - ADRION

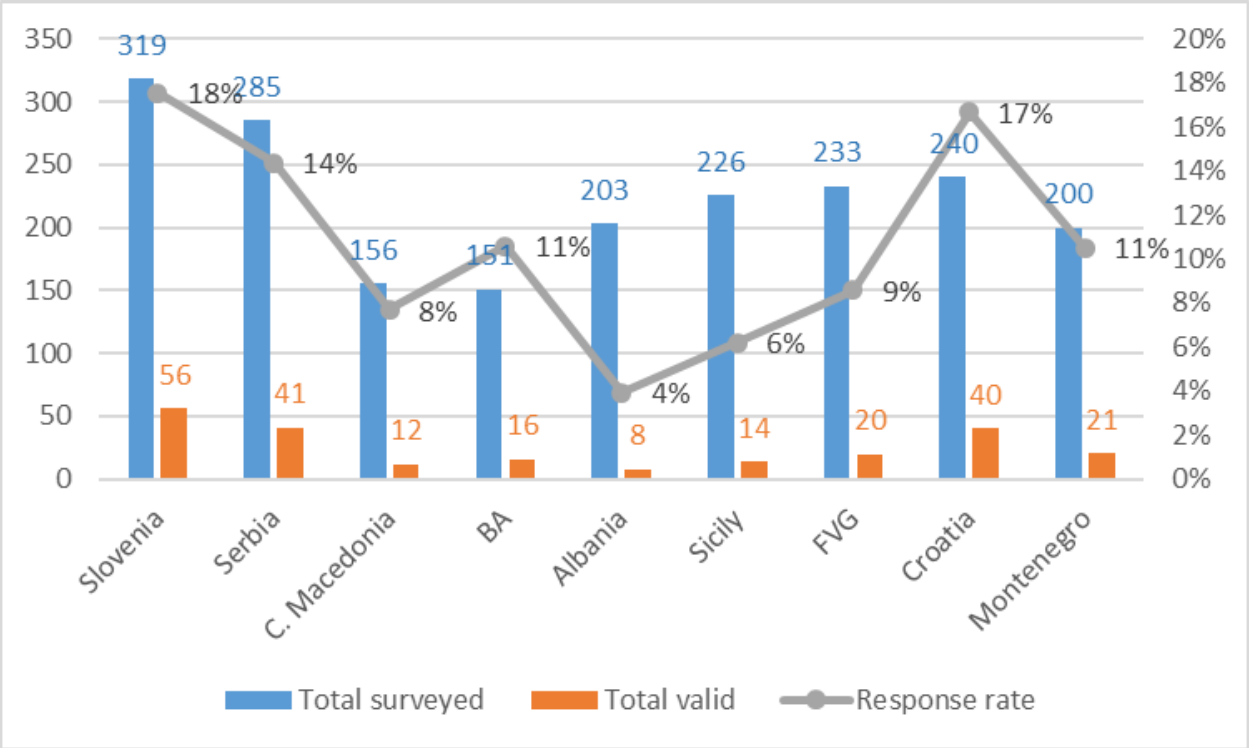

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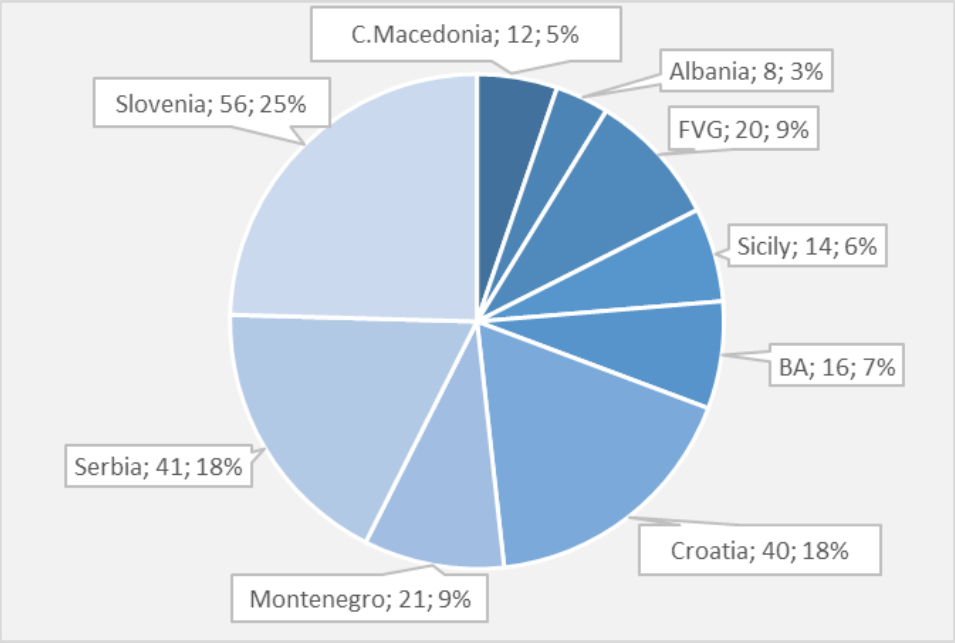
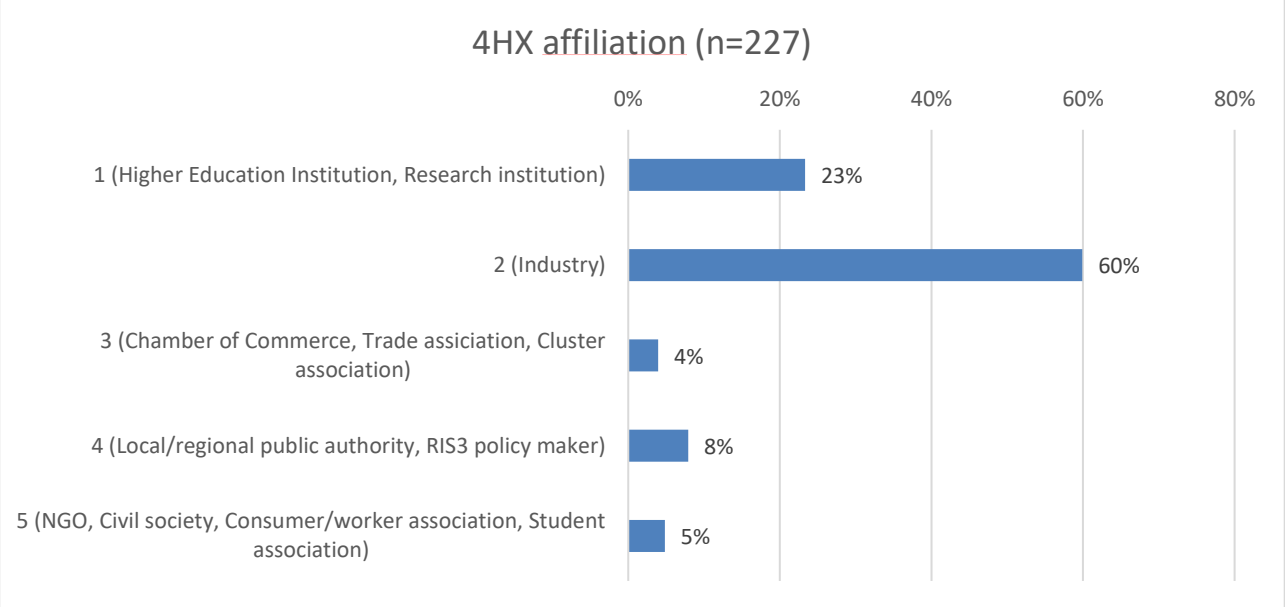
Figure 4. Ratios and number of surveyed valid responses by country/region



2.1.2. Business Demographics and Organization Context

Most valid inputs have been collected from the **industry entities** (60%), followed by **higher education institutions & research institutions** (23%).

Figure 5. Quadruple helix affiliation



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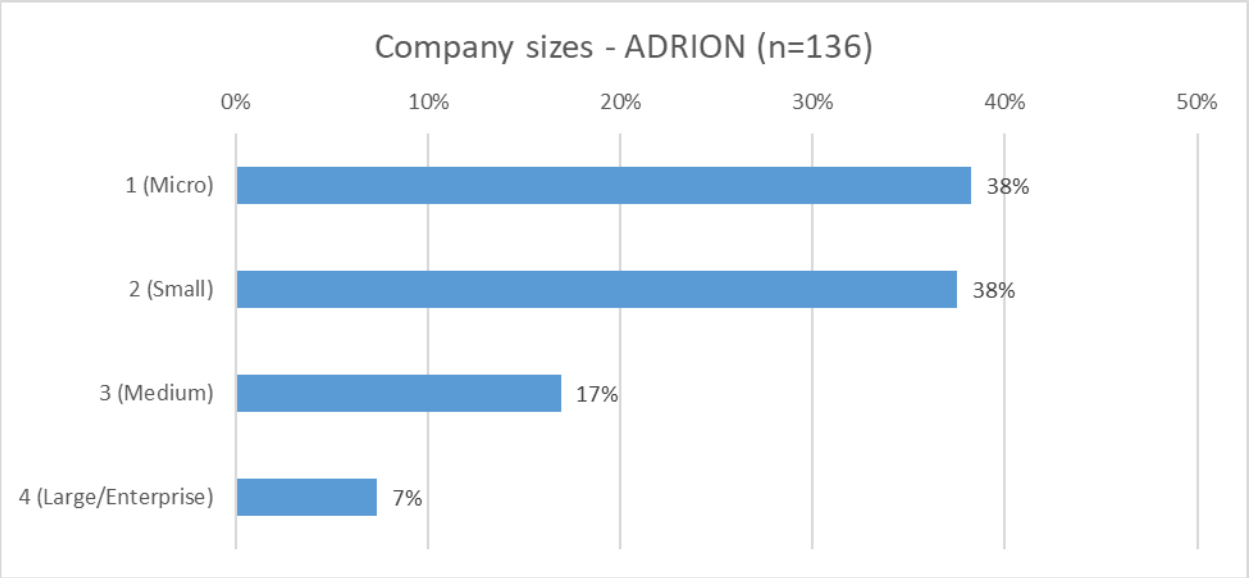
Industry entities

Total of **136 industry entities** were surveyed across the ADRION.

	Slovenia	Serbia	Central Macedonia	BA	Albania	Sicily	FVG	Croatia	Monte-negro	Total
Industry	46	15	6	4	1	8	18	29	9	**136**
	34%	11%	4%	3%	1%	6%	13%	21%	7%	

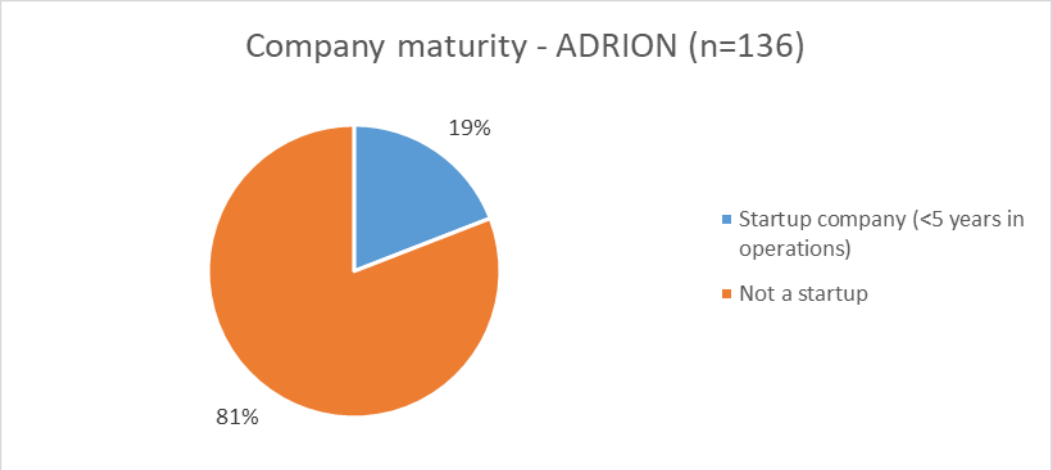
Out of 136 industry actors, the majority come from **micro** (38%) and **small** (38%) entities, while 17% of them were **medium** size companies. **Large companies/enterprises** were represented with 7% of responses.

Figure 6. Interviewed companies by size - ADRION



Out of 136 companies, **19%** (n=26) of the companies in ADRION region are **start-up companies**.

Figure 7. Company maturity - ADRION



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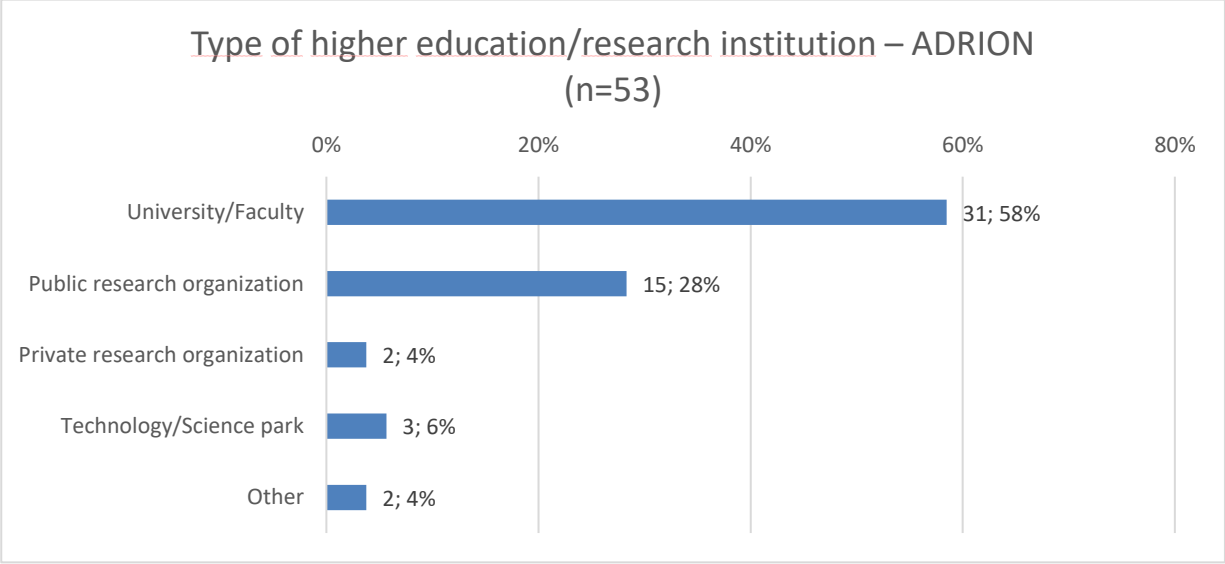
Non-industry entities

Total of 91 **non-industry** entities were surveyed across the ADRION.

	Slovenia	Serbia	Central Macedonia	BA	Albania	Sicily	FVG	Croatia	Monte-negro	Total
Higher Education Institution, Research institution	8	13	1	4	7	5	1	8	6	**53**
Chamber of Commerce, Trade assiciation, Cluster association	0	5	1	2	0	0	0	1	0	**9**
Local/regional public authority, RIS3 policy maker	1	4	3	3	0	1	1	1	4	**18**
NGO, Civil society, Consumer/ worker association, Student association	1	3	1	3	0	0	0	1	2	**11**
Total	10	25	6	12	7	6	2	11	12	**91**
	11%	27%	7%	13%	8%	7%	2%	12%	13%	**100%**

Total of **53** types of **higher education/research institution** were surveyed. The majority of surveyed organizations belong to universities/faculties (58%), followed by public research organizations (28%).

Figure 8. Type of higher education/research institutions - ADRION



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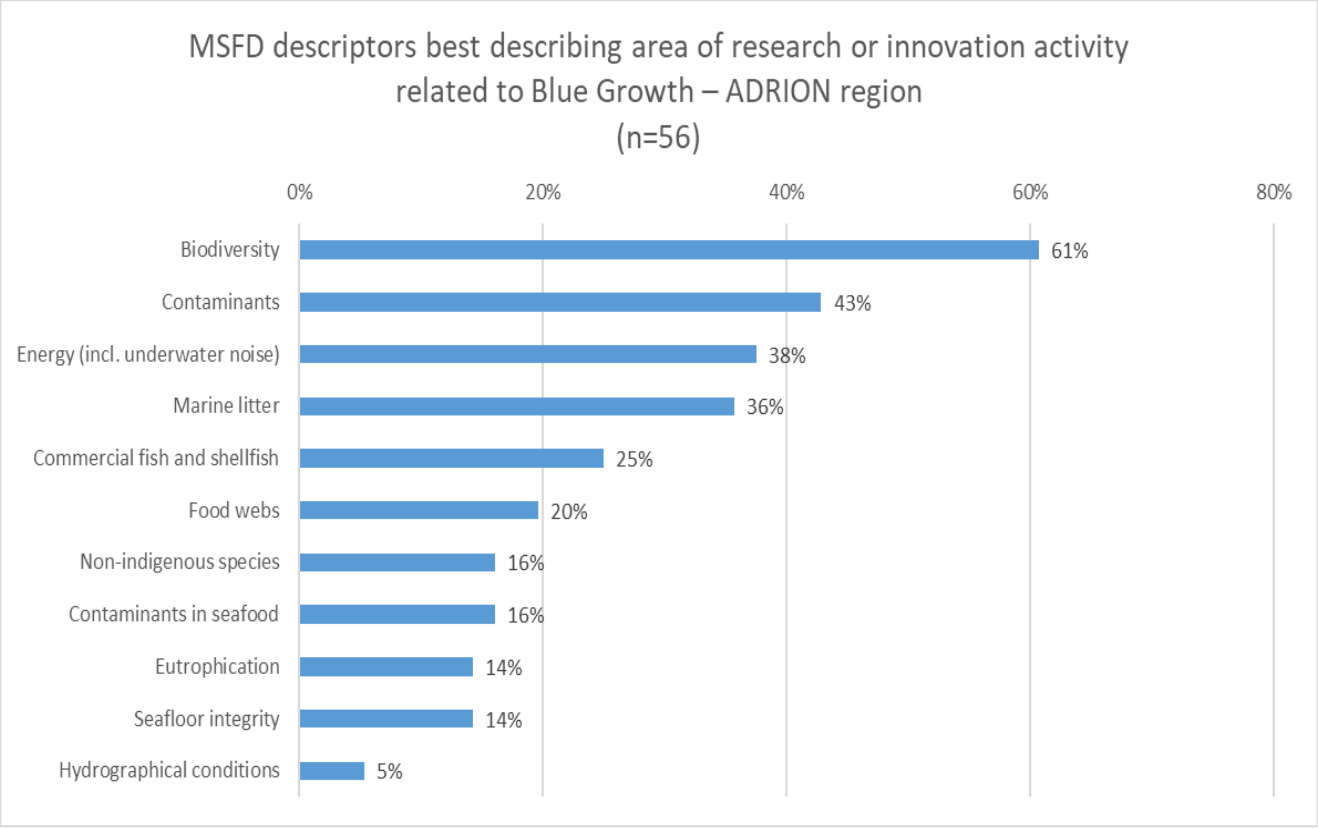
According to flow diagram of the BG-EDP questionnaire (see figure 2), all non-industry entities are given specific set of questions related to their non-industry affiliation.

Sustainable European Maritime Strategy Framework Directive (**MSFD**) was put in place to protect the marine ecosystem and biodiversity upon which our health and marine-related economic and social activities depend. To help EU countries achieve a good environmental status (GES), the directive sets out 11 illustrative qualitative descriptors. In line with the MSFD, all non-industry entities were given a question to select (multiple selection were possible) descriptors which best describe the area of their research or innovation activity related to Blue Growth based on given descriptors.

Figure 9. Maritime Strategy Framework Directive (MSFD) descriptors that best describe the area of research or innovation activity related to Blue Growth - ADRION



The most represented descriptor is "**Biodiversity**", covering 61% of research and innovation activities among surveyed non-industry entities, followed by "**Contaminants**" (43%), "**Energy** (incl. underwater noise)" (38%) and "**Marine litter**" (36%).

"Non-indigenous species" and **"Contaminants in seafood"** for human consumption represent only 16% of research and innovation activities, followed by **"Eutrophication"** and **"Seafloor integrity"** with 14% reported activities across surveyed entities in ADRION region.

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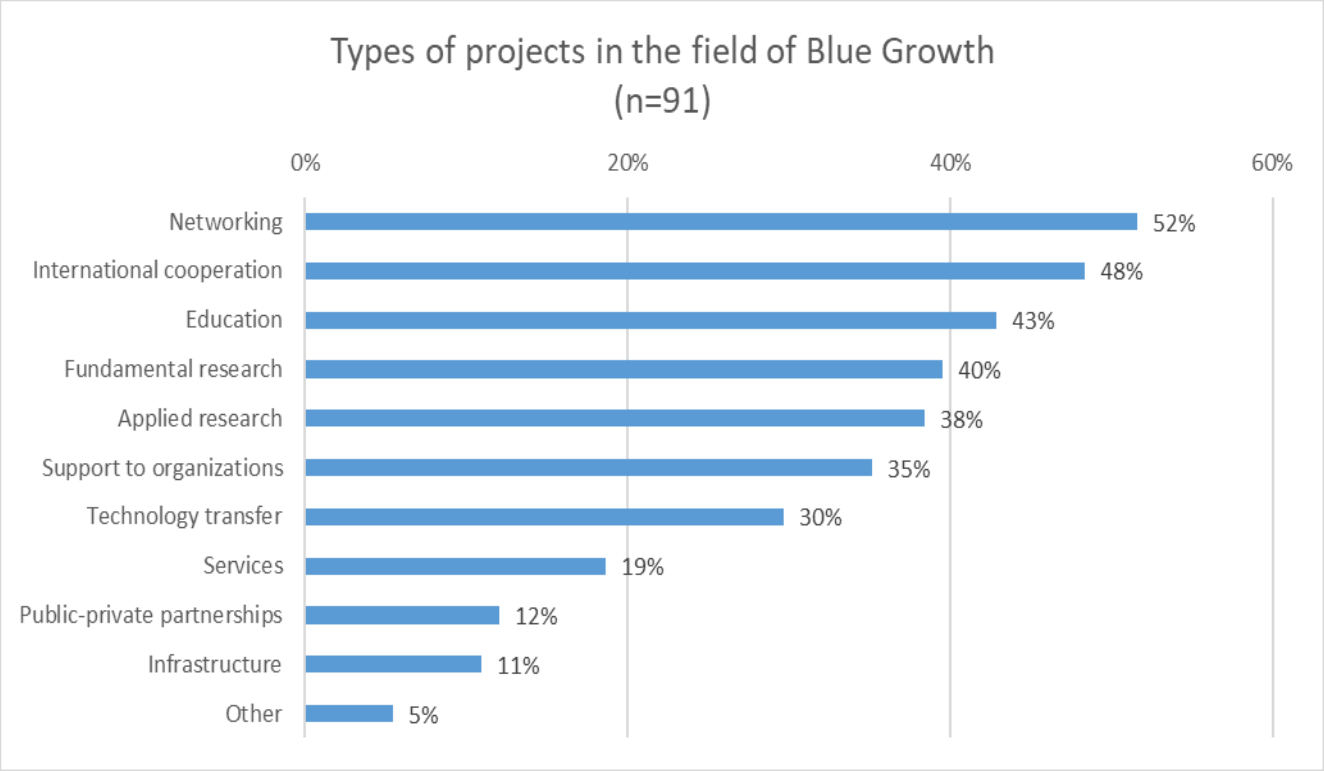
Type of projects conducted by surveyed non-industry entities in ADRION suggest where the focus of the entities is in the area of Blue Growth.

Figure 10. Types of projects conducted by non-industry entities in the field of Blue Growth - ADRION



The most represented types of projects in the field of Blue Growth by surveyed non-industrial actors are "**Networking**" (52%), "**International cooperation**" (48%) and "**Education**" (43%) projects.

"**Technology transfers**" (30%), "**Services**" (19%), "**Public-private partnerships**" (12%), and "**Infrastructure**" (11%) are the least used project types in ADRION region.

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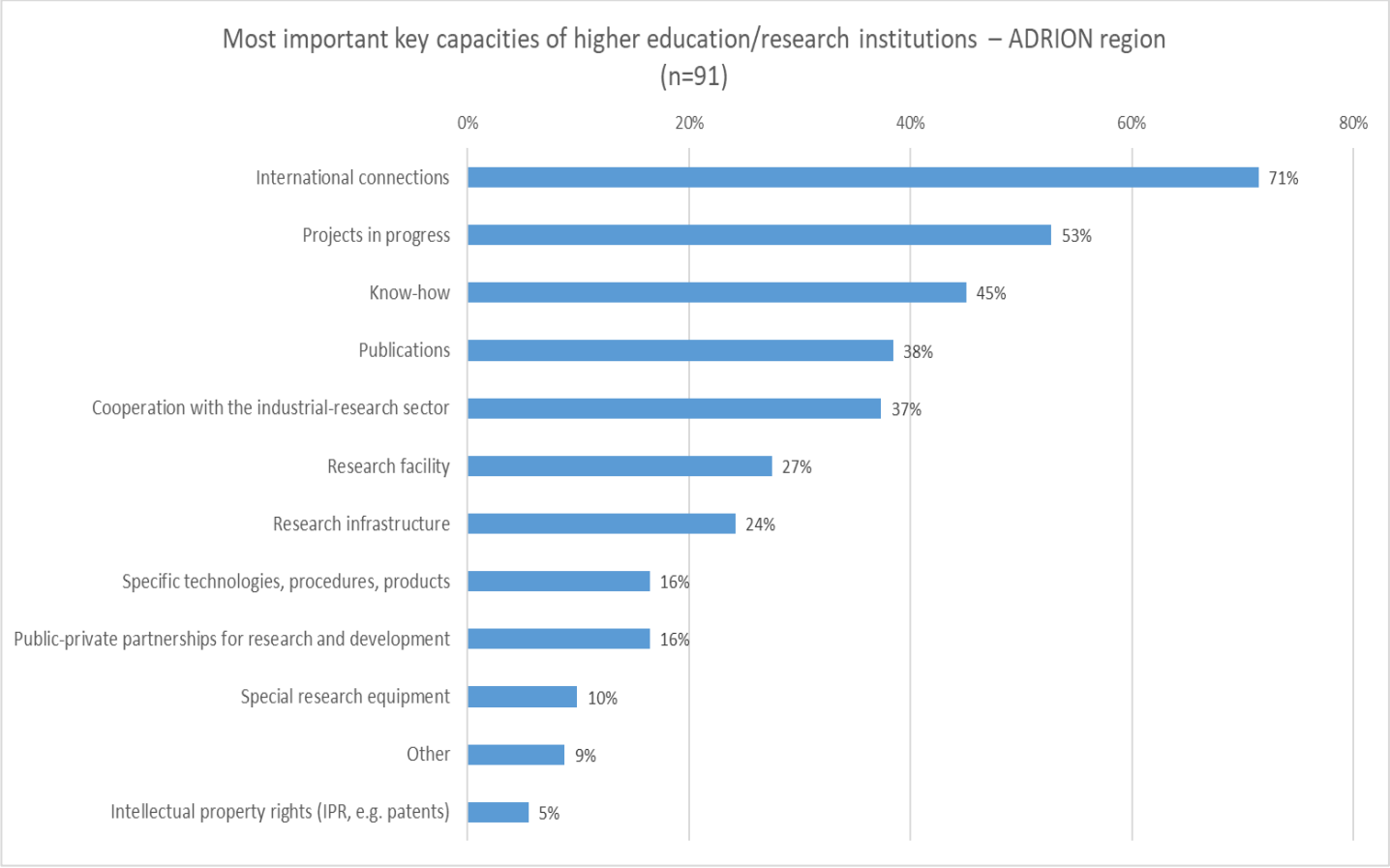
By far the most important key capacities by surveyed non-industry entities in the fields of Blue Growth are "**International connections**", represented in 71% of the cases, followed by "**Projects in progress**" (53%), and "**Know-how**" (45%).

"**Specific technologies, procedures, products**" (16%), "**Public-private partnerships for research and development**" (16%), "**Special research equipment**" (10%) and "**Intellectual property rights**" (5%) are less important key capacities within surveyed ADRION non-industry entities.

Figure 11. The most important key capacities by non-industry entities in the field of Blue Growth - ADRION



Key trends for non-industry entities

Key trends on research or innovation activities in Blue Growth that will have the greatest impact in the next few years within surveyed ADRION non-industry actors:

- **Green transition** (awareness of the importance of a good environmental status and the dependence of people and the economy on the environment and the requirement to reduce environmental impacts),
- **Digital transformation** (finding ways to make more use of data, technologies and artificial intelligence),

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- **Climate change -** further expansion to the coastal area (due to population aging and immigration to coastal areas); growing and increasingly tangible consequences of climate change, **Blue bioeconomy & biotechnology -** photoreforming, abatement of water contamination, advanced oxidation processes, catalysis, photocatalysis, development and use of genetic techniques for identification and cataloguing of biodiversity and monitoring, microalgae biotech towards high-added value,
- Fisheries & aquaculture - valorisation of biomass,
- **Marine renewable energy -** H2 production, CO2 recycling, alternative fuels, fuel cells, antifouling, energy efficiency and pollution reduction, energy archipelago for the use of energy from the sea,
- **Shipbuilding and ship repair** - green design, robotics for shipbuilding/nautical and use of innovative materials and production technologies to reduce environmental impact, green ship lightweight and green structures, sustainable ship mobility,
- **Infrastructure and maritime works** (submarine robots and drones - offshore structures, remote research, development of marine robotics and technologies, sensors),
- Maritime surveillance - safety, security,
- **Public services and governance** - adoption of maritime spatial plans and joint regulation of the coast and sea, regional policies for coordinated management of marine areas, supervision and control in port areas, policies to affirm and finance development and research projects in the area of Blue Growth, coordinated actions in countries outside the EU in connection with strategic planning of the development of blue economy,
- **Management of ecosystem services**: - environmental protection, prevention of sea pollution,
- **Circular economy -** circular regenerative systems for food production, circular solutions for marine litter,
- **Blue innovations** - blue economy as an innovation incubator,
- **Waterborne transport and port activities** - sustainable logistics, sustainable mobility, autonomous vessels, greening of navigation and in ports and interports,
- **Social innovations** - mapping user preferences
- **Skills and education** - strengthening the degree of eco-awareness of citizens, blue skills, business, education,
- **Networking of Blue Economy stakeholders** -, international cooperation on Interreg projects in SBE field, technology transfers, support to organizations,
- **Market trends** - product diversification, market specialization/client base/technology/geographic specialization, weak competitiveness on the domestic market and frequent market closures in sectors Blue industry activities, lack of support and motivation for marketing services on foreign markets
- **Coastal tourism –** sustainable tourism development, Mediterranean diet and tourism, cruise tourism.

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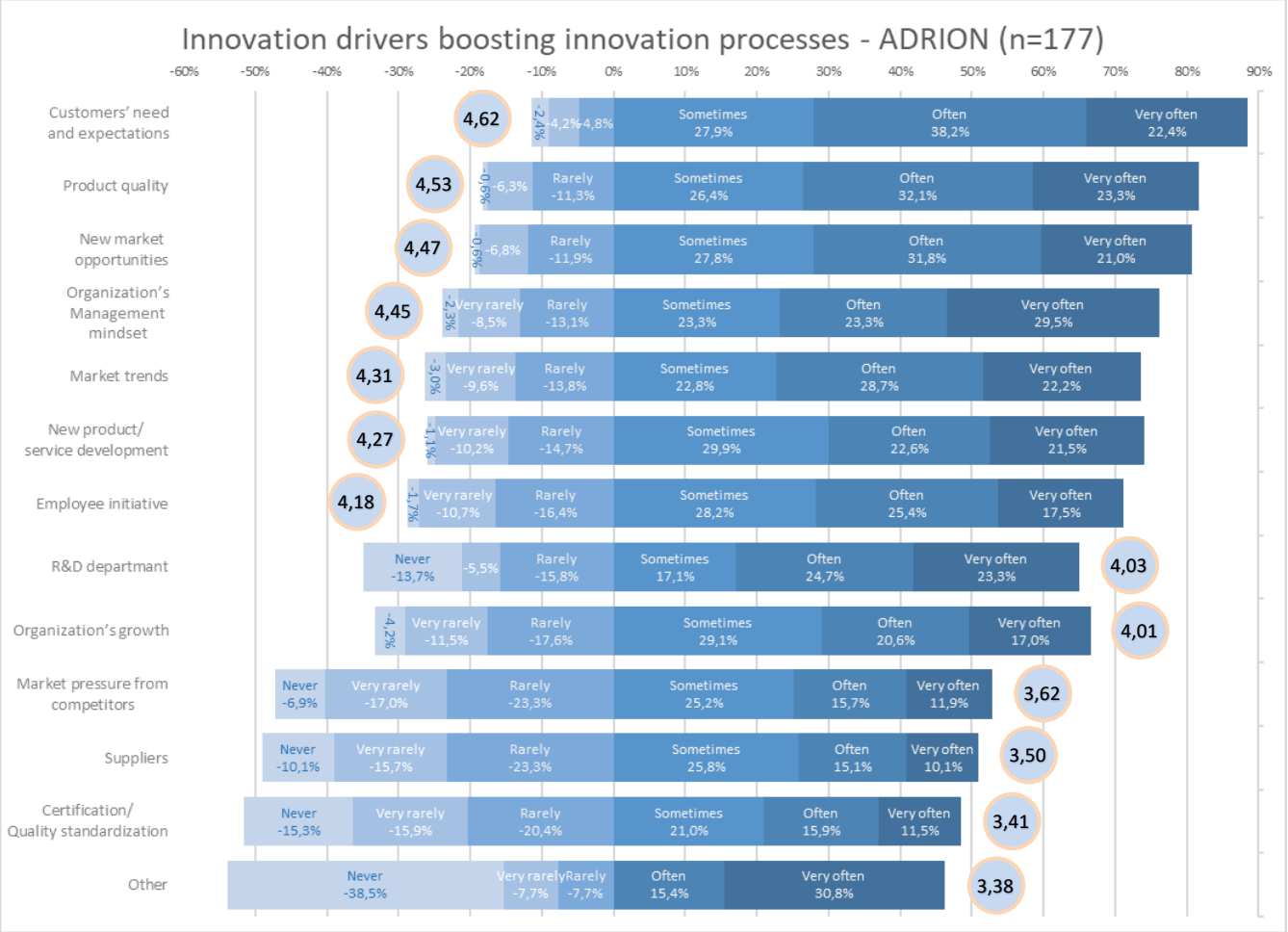
3. Innovation drivers

Innovation drivers are understood as incentives for the management that encourage innovation. The focus is on a broad number of aspects that can motivate the management to innovate and the main task is to verify the intensity of each driver.

"**Customers' needs and expectations**" is most frequent motivator for the management which **often** encourages innovation processes in the companies (avg. 4,62). Second most frequent is "**Product quality**" (avg. 4,53), closely followed by "**New market opportunities**" (avg.4,47).

"**Market pressure from competitors**" (avg.3,62), "**Suppliers**" (avg.3,5) and "**Certification/Quality standardization**" (avg.3,41) presents small driving force for Blue growth related innovations for surveyed entities in ADRION region.

Figure 12. Innovation drivers which encourage innovation processes – ADRION; percent by response and average of score for each innovation driver (on scale 1-6)



1. Never	2. Very rarely (less than one per year)	3. Rarely (1-2 times per year)	4. Sometimes (3-6 times per year)	5. Often (7-12 times per year)	6. Very often (more often than once per month)

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4. Barriers to growth & innovation

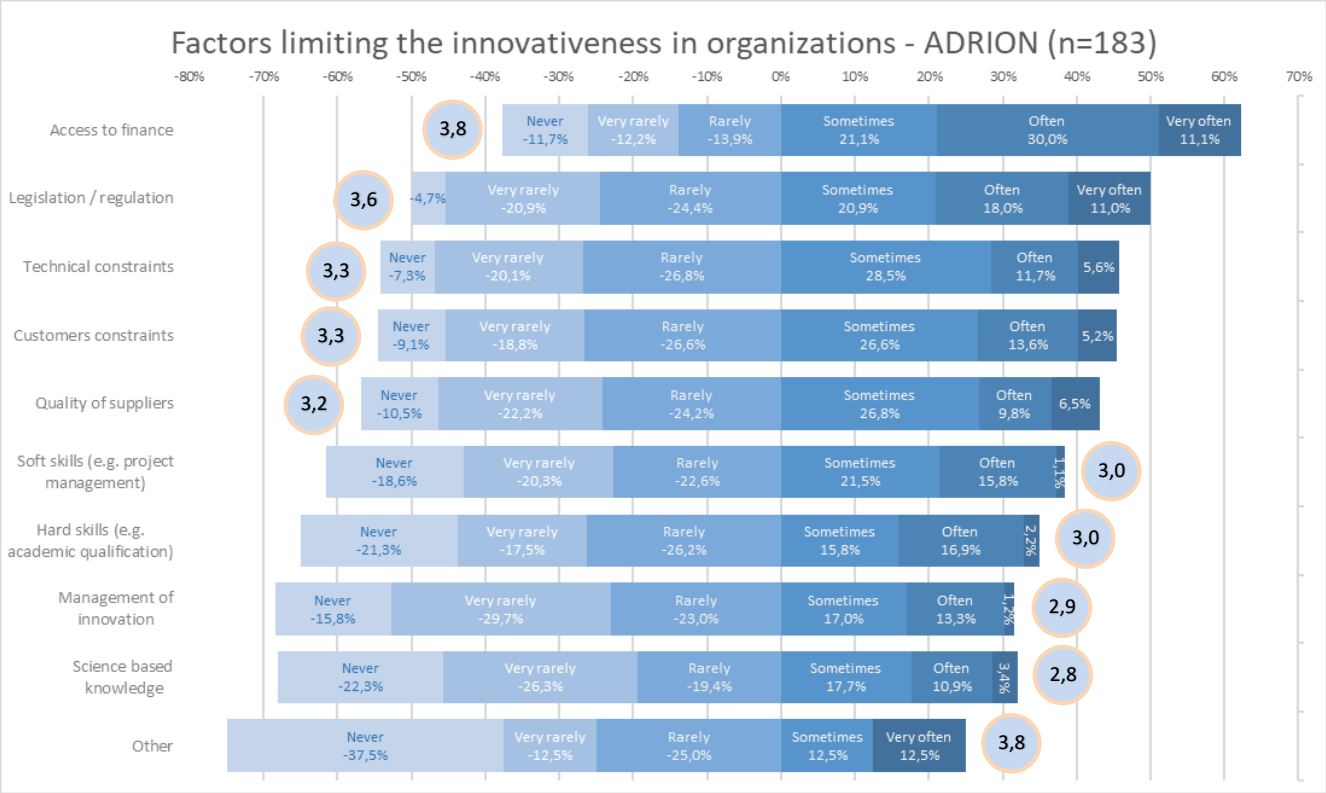
Barriers to growth and innovation module's purpose is to help identify constraints encountered by the enterprise when embarking on innovation development or implementation. Also, this module helps identify internal and external growth constraints. These constraints refer strictly to organization growth and not to innovation growth.

4.1. Innovation barriers

"**Access to finance**" is most limiting factor for innovativeness (avg. 3,8) for surveyed entities in ADRION, with "**Legislation/regulation**" (avg. 3,6) and "**Technical constraints**" (avg. 3,3) coming close second and third as most frequent limiting factors.

"**Soft skills**" and "**Hard skills**" (avg. 3,0), "**Management of innovation**" (avg.2,9) and "**Science based knowledge**" (avg. 2,6) are less frequent limiting factors for surveyed entities in ADRION region.

Figure 13. Frequencies of factors limiting the innovativeness in organizations – ADRION; percent by response and average of score for each limiting factor (on scale 1-6)



1. Never	2. Very rarely (less than one per year)	3. Rarely (1-2 times per year)	4. Sometimes (3-6 times per year)	5. Often (7-12 times per year)	6. Very often (more often than once per month)

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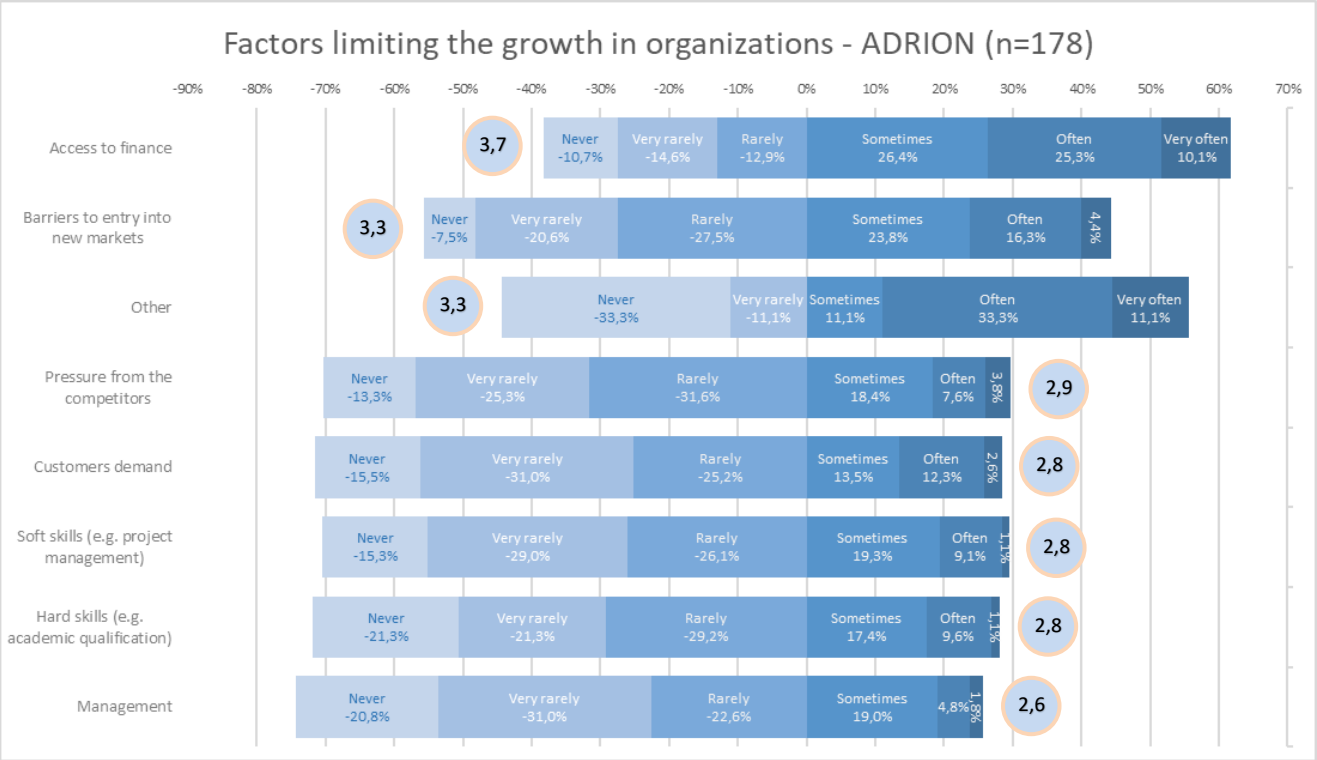
4.2. Growth barriers

"**Access to finance**" (avg.3,7) is often the most limiting growth constrain factor for surveyed entities in ADRION. "**Barriers to entry into new markets**" (avg. 3,3) is another identified limiting factor for organizations.

"**Soft skills**" and "**Hard skills**" (avg. 2,8) with "**Management**" (avg. 2,6) factor rarely limits the growth for surveyed entities in ADRION region.

Figure 14. Frequencies of factors limiting the growth in organizations – ADRION; percent by response and average of score for each limiting factor (on scale 1-6)

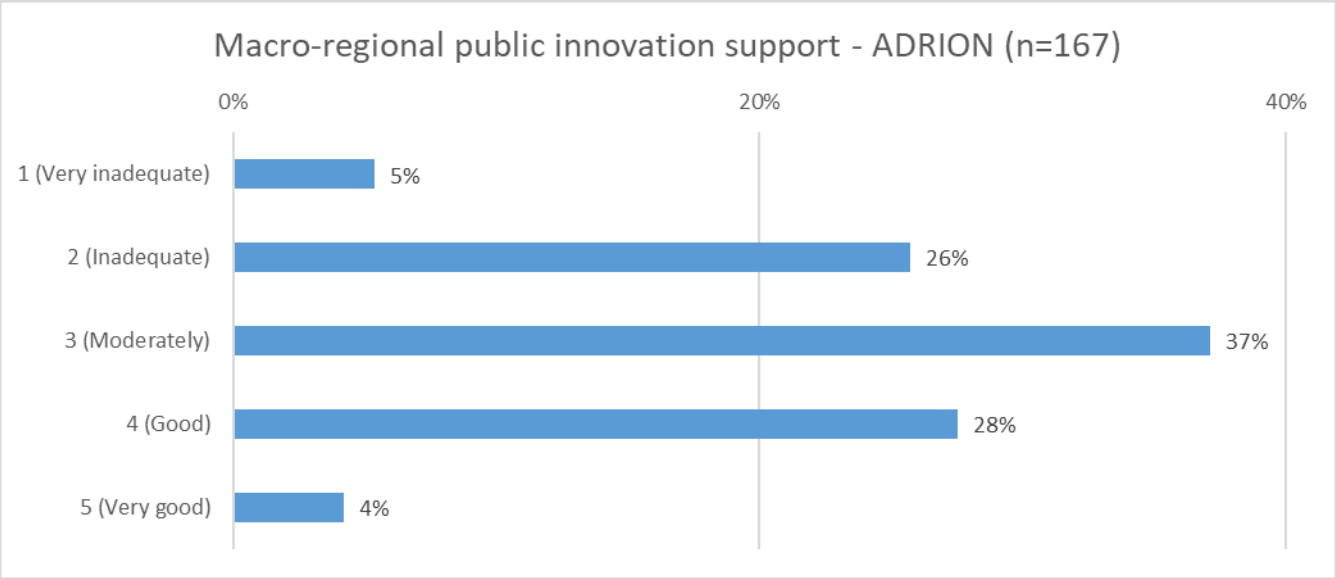


1. Never	2. Very rarely (less than one per year)	3. Rarely (1-2 times per year)	4. Sometimes (3-6 times per year)	5. Often (7-12 times per year)	6. Very often (more often than once per month)

4.3. Awareness of public innovation support

The surveyed subjects in the ADRION region rated the **macro-regional support for innovations** as *moderate* (average 3.0), which gives room for improvement in the next period.

Figure 15. Macro-regional public innovation support – ADRION (on scale 1-5)



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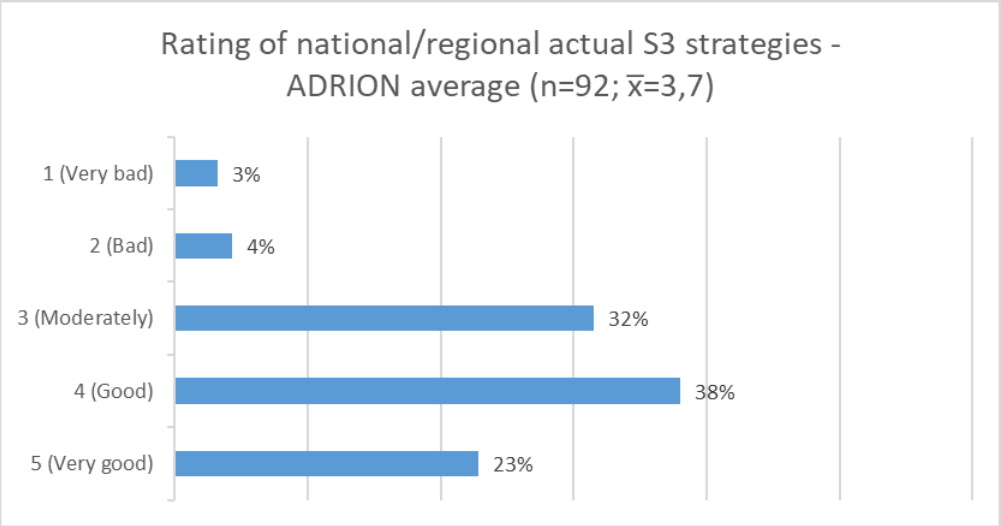
4.4. National/regional current S3 ratings

NOTE: Analysis took into account only surveyed entities from countries/regions with adopted S3 strategies for their respective country/region. **Herzegovina Neretva Canton** (Bosnia Herzegovina) and **Albania** were not taken into account due to not yet adopted S3 strategies.

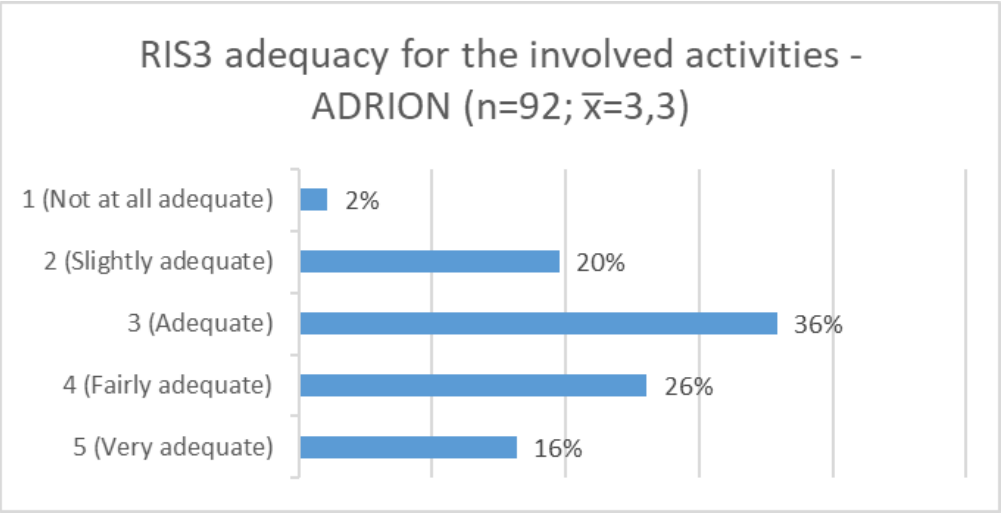
Figure 16. Rating of actual S3 strategies as ADRION average (on scale 1-5)



4.5. National/regional RIS3 adequacy

RIS3 adequacy may be indicator to show how national/regional RIS3 strategy is aligned with the 4-helix entities and their activities. Surveyed entities from **Herzegovina Neretva Canton** (Bosnia Herzegovina) and **Albania** were not taken into account due to not yet adopted S3 strategies.

Figure 17. RIS3 adequacy for the involved activities as ADRION average (on scale 1-5)



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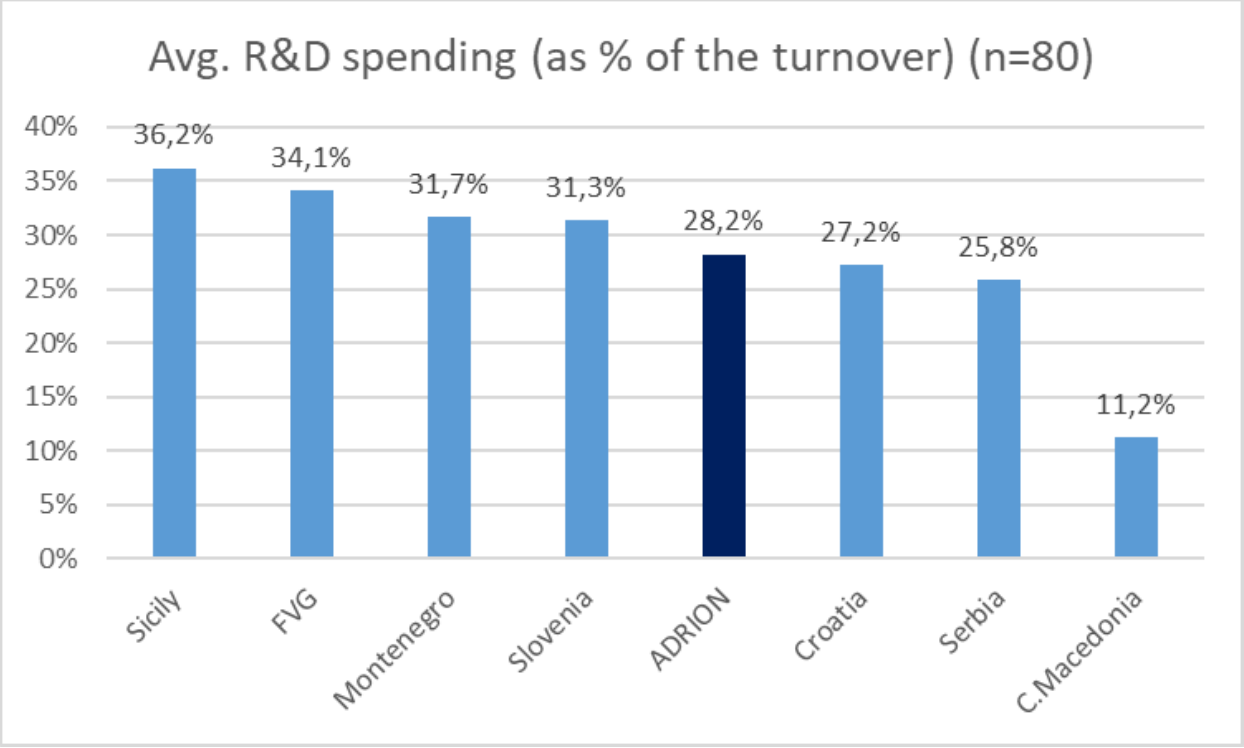
5. Innovation/R&D capacities and processes

Section assesses the innovation and R&D capacities and processes' potentials of the entities in ADRION region.

5.1. R&D spending

Average percentage of R&D spending (as % of the turnover) over the past 3 years was **28,2%** as reported by surveyed entities from 7 ADRION countries/regions. It should be noted that surveyed entities from Albania and Herzegovina Neretva Canton (Bosnia and Herzegovina) haven't been included into the analysis due to lack of survey responses on this topic.

Figure 18. Amount of R&D spending over past 3 years (as percentage of the turnover)



Surveyed entities from **Sicily** (36,2%), **Friuli Venezia Giulia** (34,1), **Montenegro** (31,7%) and **Slovenia** (31,3%) have reported R&D spending above the ADRION average.

Surveyed entities from **Croatia** (27,2%) and **Serbia** (25,8) position themselves slightly below the average, while **Central Macedonia** is lagging behind with reported 11,2% average R&D spending.

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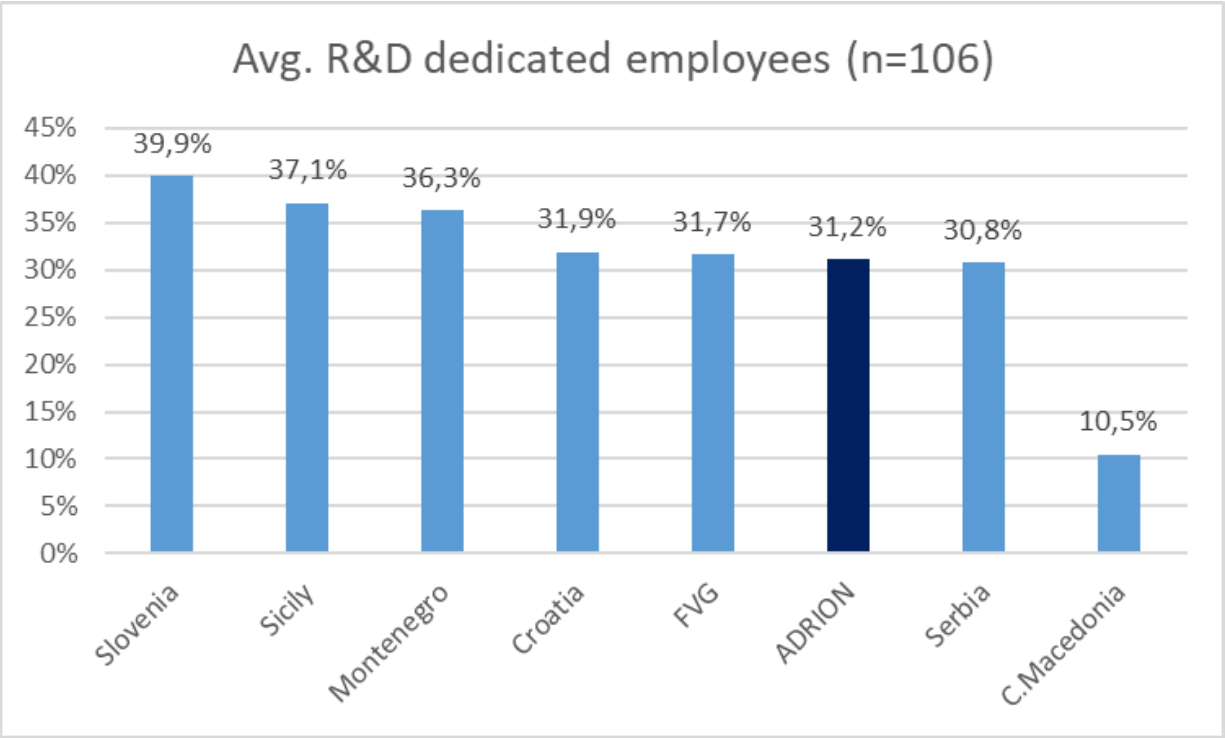
5.2. R&D dedicated employees

Average percentage of R&D dedicated employees from surveyed entities in 7 **ADRION countries/regions** is **31,2%**. It should be noted that surveyed entities from Albania and Herzegovina Neretva Canton (Bosnia and Herzegovina) haven't been included into the analysis due to lack of survey responses.

Figure 19. Proportion of dedicated employees performing R6D work



Surveyed entities from **Slovenia,** as leading country, reported 39,9% of dedicated R&D employees. Surveyed entities from **Sicily** (37,1%) and **Montenegro** (36,3%) are close second and third. **Croatia** (31,9%) and **Friuli Venezia Giulia** (31,7%) sit slightly above the ADRION average of the surveyed entities.

Surveyed entities from **Serbia** (30,8%) are positioned slightly below the ADRION average, while surveyed entities from **Central Macedonia** reported only 10,5% R&D dedicated employees.

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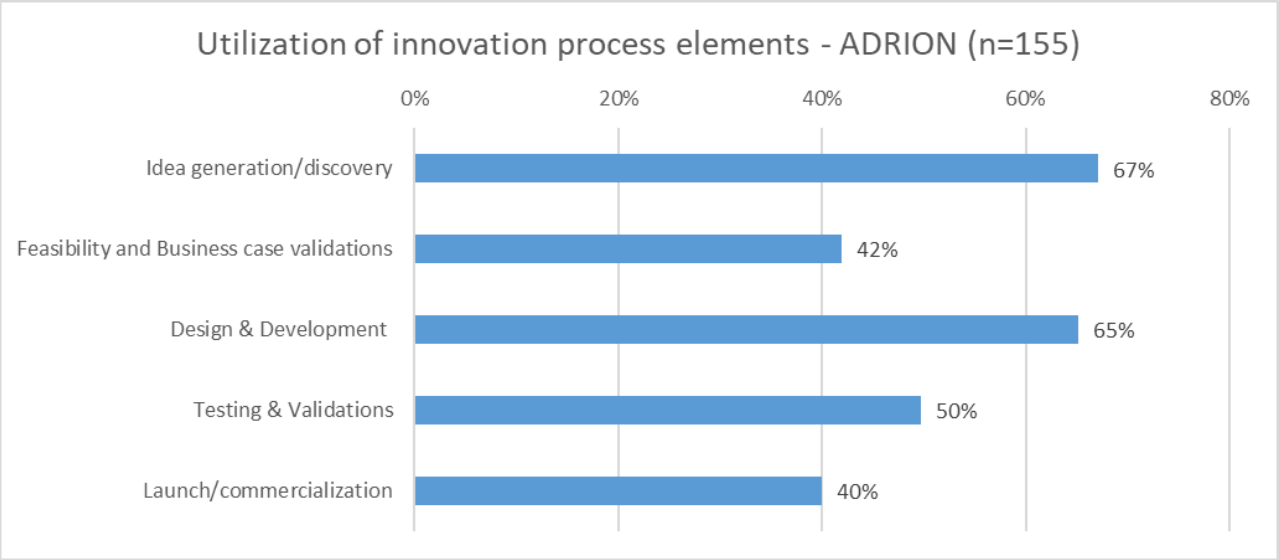
5.3. Elements of innovation processes

Innovation process (for the purpose of the survey) is divided into five discrete and essential stages of successful innovation, starting with idea generation or discovery. The process is then upgraded by each stage, until it reaches the final stages of launch and commercialization. Each stage requires more resources, capacities, knowledge and efforts to embed the new added value into the process.

Figure 20. Innovation process elements used by ADRION entities.



Two-thirds of surveyed ADRION entities are involved in primary **idea generation/discovery** (67%) stage of innovation processes, along with more advanced **design/development** stage (65%). There is a noticeable gap in **feasibility and business case validations** with only 42% of utilization within ADRION entities.

Testing and validation is utilized by 50% of surveyed ADRION entities. **Launch/commercialization stage**, as the most demanding stage in the innovation process, is utilized by 40% of surveyed ADRION entities.

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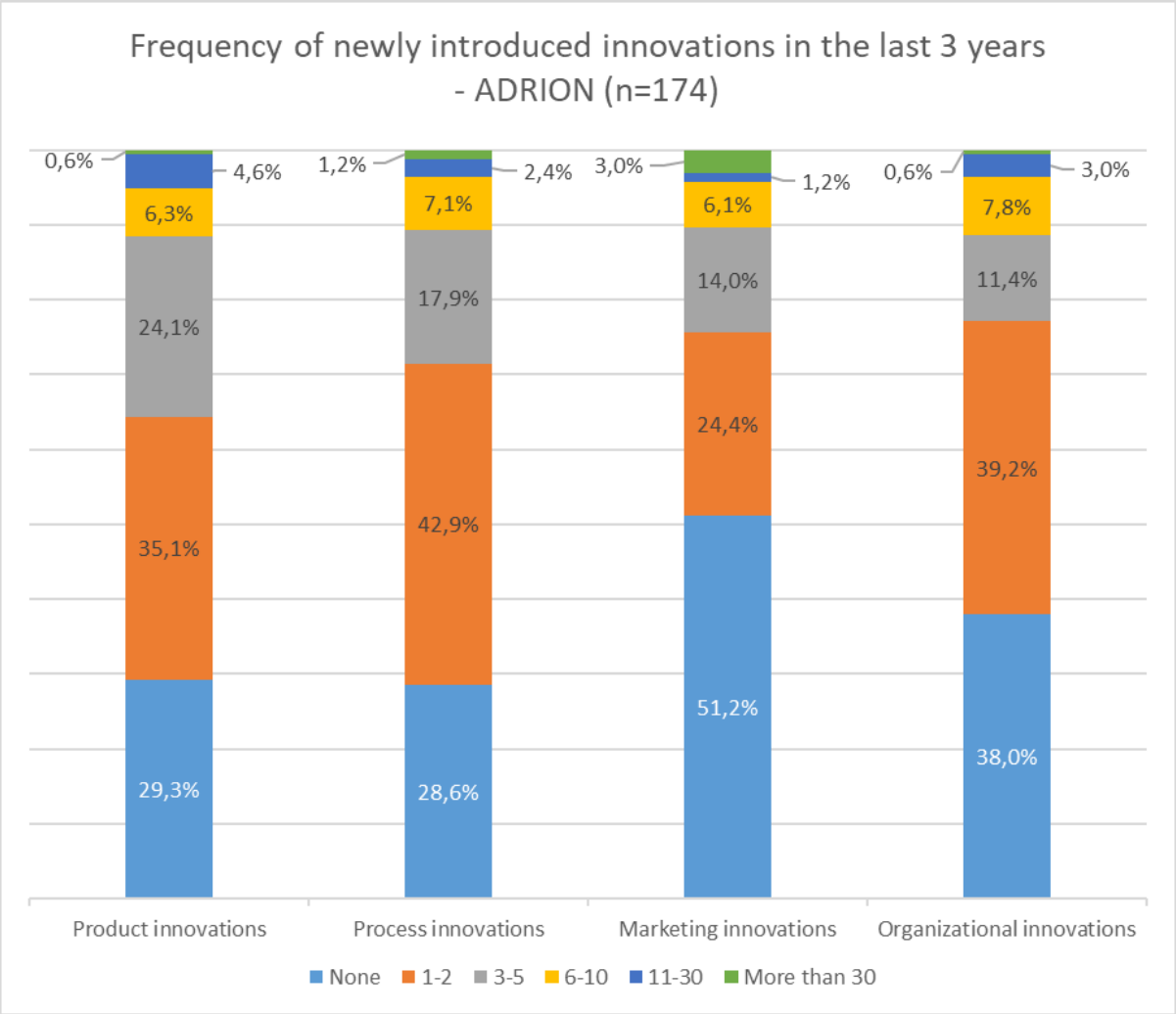
5.4. Frequency of newly introduced innovations

Innovations are mostly perceived through the practical implementation of ideas that result in the introduction of new goods or services or improvement in offering goods or services. Besides product/services innovations, process, marketing and organizational innovations are essential parts of the innovation framework.

Figure 21. Newly introduced innovations by stated type in the last 3 years – ADRION region.



Product and process innovations are the most used type of innovations by surveyed entities in ADRION with around 60% with an average 1-to 5 innovations introduced in the last three years.

Marketing innovations are not utilised in 51,2% of cases, but there is a noticeable 3% of specialised entities utilising more than 30 innovations in the last three years. Organizational innovations are least utilised in 50,6% of cases with 1 to 5 innovations in the last 3 years.

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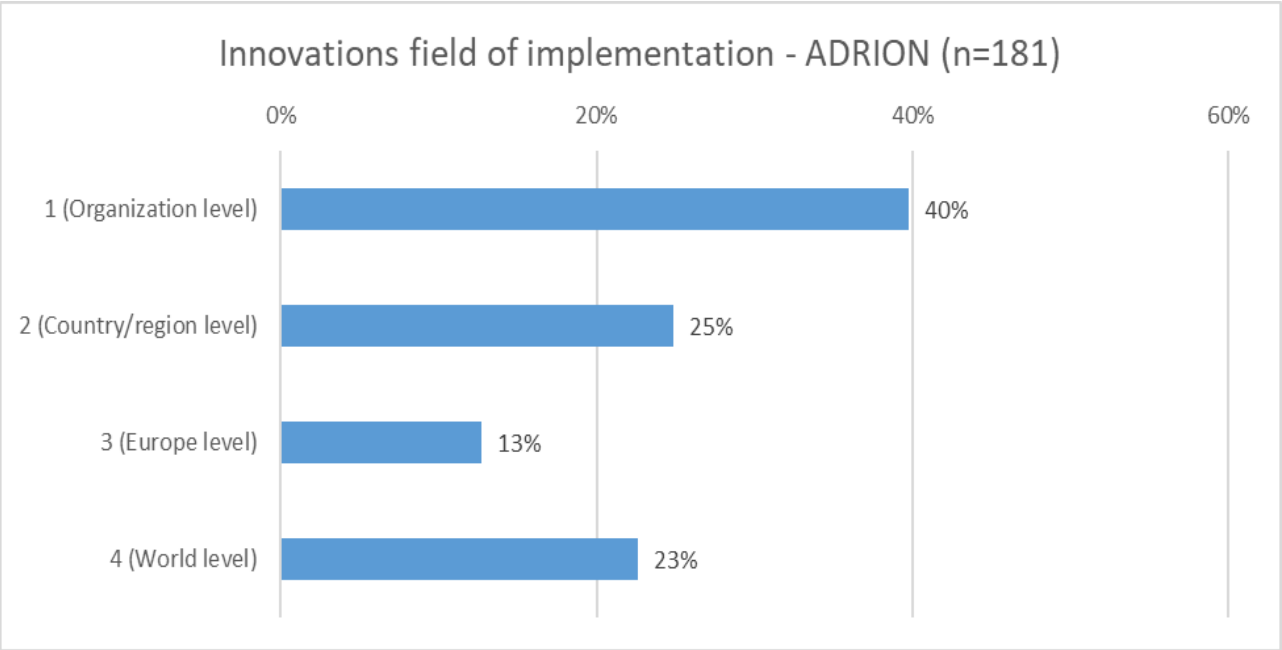
5.5. Field of application of innovations

Innovations could be introduced internally within own organization and utilized internally as upgrades to internal products and production processes, or they can be introduced to external levels and markets such as the country/regional level, the European market level or globally.

Figure 22. Innovations major field of implementation – ADRION region.



Regarding major filed of implementation of newly developed innovations, internal or **organizational level** is the most frequent choice for surveyed ADRION entities in 40% of cases.

Second most used field of implementation is **country or regional level** in 25% of cases.

World level implementations come third with 23% and **Europe level** is represented with a modest 13%.

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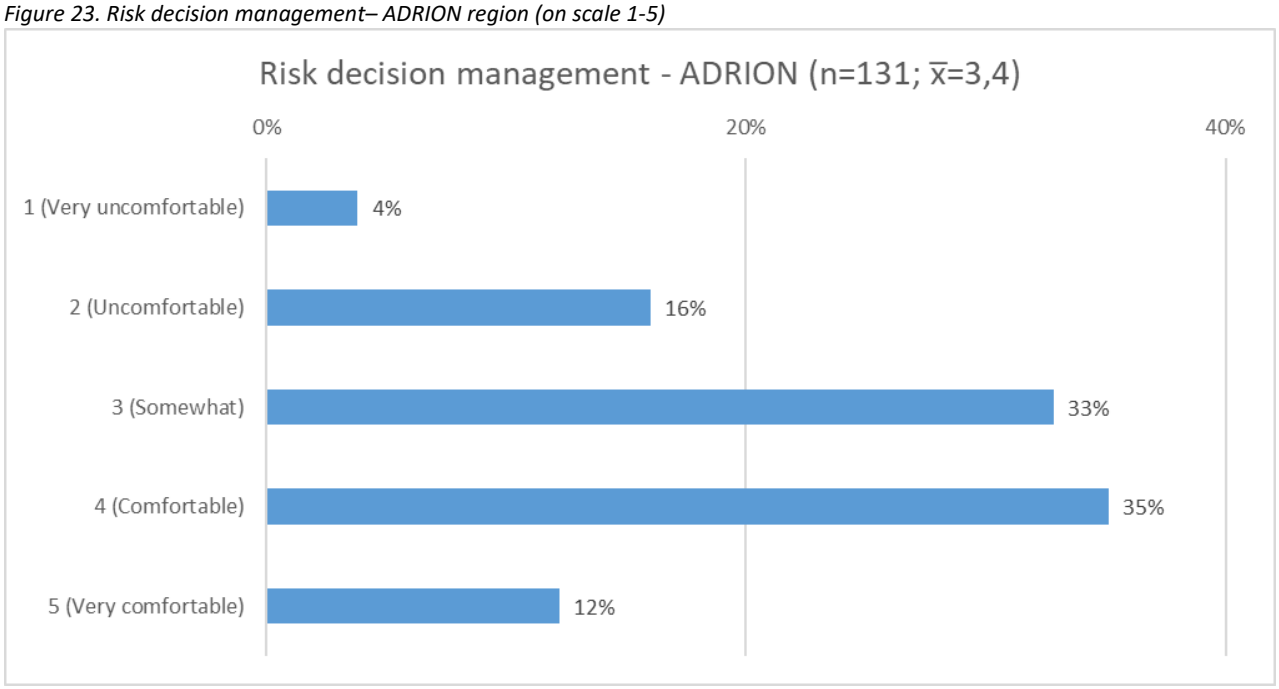
5.6. Risk decision management

Ability and willingness of entities' management to make risky decisions is one of the indicators showing innovation potential based on assessment and identification, analysis, evaluation and monitoring of business and non-business risks affecting the entities.

Figure 23. Risk decision management– ADRION region (on scale 1-5)



Average of surveyed ADRION entities are positioned risk decision level between *somewhat comfortable* to *comfortable* for making risky decisions (x̄=3,4).

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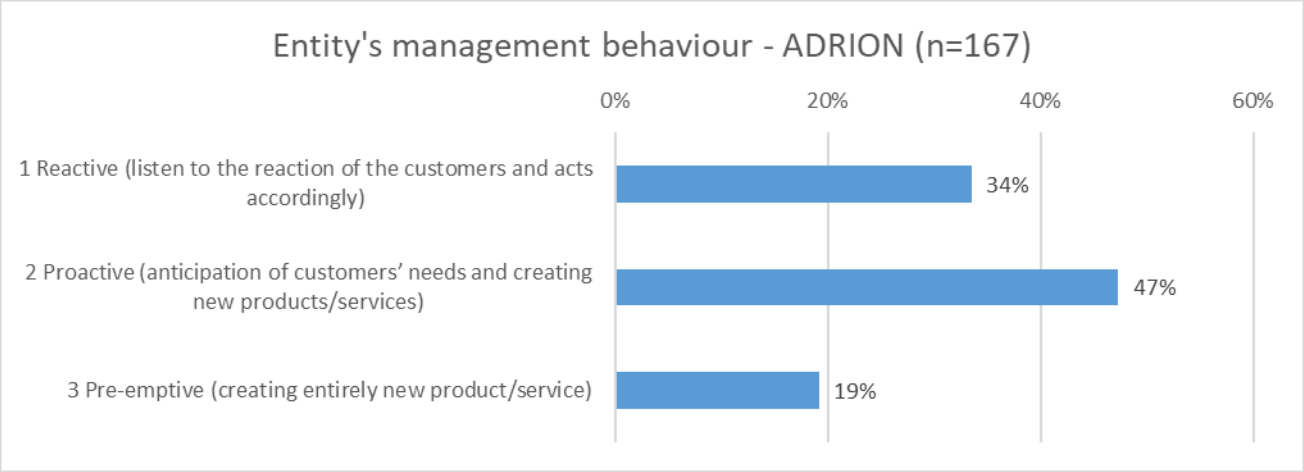
6. Innovation management

Assessment of innovation management capabilities of the ADRION surveyed entities.

6.1. Entity's management behaviour

Section assesses in the manner of the management of ADRION entities' behaviour towards happenings on the market.

Figure 24. Entity's management behaviour towards happenings on the market– ADRION region.



Most surveyed entities in ADRION behave **proactively** (47%) to what happens on the market, meaning that they are anticipating customers' needs and thus creating new products and services.

Almost one-third (34%) are **reactive** to what happens to the market by listening customers reactions and acting accordingly.

Around 19% of surveyed ADRION entities act **pre-emptively** by creating entirely new products and services.

Most surveyed entities from countries/regions (Slovenia, Serbia, Sicily, Friuli Venezia Giulia and Croatia) follow the above mentioned pattern.

Surveyed entities from Albania and Montenegro share similar pattern of having equal share or reactive and proactive behaviour (around 40%).

Herzegovina Neretva Canton surveyed entities mostly behave reactively (60%) and proactively (40%).

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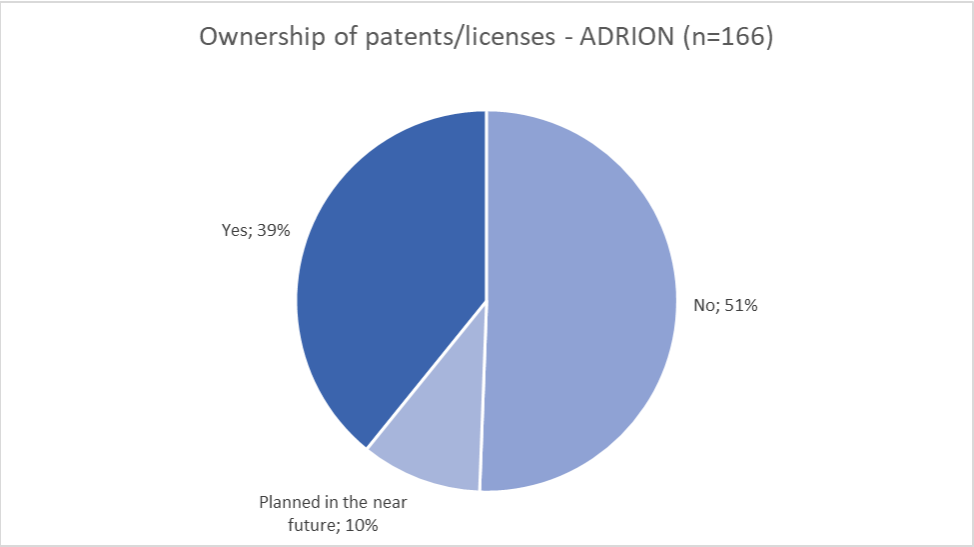
6.2. Ownership of patents/licenses

Inventions are the basis of innovation. An invention is a new solution to a technical problem and can be protected through patents. Patents protect the interests of inventors whose technologies are truly innovative and commercially successful by ensuring that an inventor can control the commercial use of their invention.

Figure 25. Ownership of patents/licenses – ADRION region.



In ADRION region, 39% of the surveyed entities stated that they own patents or licenses or have applied for them.

Small percentage (10% of surveyed entities) are planning to obtain ownership of patents/licenses in the near future.

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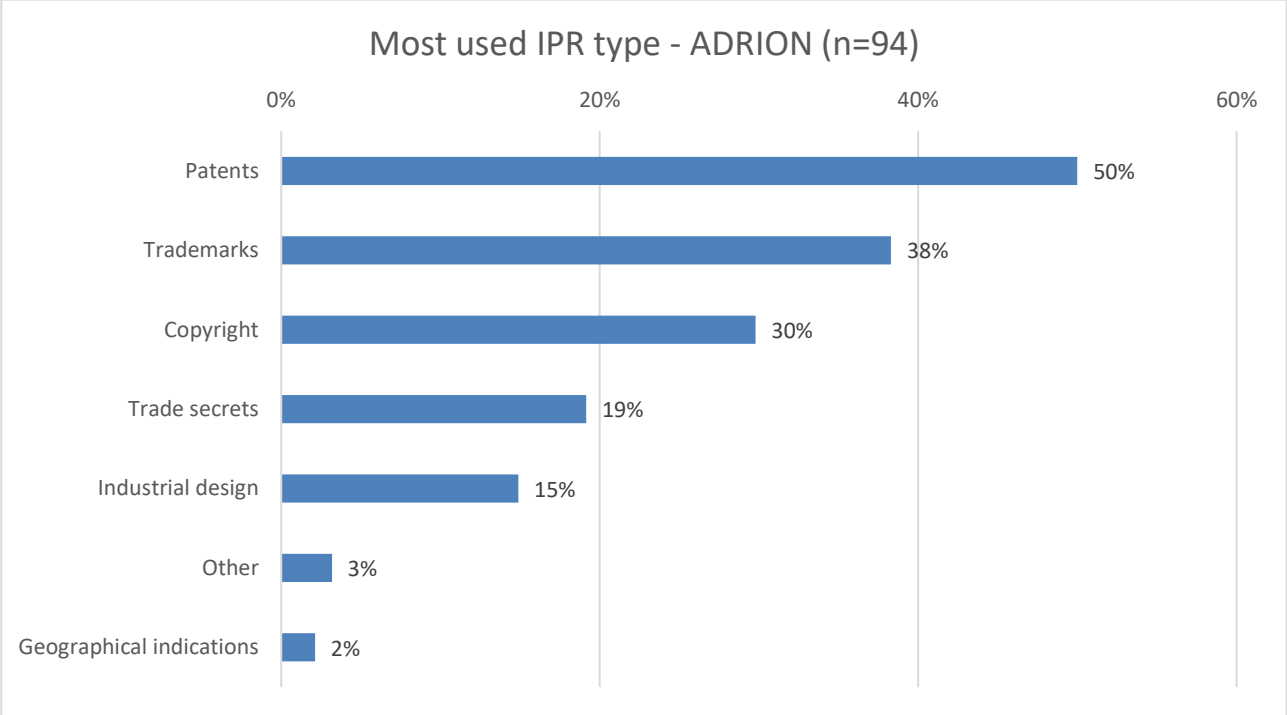
6.3. Use of Intellectual Property Rights

The technical information and business intelligence generated by the patenting process can spark new ideas and promote new inventions. Other IP rights can also be used to protect a new technology, product or service. Knowing which IP rights are the most used and where across ADRION region might suggest a creation of specialised IPR skills and education courses to boost this important domain.

Figure 26. Most used IPR types to protect new technology, product or service - ADRION region.



Patents are the most used IPR in ADRION region used by 50% of surveyed entities, followed by **trademarks** (38%) and **copyrights** (30%).

Trade secrets are represented with 19%, followed by **industrial design** (15%).

Geographical indications are least represented with 2%.

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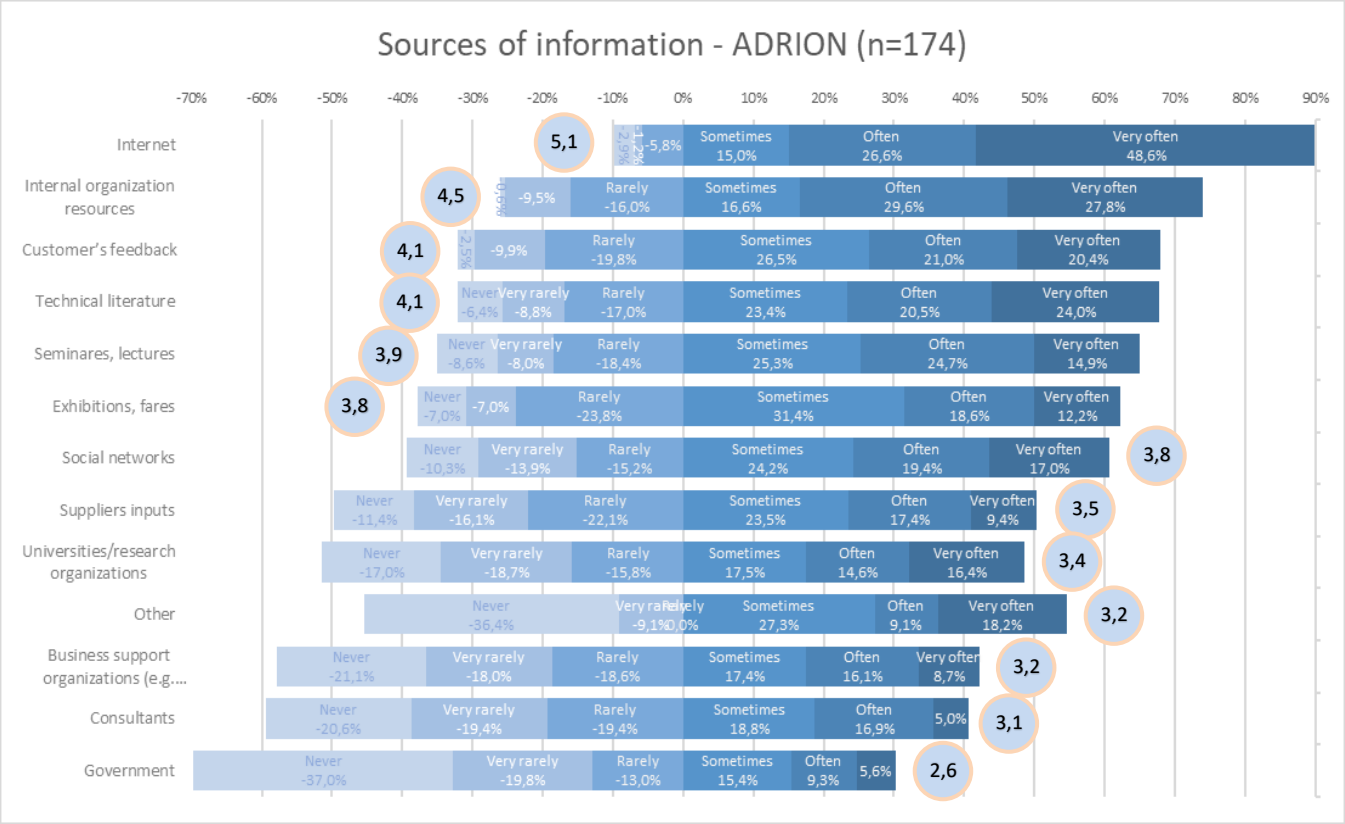
7. Sources of information

Assessment on sources of information about innovation and intensity of their use. Verification of various information sources used to identify current technology developments that would enhance the organization's ability to identify trends and possibly foresee market development.

Figure 27. Sources of information about innovation – ADRION region; percent by response and average of score for each source of information (on scale 1-6).



1. Never	2. Very rarely (less than one per year)	3. Rarely (1-2 times per year)	4. Sometimes (3-6 times per year)	5. Often (7-12 times per year)	6. Very often (more often than once per month)

The most used source of information about innovation by all ADRION surveyed entities is **the internet** (avg. 7-12 times per year).

The second most used source of information are **internal organization resources** (3-12 times per year).

Customer's feedback and **technical literature** are together the third most important source of information.

Business support organizations, consultants and **government** are rarely used as sources of information about innovation.

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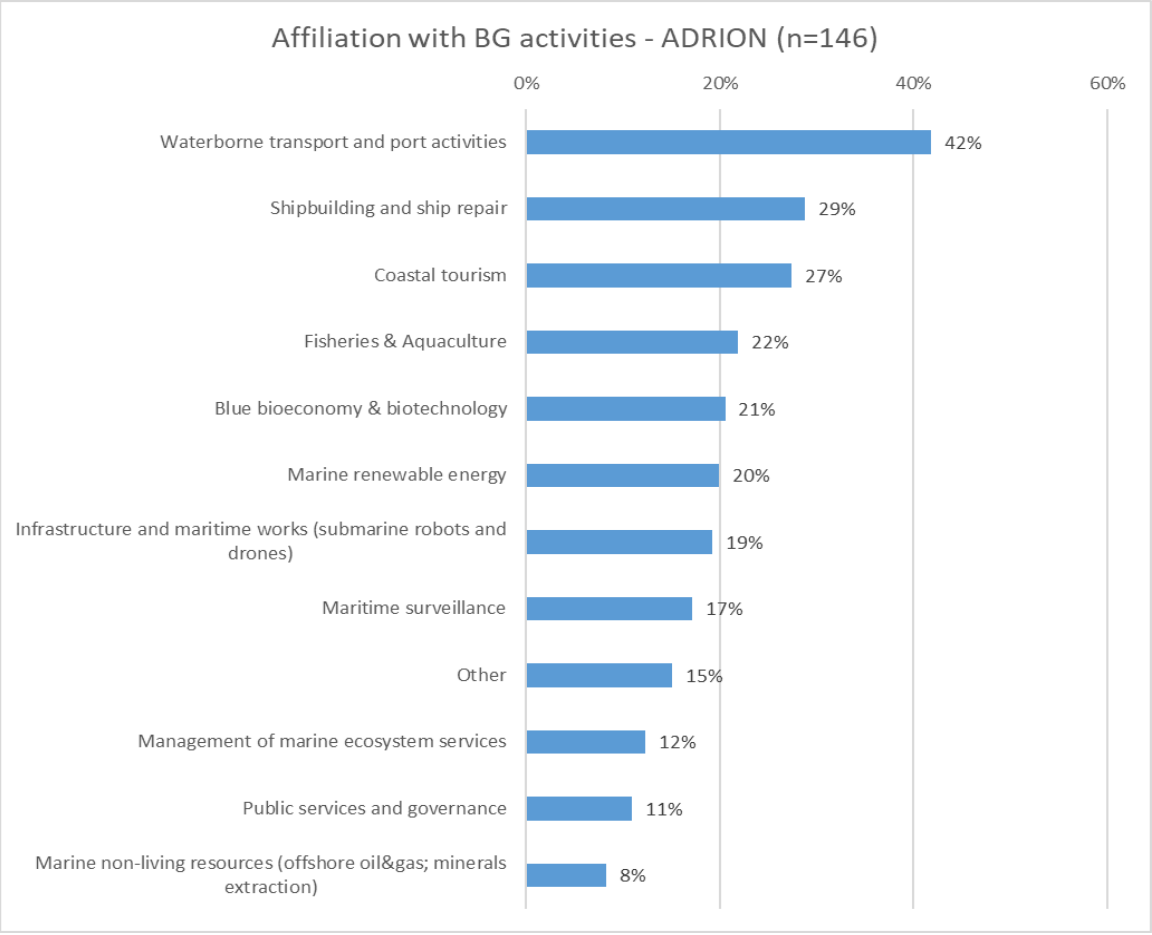
8. Blue Growth & technological/skills capacities

Assessment of usage and creation of technology related to the Blue Growth areas, cooperation options, investments in new skills to master new technologies and usage of available public support tools/instruments. Are entities up to date with new digital systems that help optimize production or management processes?

8.1. Affiliation with Blue Growth activities

Affiliation with the BG activities is based on the established and emerging sectors and sub-sectiors identified in European Commission's recent EU Blue Economy Reports.

Figure 28. Affiliation with BG activities – ADRION region.



Top three Blue Growth activities affiliated with ADRION level surveyed entities are **waterborne transport and port activities** (42%), **shipbuilding and ship repair** (29%) and **coastal tourism** (27%) activities.

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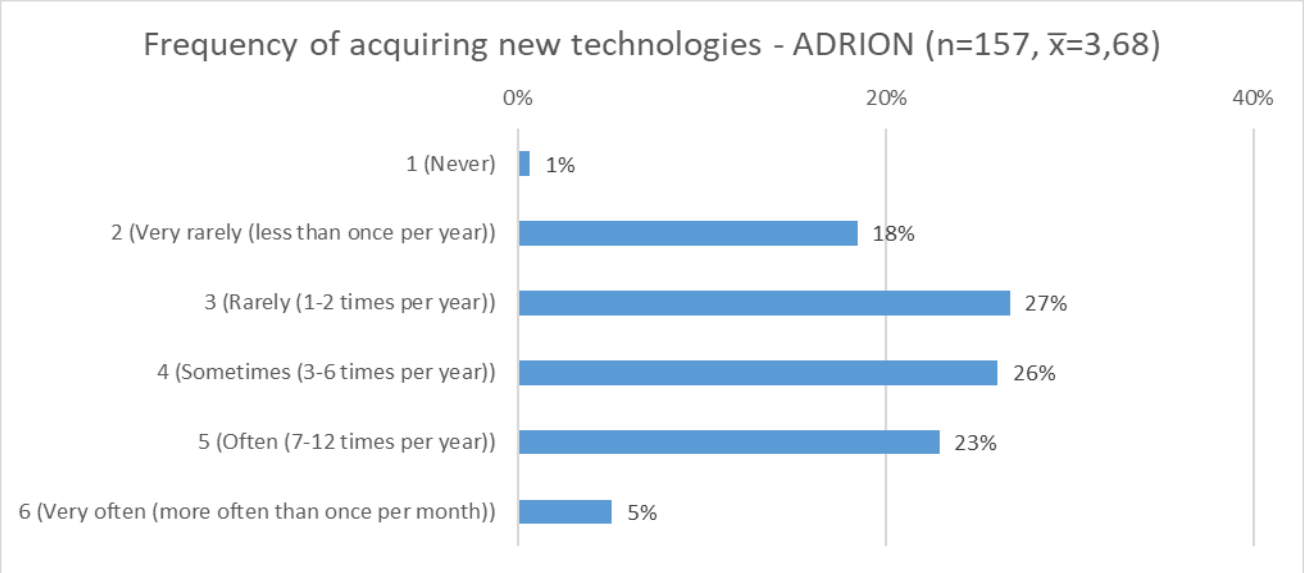
8.2. Frequency of acquiring newest technologies

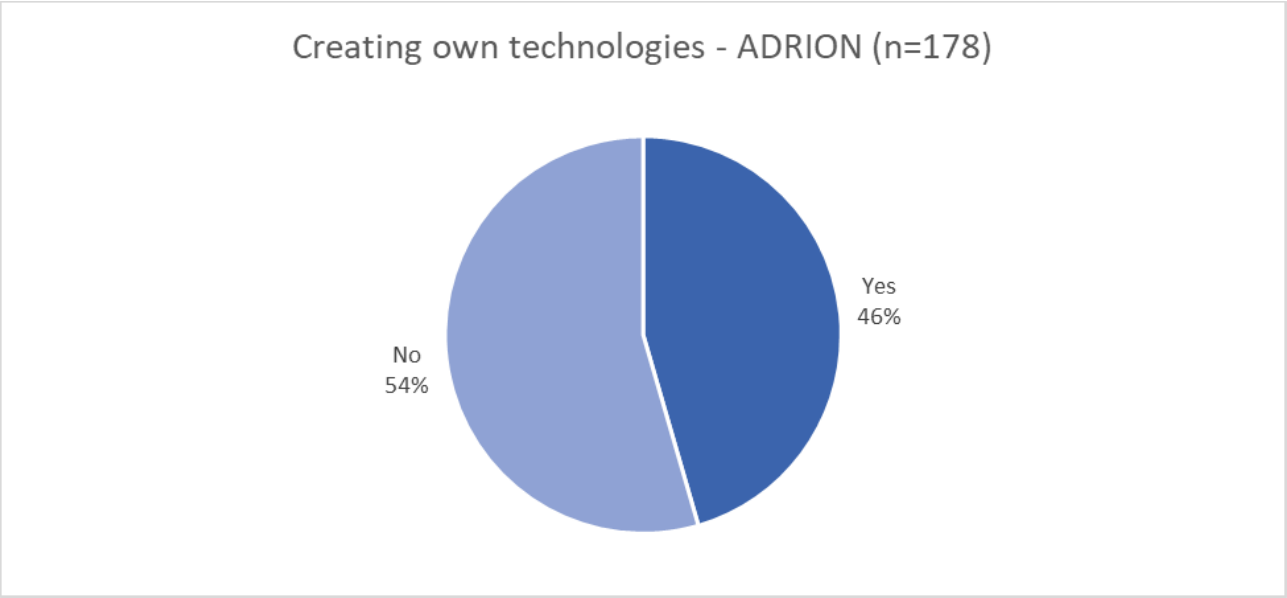
Figure 29. Frequency of acquiring new technologies – ADRION region (on scale 1-6)



Surveyed entities from ADRION are acquiring newest technologies around 1-6 times a year in 53% cases.

8.3. Potential of creating own technologies

Figure 30. Creation of own technologies – ADRION region.



Almost half (46%, 81 entities) of ADRION region entities create their own technologies.

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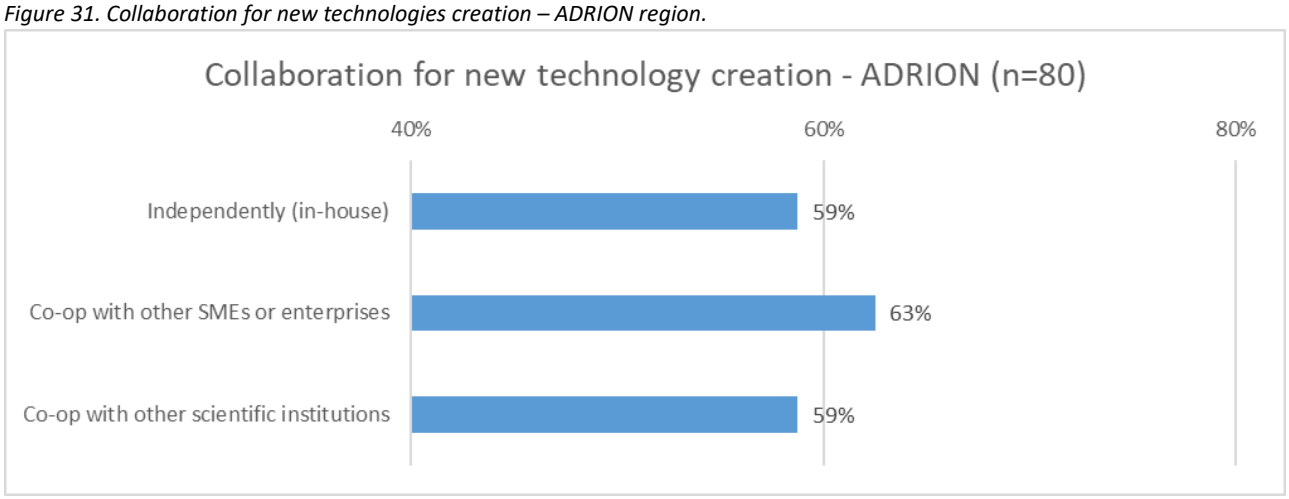
8.4. Collaboration for new technology creation

In the cases of creating own technology (entities which answered positive in previous case, see figure 30), an analysis was carried out on who is the most common partner of the entities in such cases.

Figure 31. Collaboration for new technologies creation – ADRION region.



On ADRION level, almost two-thirds of surveyed entities are forming some type of cooperation: cooperation with other SMEs/enterprises or cooperation with other scientific institutions.

Same ratio goes for independent (in-house) new technology creation.

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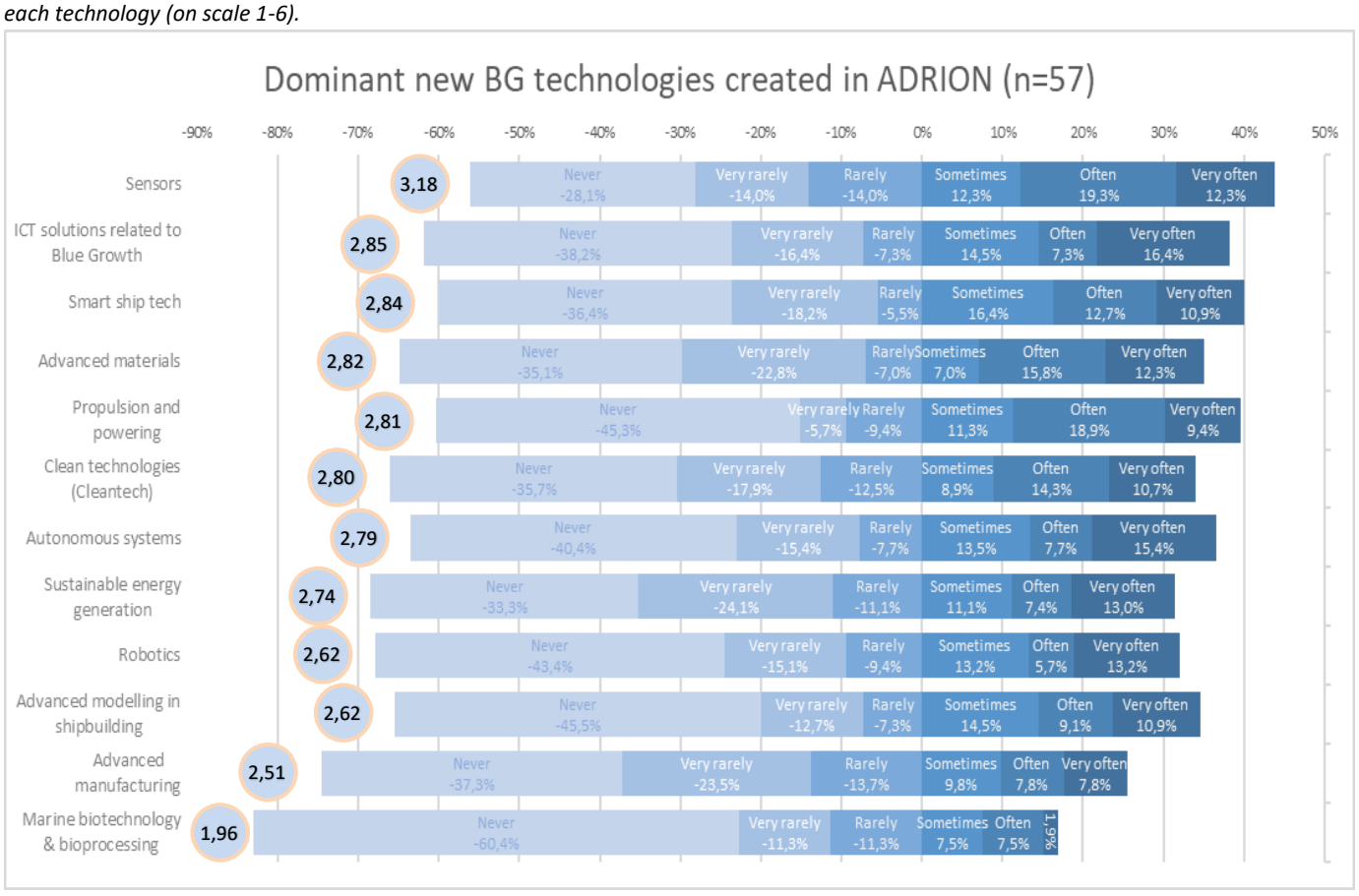
8.5. Creation of innovative technologies related to Blue Growth in ADRION

Assessment was carried out to analyse which type of new innovative technologies dominate in the ADRION area and if there are specialized regions/countries in particular Blue Growth related technologies (entities which answered positive in previous case, see figure 30).

Figure 32. Dominant new created Blue Growth related technologies – ADRION region; percent by response and average of score for each technology (on scale 1-6).



1. Never	2. Very rarely (less than one per year)	3. Rarely (1-2 times per year)	4. Sometimes (3-6 times per year)	5. Often (7-12 times per year)	6. Very often (more often than once per month)

Most dominant Blue Growth-related technology by surveyed entities in ADRION region is creation of **sensors.** It is closely followed by **ICT solutions related to Blue Growth, smart ship technologies, advanced materials, propulsion and powering, Clean Tech, autonomous systems and sustainable energy generation, which are all** equally represented across the ADRION.

They're followed by **Robotics, advanced modelling in shipbuilding and advanced manufacturing** and less represented is **marine biotechnology & bioprocessing**.

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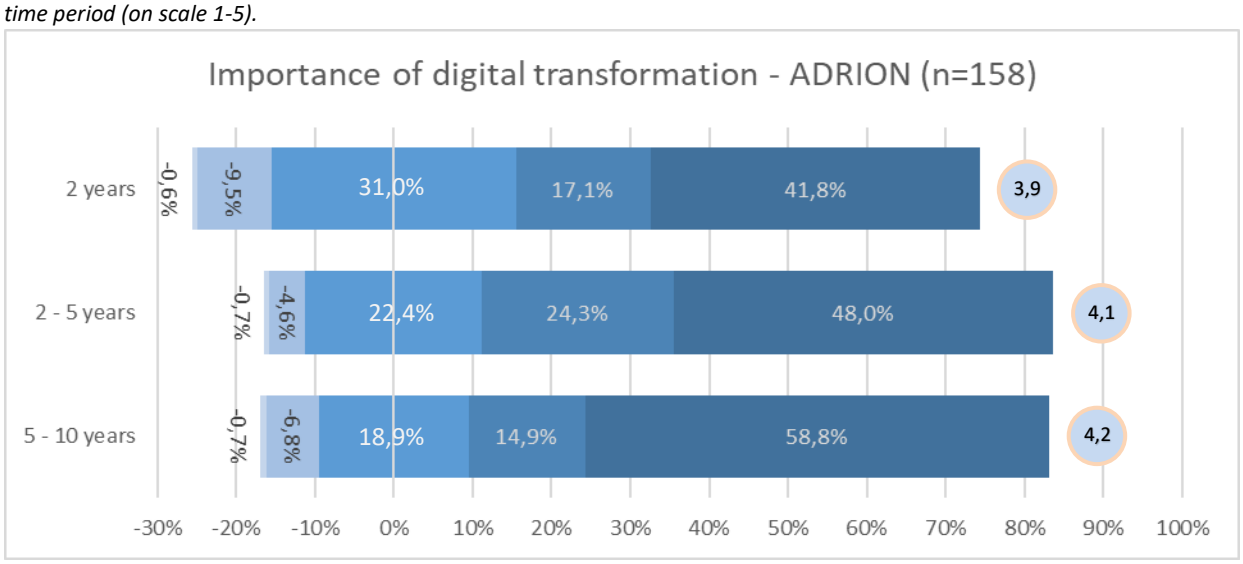
8.6. Importance of digital transformation

Assessment of importance of digital transformation on the entities in near future (2-10 years).

Figure 33. Importance of digital transformation in stated period – ADRION region; percent by response and average of score for each time period (on scale 1-5).



Average perception of digital transformation of surveyed entities in ADRION is fairly important in the next 2 years with importance slightly rising in period of 2-5 years and slightly rising again in period of 5-10 years.

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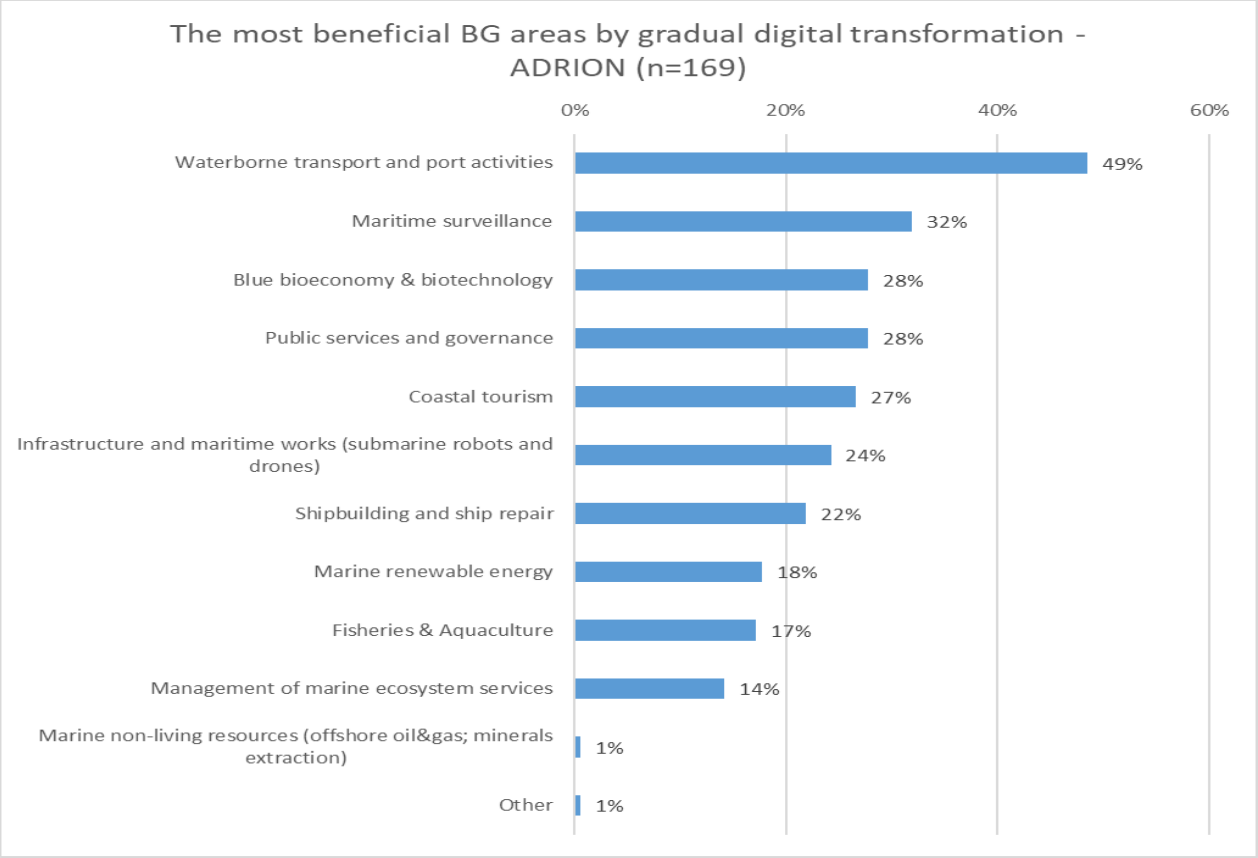
8.7. The most beneficial Blue Growth areas by gradual digital transformation

Across the surveyed entities from ADRION region, average perception of digital transformation is fairly important. It is therefore important to assess which Blue Growth areas are expected to benefit from it.

Figure 34. The most beneficial Blue Growth areas by gradual digital transformation – ADRION region.



Across the ADRION region level, **waterborne transport and port activities** (49%) are expected to benefit the most by gradual digital transformation, followed by **maritime surveillance** (32%).

Blue bioeconomy & biotechnology, along with public services and governance (both 28%) are closely followed by c**oastal tourism** (27%).

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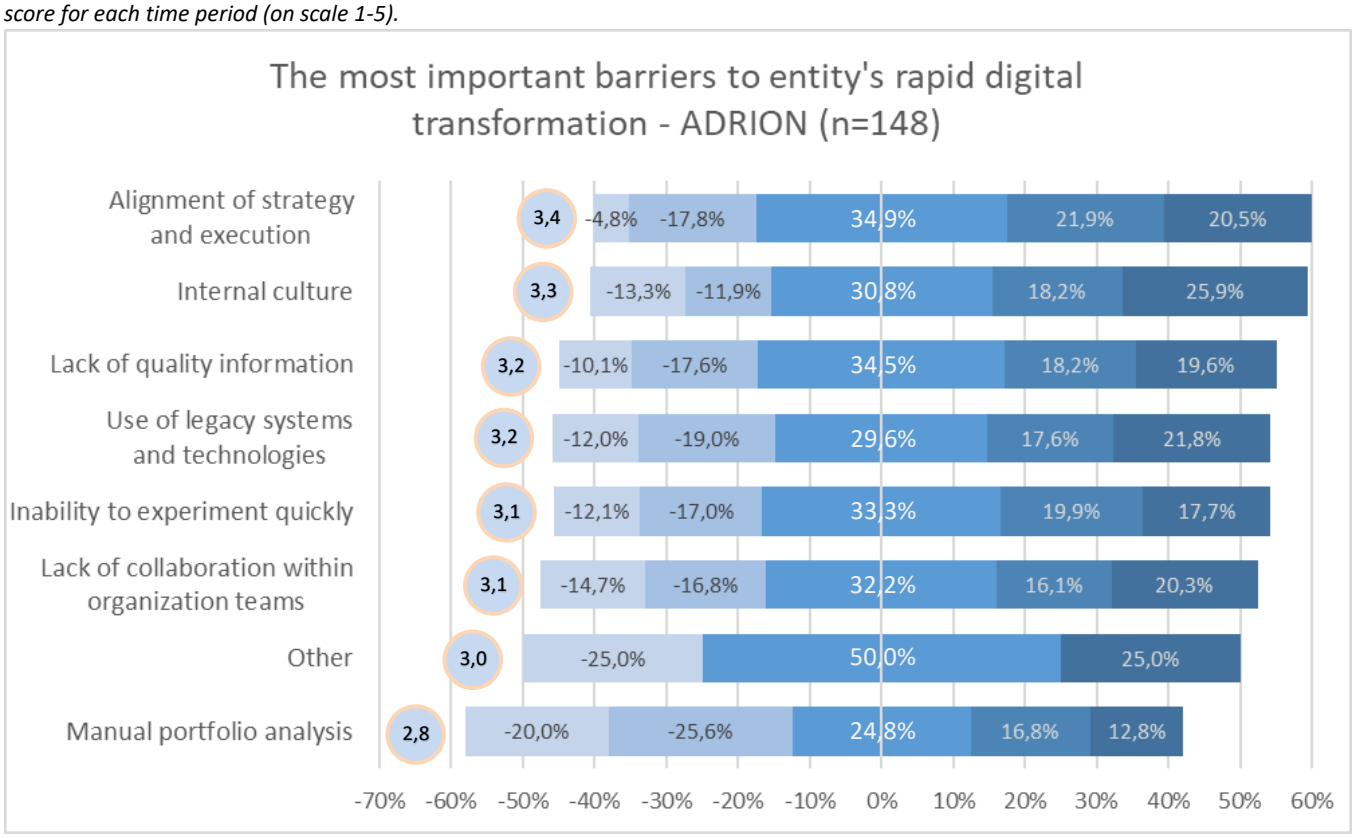
8.8. The most important barriers to entity's rapid digital transformation

Having considered average perception of digital transformation as fairly important, and assessed which Blue Growth areas are expected to best benefit from it, it is important to understand what are the barriers and their importance for rapid digital transformation. Removal of such barriers might stimulate faster digital transformation in the Blue Growth areas across the ADRION region.

Figure 35. The most important barriers to entity's rapid digital transformation – ADRION region; percent by response and average of score for each time period (on scale 1-5).



1. Not at all important	2. Slightly important	3. Important	4. Fairly important	5. Very important

Alignment of strategy and execution is considered as most frequent important barrier (avg. 3,4) by surveyed ADRION entities.

Second important barrier is **internal culture** (avg.3,3).

Third important barrier is **lack of quality information** (avg. 3,2).

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SURVEY FINDINGS

ADRION countries/regions are diverse and multifaceted, with significant disparities in terms of socio-economic conditions and development. However, the region has a considerable potential for cooperative growth and development. This is possible by leveraging the region's unique strengths and addressing its challenges through collaborative efforts. That way, ADRION could unlock its full potential and pave the way for sustainable and inclusive growth in the years ahead.

There is a need for increased technology transfer and public-private partnerships between non-industry and industry surveyed entities in ADRION region. The analysis of non-industry entities in the ADRION region highlights that there is a strong affiliation with the biodiversity, contaminants, energy, and marine litter descriptors of the Maritime Strategy Framework Directive. The most common types of projects between surveyed entities are networking, international cooperation and education, while public-private partnerships, specific technologies, procedures, products, special research equipment and IPR represent less important key capacities of non-industry entities, especially higher education/public research institutions.

Trends in the field of Blue Growth are very diverse across ADRION. Trends that will have the greatest impact on R&D&I activities in the following years, collected from around 60 non-industry entities, are diversified depending on their domains originating and identified mainly from identified EU Blue Economy Reports. Also, reported trends are closely connected to main field of work of the surveyed non-industry entities.

Surveyed entities in ADRION share similar innovation drivers such as customers' needs and expectations, product quality, new market opportunities, management mindset and market trends, highlighting the need for horizontal support policies to encourage innovation processes.

Access to finance is the most limiting innovativeness and growth barrier for ADRION surveyed entity organizations. This suggests a need for better and more transparent financial support policies. Legislation/regulation, technical constraints and customers constrains follow next as most frequent barriers limiting innovativeness.

Surveyed entities in ADRION are aware of the available macro-regional public innovation support programs. Average rate is “moderately good”, meaning there could be more room for improvement for authorities responsible for macro-regional public innovation support, especially in several countries/regions with lower awareness.

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New released RIS3 strategies for 2021-2027 period have better rating scores than their 2013-2020 RIS3 counterparts. Serbia's surveyed entities have rated its recently adopted (April 2021) RIS3 and related action plan with highest marking (57%), averaging 4,5 points (out of 5), making it the top rated S3 within ADRION countries/regions. Slovenia's S3 comes second with average rating of 3,7 (new Slovenian RIS3 version for period 2021-2027 was adopted in the first half of 2022). For most surveyed entities their national/regional RIS3 strategy is adequate to fairly adequate, based on their involved Blue growth activities, suggesting a need for better implementation of Blue Growth thematic area into next versions of national/regional RIS3. Within ADRION, the best rating has Montenegro with fairly adequately rated RIS3 strategy.

Cluster of several ADRION countries/regions show higher potential towards R&D and innovation development, with a higher-than-average rate of R&D spending and dedicated employees. This cluster includes surveyed entities from Italian regions, Slovenia, Croatia and Montenegro and Serbia. Two-thirds of ADRION surveyed entities are involved in the primary idea generation/discovery and more advanced design/development stages of the innovation process. However, there is a noticeable gap in feasibility and business case validations, and the launch/commercialization stage is the least utilized. Product and process innovations are the most common types of innovations and the internal or organizational level is the most frequent choice for implementation. Efforts are needed towards market internationalization. The willingness of entities' management to make risky decisions is one of the indicators of innovation potential, with Serbian, Slovenian, and Friuli Venezia Giulia's surveyed entities' managements being the most comfortable with taking risks.

Almost half of the surveyed entities in ADRION behave *proactively* to what happens on the market. They are anticipating customers' needs and thus creating new products and services in that direction.

Intellectual Property Rights (IPR) are moderately used in ADRION. Only 39% of surveyed entities have reported ownership of patents/licenses. Surveyed entities from Montenegro and Central Macedonia have reported below 13% of patents/licenses ownership, while Herzegovina Neretva Canton reported only planned intentions. Patents are the most used IPR in ADRION region, used by 50% of surveyed entities, followed by trademarks (38%) and copyrights (30%). Knowing which IP rights are the most used and where across ADRION region might suggest a creation of specialised IPR skills and education courses to boost this important domain.

The lack of trust and poor cooperation with the public sector and BSIs among surveyed ADRION entities may hinder innovation and growth. More proactive approaches from public sector stakeholders are needed to build trust, share information, and create networks that can support innovation. Business support organizations, consultants, and government might need to improve their communication and outreach strategies to better engage with entities and support their innovation needs.

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The Internet is a valuable resource for surveyed ADRION entities to gather information about innovation. However, internal organizational resources and customer feedback are also important sources of information that can be leveraged to support innovation efforts.

The affiliation with Blue Growth activities by surveyed entities in ADRION region is primarily focused on traditional sectors. Identified sectors include waterborne transport and port activities, shipbuilding, coastal tourism and fisheries and aquaculture. This suggests that there is a need to explore and support innovation in emerging Blue Growth sectors to diversify the region's economic potential and promote sustainable growth.

Collaboration is a prevalent trend among surveyed entities in the ADRION region, with almost two-thirds of entities forming some type of cooperation, either with other SMEs/enterprises or with other scientific institutions. This emphasizes the importance of building strong partnerships and networks to foster innovation and promote socio-economic growth in the region. Additionally, the fact that in-house technology creation is on par with external collaboration highlights the potential for entities to develop their own innovations, while also benefiting from external knowledge and expertise.

ADRION region shows a good level of complementarity among surveyed entities in the newly created Blue Growth technologies, with the most dominant technology being creation of sensors and ICT solutions related to Blue Growth. However, there is a need for additional efforts in the less represented area of marine biotechnology & bioprocessing, which has been identified as an important trend.

Most surveyed entities in the ADRION region are gradually recognizing the importance of digital transformation, with expectations increasing over the years. However, surveyed entities in Slovenia and Herzegovina Neretva Canton stand out as having higher starting expectations, suggesting a greater sense of urgency and readiness to embrace digital transformation. This highlights the need for proactive measures to support digital transformation across the ADRION region and ensure that all countries can take advantage of the benefits it offers. Across the ADRION region level, *waterborne transport and port activities* are expected to benefit the most by gradual digital transformation followed by *maritime surveillance*, *blue bioeconomy & biotechnology*, *public services and governance* and *coastal tourism* closely behind.

The most important barrier to digital transformation in the Blue Growth areas across the ADRION surveyed entities is the alignment of strategy and execution. It is followed by internal culture and lack of quality information. It is important to understand what are the barriers and their importance for rapid digital transformation. Removal of such barriers may instigate faster digital transformation in the Blue Growth areas across the ADRION region.

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ANNEX

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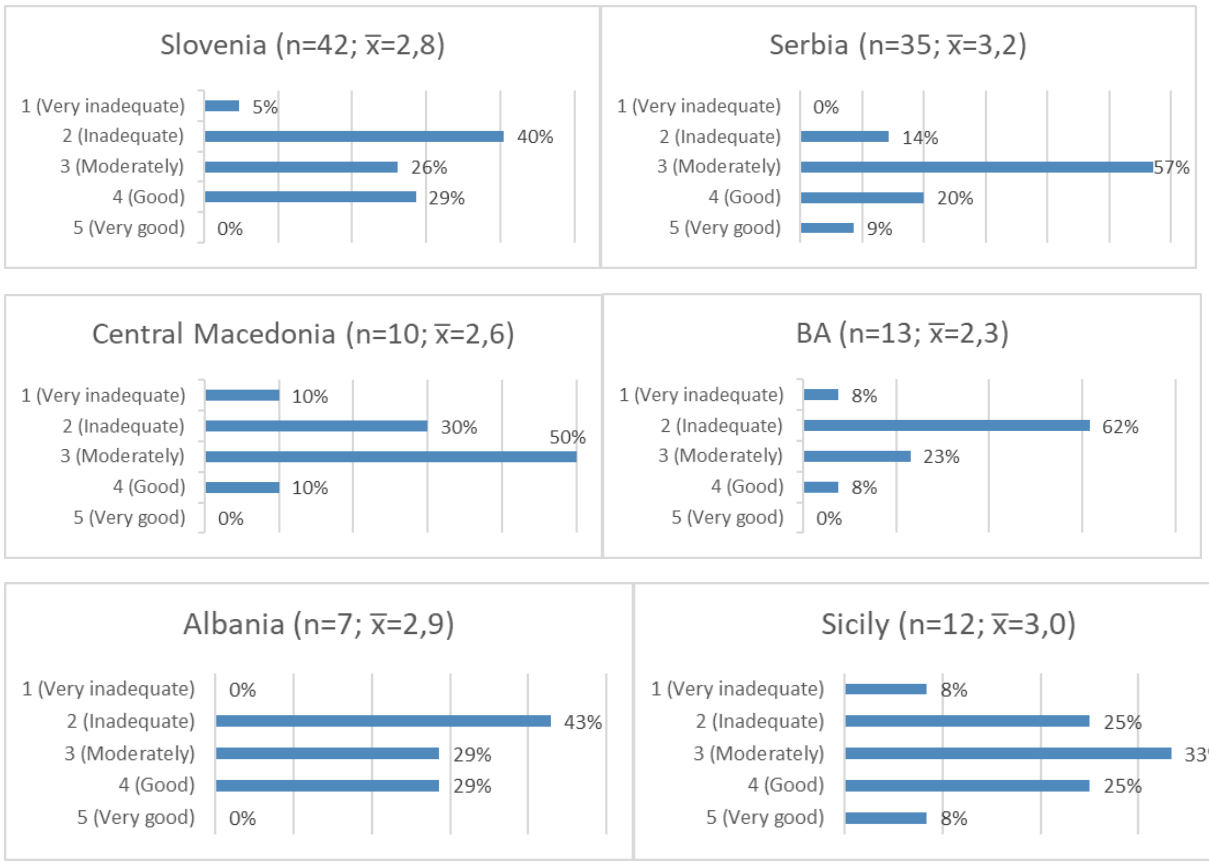
ANNEX A – COUNTRY/REGIONAL RESULTS

Annex A holds collection of surveyed entities data representing results in a form of graphs and charts for individual countries/regions based on topics from the BG-EDP survey.

Annex B contain data on frequencies and statistical descriptions (including averages, percentages and standard deviations) obtained as export report from the BG-EDP platform (1KA application platform). The data was formed around surveyed entities from nine countries/region affected by the EDP process.

Awareness of public innovation support

Regarding the **public innovation support on country/regional level**, ratings are diverse:



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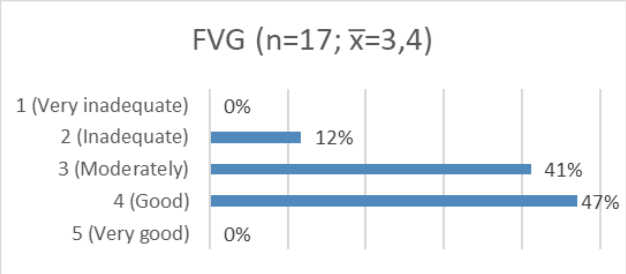

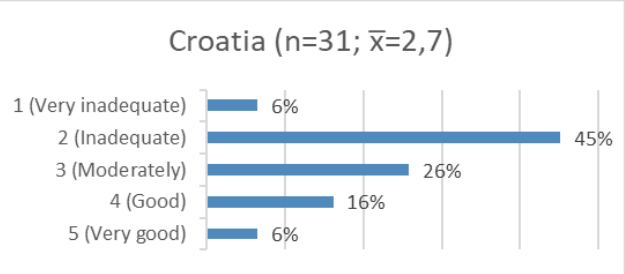

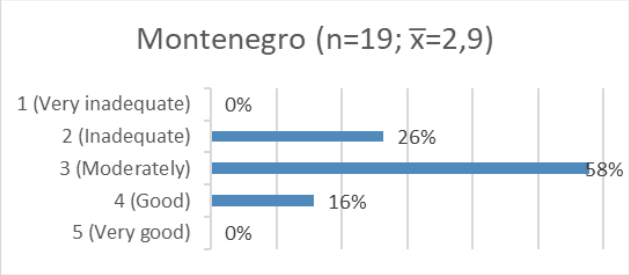

Surveyed entities	Avg. rating (scale 1-5)
FVG	3,4
Serbia	3,2
Sicily	3,0
Montenegro	2,9
ADRION	2,9
Albania	2,9
Slovenia	2,8
Croatia	2,7
C.Macedonia	2,6
BA	2,3

Surveyed entities in Serbia, Sicily and Friuli Venezia Giulia (FVG) share the best ratings for their regional/country's public innovation support. Surveyed entities in **Albania** sits in the middle, with remaining surveyed countries/regions slightly falling behind, except for **Herzegovina Neretva Canton (Bosnia Herzegovina)** at the bottom with only 2,5 average rating.

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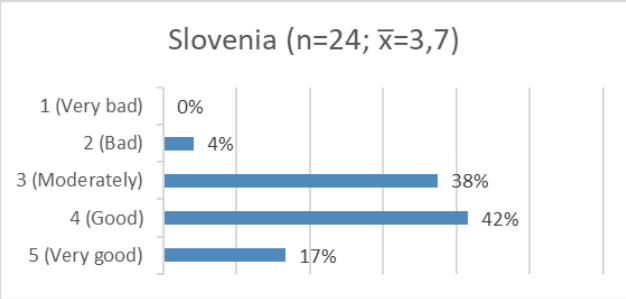
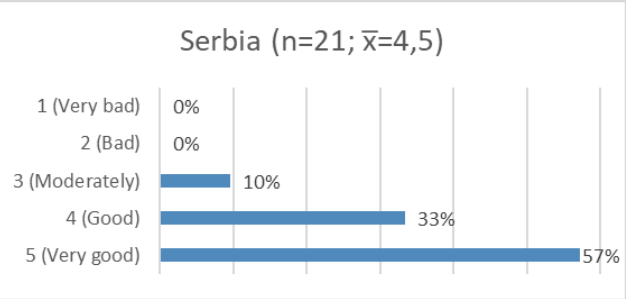
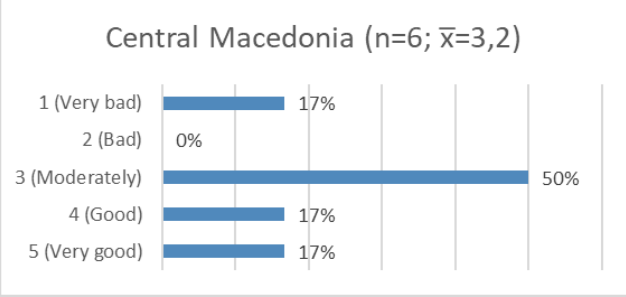
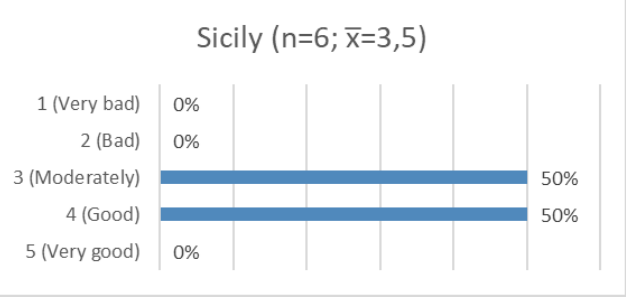
National/regional current S3 ratings

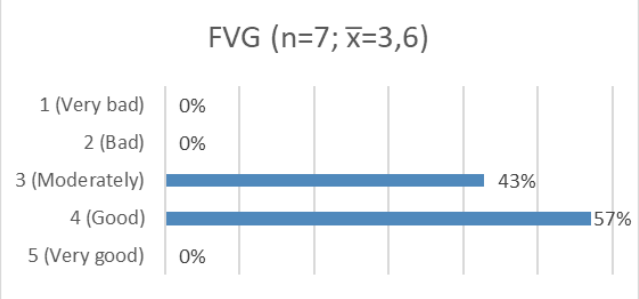
NOTE: Analysis took into account only surveyed entities from countries/regions with adopted S3 strategies for their respective country/region. **Herzegovina Neretva Canton** (Bosnia Herzegovina) and **Albania** were not taken into account due to unadopted S3 strategies.

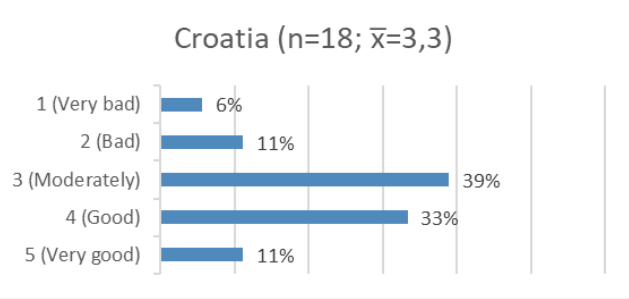


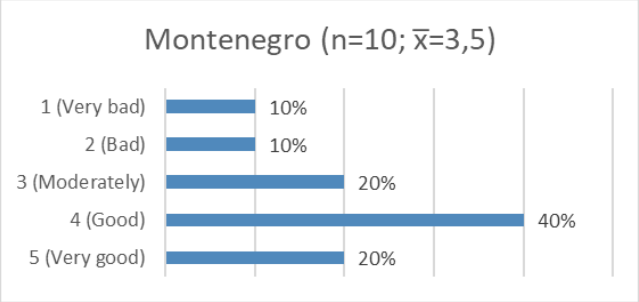












Surveyed entities	Avg. rating (scale 1-5)
Serbia	4,5
Slovenia	3,7
FVG	3,6
Sicily	3,5
Montenegro	3,5
Croatia	3,3
C.Macedonia	3,2

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Surveyed entities from **Serbia** have rated its recently adopted (April 2021) RIS3 and related action plan with highest marking (57%), averaging 4,5 points (out of 5), making it the top rated S3 within ADRION countries/regions. In second place were surveyed entities from **Slovenia** with an average rating of 3.7 (new Slovenian RIS3 for 2021-2027 period was adopted in first half of 2022).

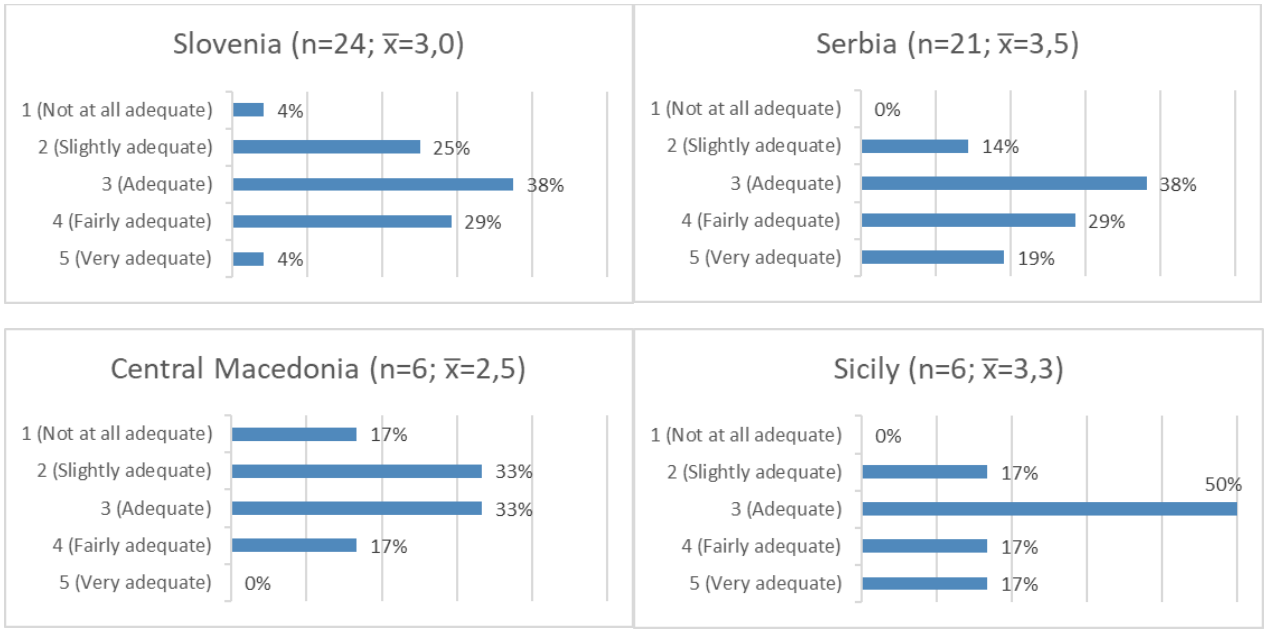
Below ADRION average rating ($\bar{x}$=3,7) comes surveyed entities **Friuli Venezia Giulia (FVG)** averaging 3,6 points while surveyed entities from **Sicily** and **Montenegro** (first country outside EU which adopted national RIS3 in June 2019) both averaging 3,5 points.

Croatia (with RIS3 for 2014-2020 period) averages 3,3 points and region of **Central Macedonia** averages 3,2 points.

National/regional RIS3 adequacy

RIS3 adequacy may be indicator to show how national/regional RIS3 strategy is aligned with the 4-helix entities and their activities.

Again**,** surveyed entities from **Herzegovina Neretva Canton** (Bosnia Herzegovina) and **Albania** were not taken into account due to unadopted S3 strategies.



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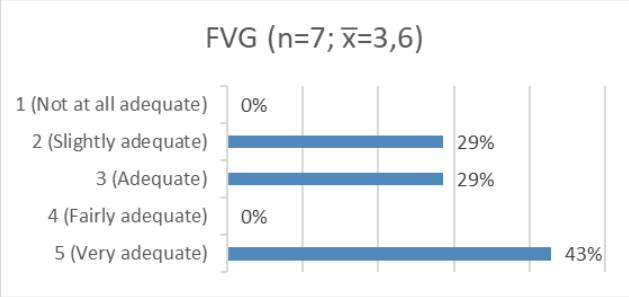

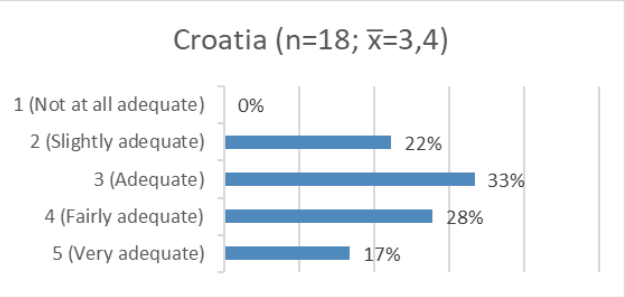

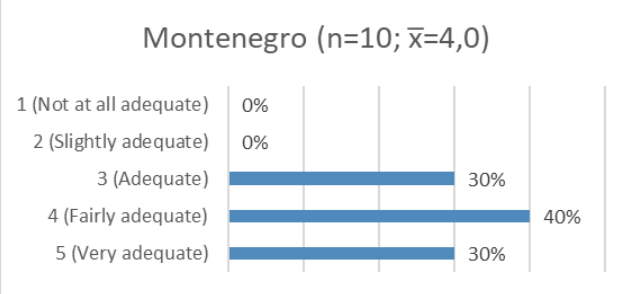

Surveyed entities	Avg. rating (scale 1-5)
Montenegro	4
FVG	3,6
Serbia	3,5
Croatia	3,4
Sicily	3,3
Slovenia	3
C.Macedonia	2,5

Surveyed entities from **Montenegro** hold first position with fairly adequate RIS3 strategy in respect to activities of the involved entities (avg. 4,0). Surveyed entities from **Friuli Venezia Giulia (FVG)** with average 3,6 points comes second, while **Serbia** (avg. 3,5) and **Croatia** (avg. 3,4) close the above the ADRION average group of surveyed entities from countries/regions.

Surveyed entities from **Sicily** hold the ADRION average with 3,3 points.

Surveyed entities from **Slovenia** with 3,0 average points and **Central Macedonia** with low 2,5 average points hint at poor RIS3 adequacy.

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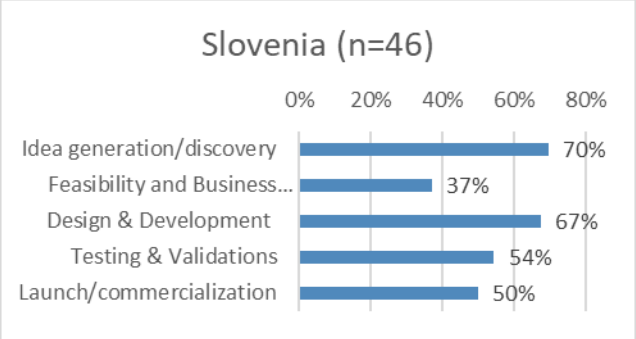
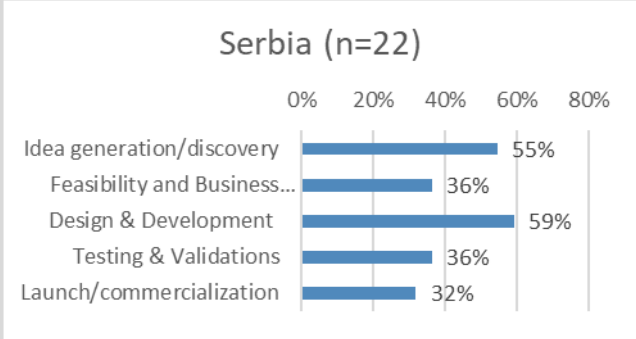
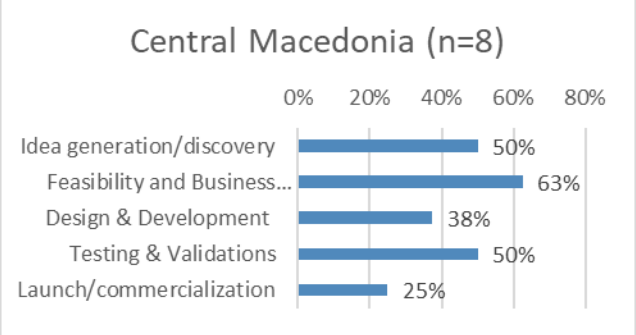
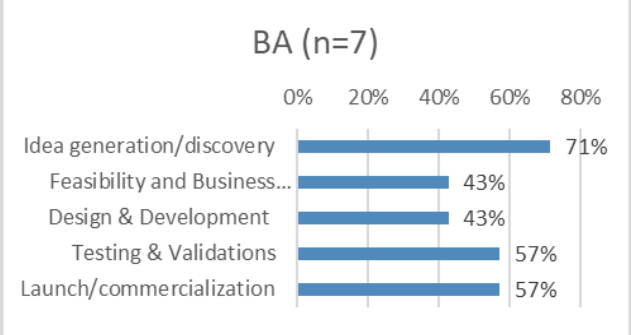
Elements of innovation processes

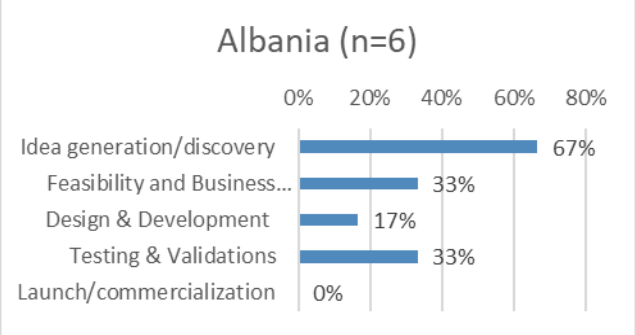
Innovation process is divided into five discrete and essential stages of successful innovation, starting with idea generation or discovery. The process is then upgraded by each stage, until it reaches the final stages of launch and commercialization. Each stage requires more resources, capacities, knowledge and efforts to embed the new added value into the process.

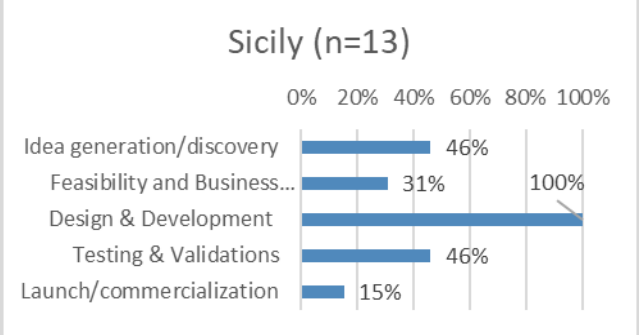


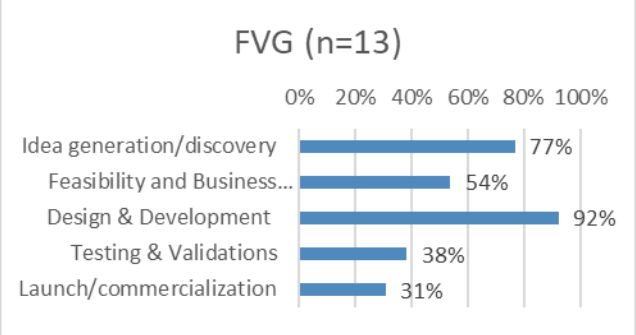


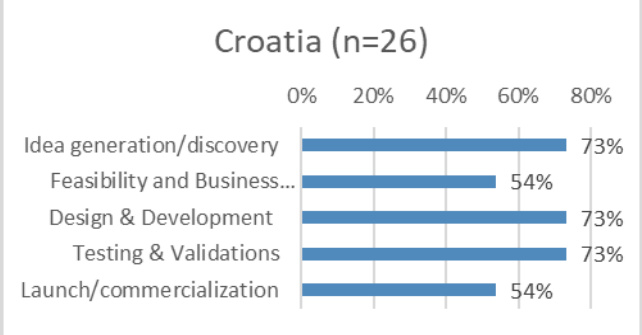












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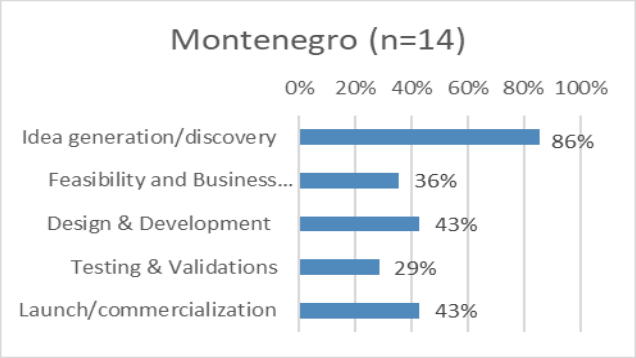
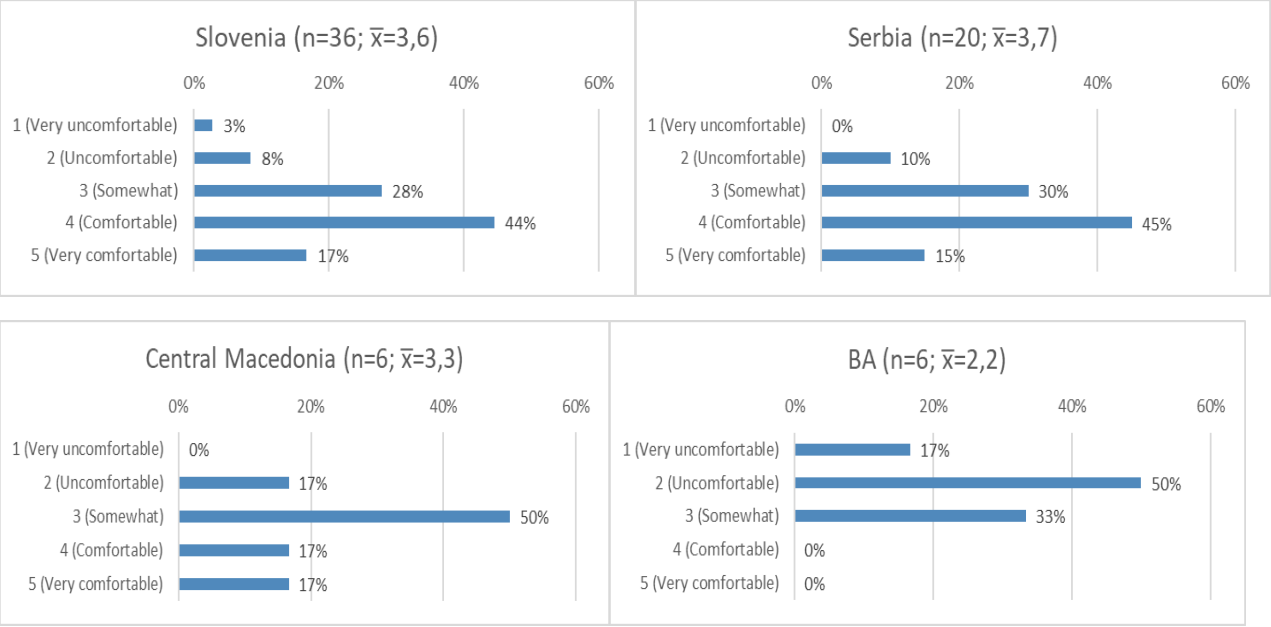


More than two-thirds of surveyed entities in Slovenia (70%), Herzegovina Neretva Canton (71%), Albania (67%), Friuli Venezia Giulia (77%), Croatia (73%) and Montenegro (86%) utilise **idea generation/discovery** stage. **Feasibility and business case validations** are fairly utilised by surveyed entities from Central Macedonia (63%), Friuli Venezia Giulia (54%) and Croatia (54%). **Design & development** are particularly strong in Sicily (100%), FVG (92%), Croatia (73%) and Slovenia (67%). **Testing & Validations** are fairly well utilised in Croatia (73%). The most demanding innovation stage of **launch/commercialization** is well utilized in Herzegovina Neretva Canton (57%), Croatia (54%) and Slovenia (50%).

Risk decision management

Ability and willingness of entities' management to make risky decisions is one of the indicators showing innovation potential based on assessment and identification, analysis, evaluation and monitoring of business and non-business risks affecting the entities.



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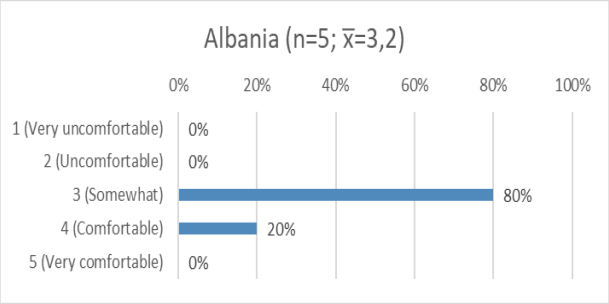

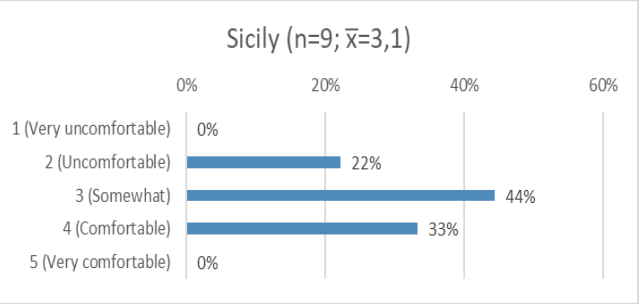

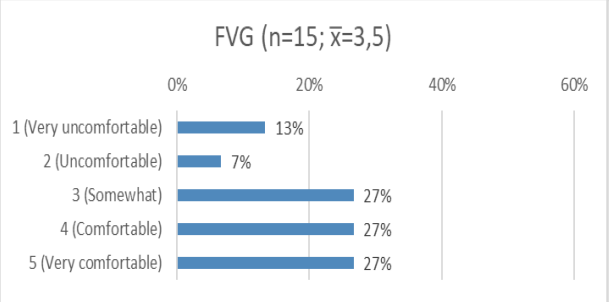

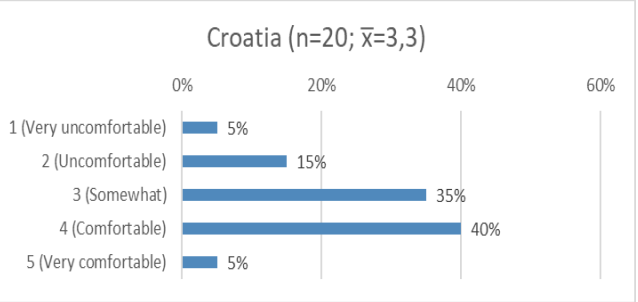

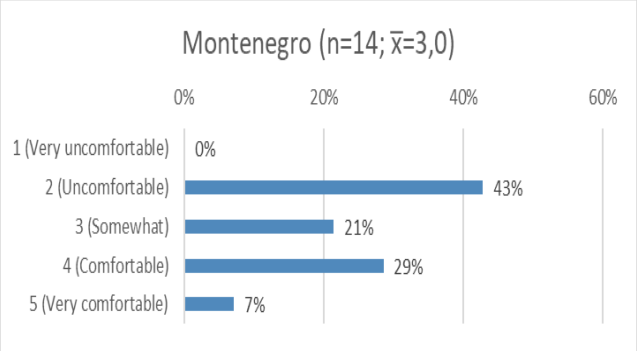

Surveyed entities	Avg. risk decision management (scale 1-5)
Serbia	3,7
Slovenia	3,6
FVG	3,5
ADRION	**3,4**
Croatia	3,3
C.Macedonia	3,3
Albania	3,2
Sicily	3,1
Montenegro	3,0
BA	2,2

Surveyed **Serbian** (avg. 3,7), **Slovenian** (avg. 3,6) and **Friuli Venezia Giulia's** (avg.3,5) entities' managements are the most comfortable for taking risky decisions, scoring above the ADRION average (3,4).

Surveyed entities from **Croatia** (avg. 3,3), **Central Macedonia** (avg. 3,3), **Albania** (avg. 3,2) and **Sicily** (avg. 3,1) are somewhat comfortable in taking risky decisions.

Surveyed entities from **Herzegovina Neretva Canton** are averaging uncomfortable decision making when it comes to risks.

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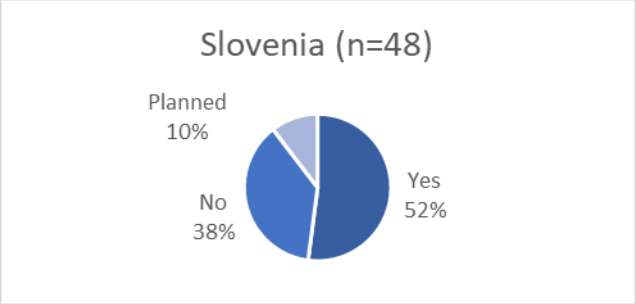
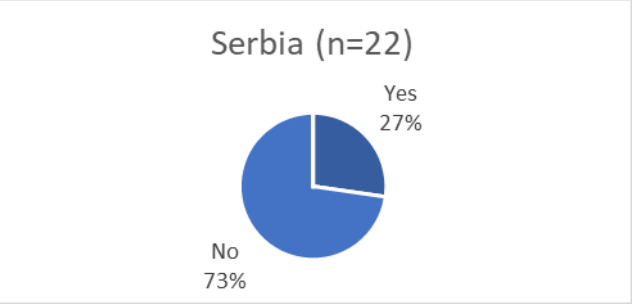
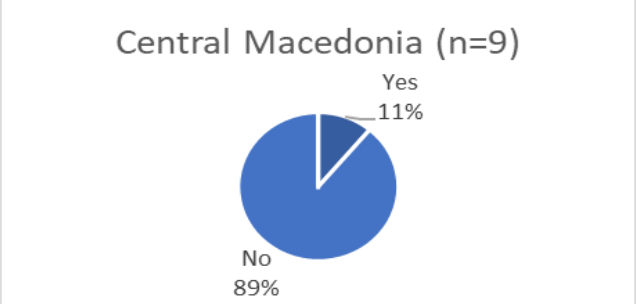
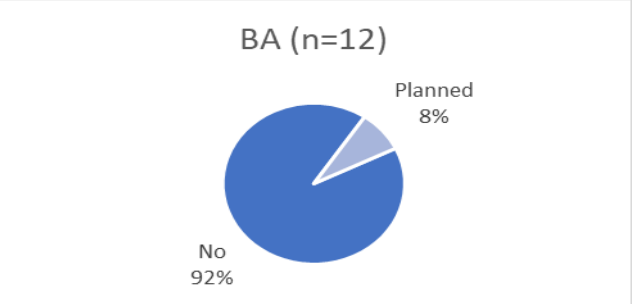
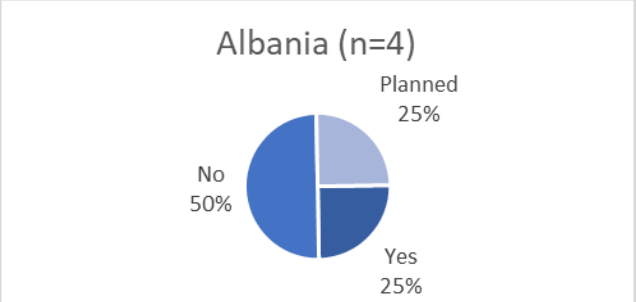
Ownership of patents/licenses

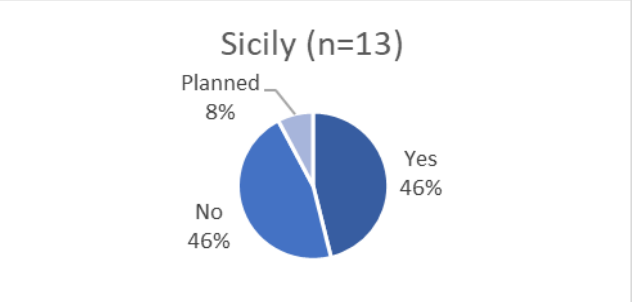


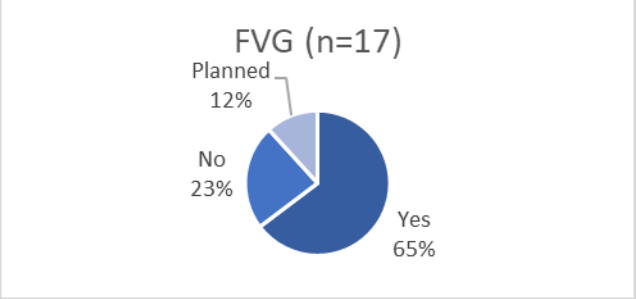


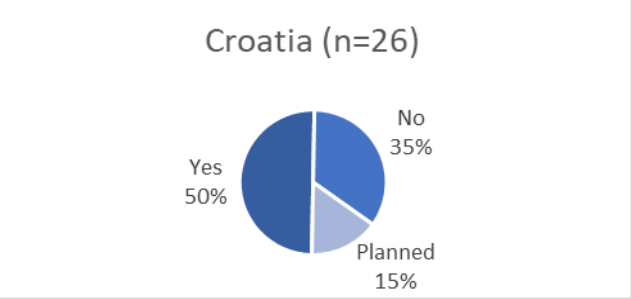












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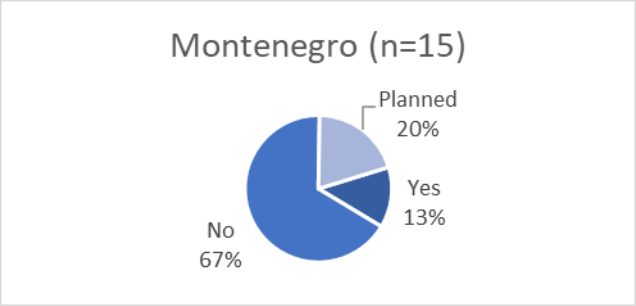
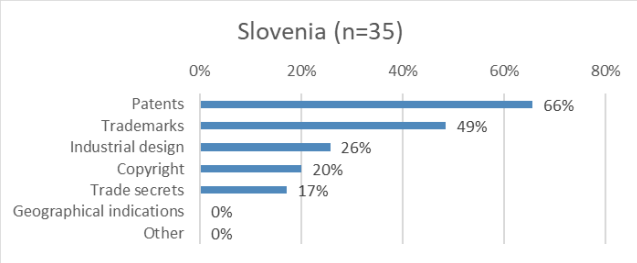


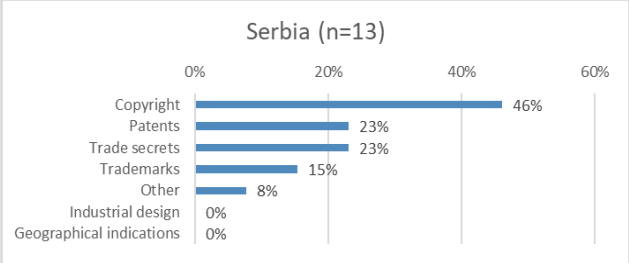
Ownership of patents or licences of surveyed entities in Slovenia, Sicily, Friuli Venezia Giulia and Croatia is above 45%.

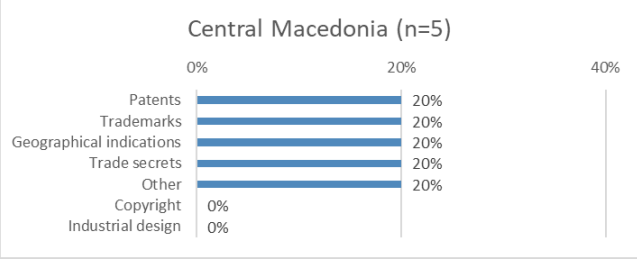
Montenegro and Central Macedonia have reported below 13% of patents/licenses ownership, while Herzegovina Neretva Canton reported only planned intentions.

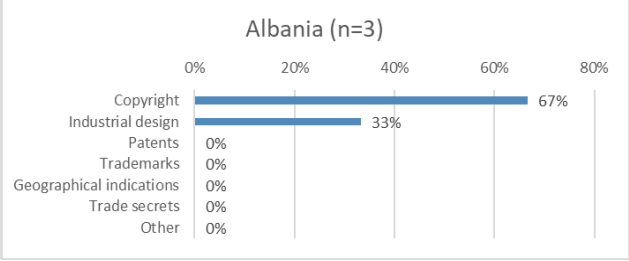
Use of Intellectual Property Rights

Inventions are the basis of innovation. An invention is a new solution to a technical problem and can be protected through patents. Patents protect the interests of inventors whose technologies are truly innovative and commercially successful by ensuring that an inventor can control the commercial use of their invention. The technical information and business intelligence generated by the patenting process can spark new ideas and promote new inventions. Other IP rights can also be used to protect a new technology, product or service. Knowing which IP rights are the most used and where across ADRION region might suggest a creation of specialised IPR skills and education courses to boost this important domain.









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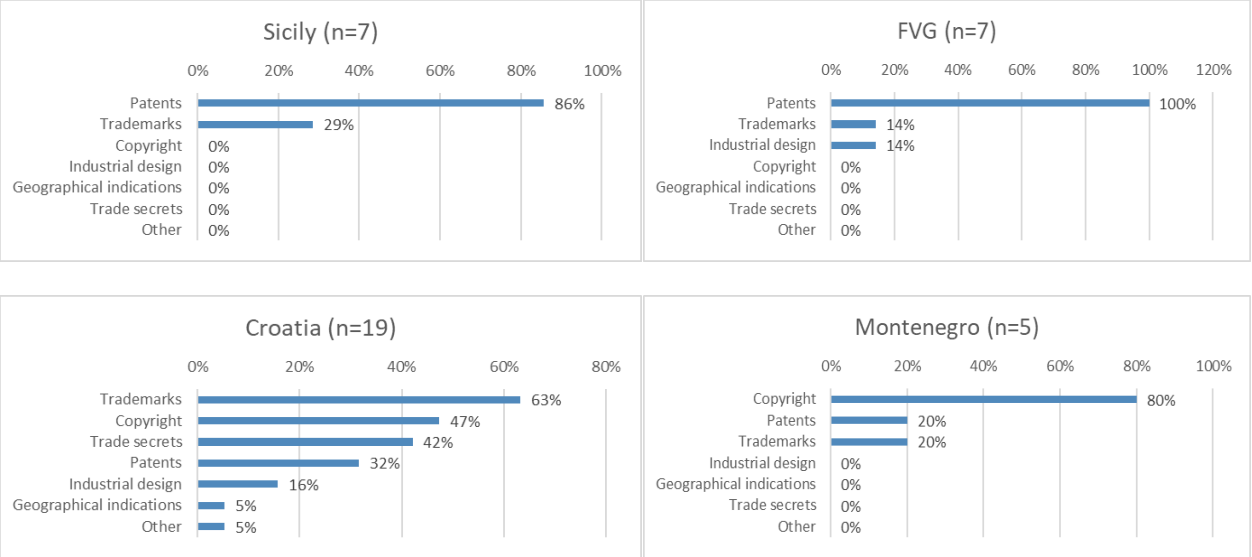

Surveyed entities from **Slovenia** report **patents** (66%) as most used IPR type, followed by **trademarks** (49%) and **industrial design** (26%).

Surveyed entities from **Serbia** are mostly relying on **trademarks** (46%), followed by **patents** and **trade secrets** (23%).

Central Macedonia's surveyed entities are equally using all IPR types (20% each). Industrial design is not represented.

Albania is reporting only **copyrights** (67%) and i**ndustrial design** (33%) as most used IPR types.

Surveyed entities from **Sicily** are relying on **patents** (86%) and to some extent **trademarks** (29%).

Friuli Venezia Giulia's surveyed entities are using **patents** (100%) followed by small share of **trademarks** and **industrial design.**

Surveyed entities from **Croatia** report using all IPS types. **Trademarks** (63%) are the most used IPR type, followed by copyrights (47%), trade secrets (42%), patents (32%), industrial design (16%) and geographical indications (5%).

Surveyed entities from **Montenegro** are reporting copyrights in 80% of the cases, followed by patents and trademarks both represented with 20%.

Herzegovina Neretva Canton entities haven't report any IPR activity.

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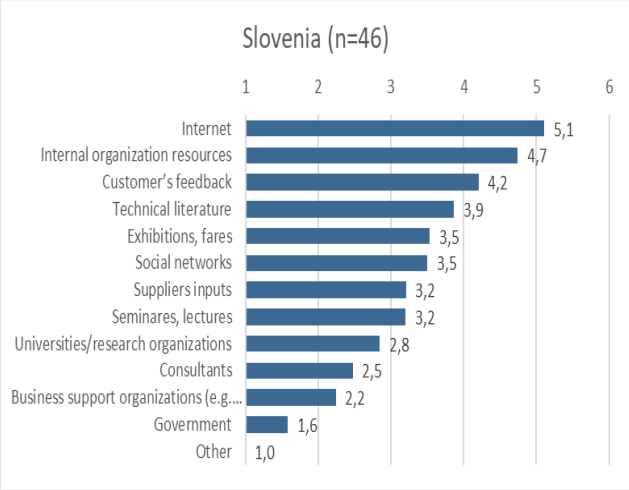
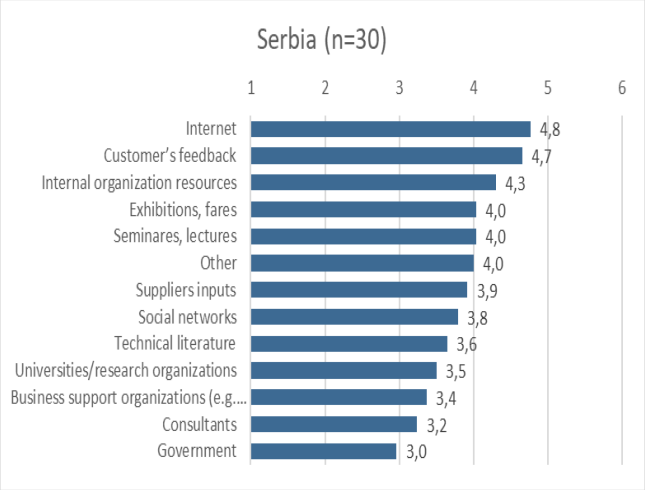
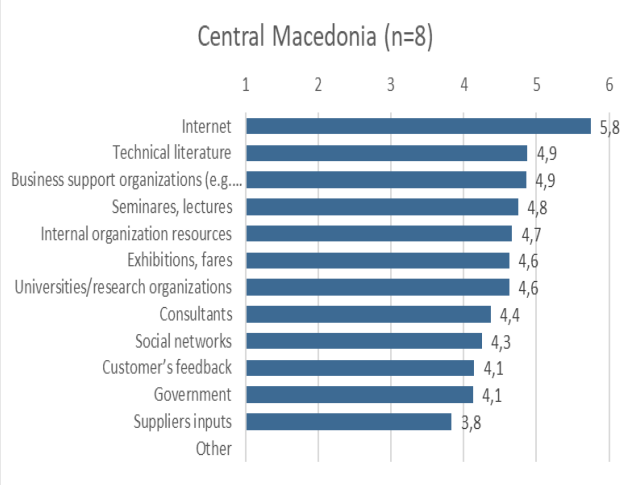
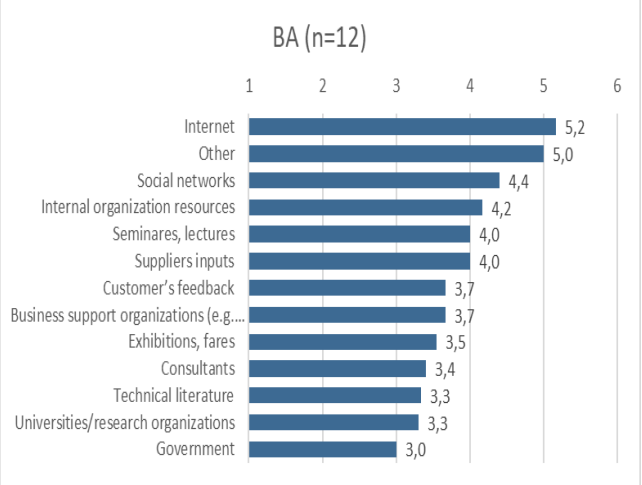
Sources of information

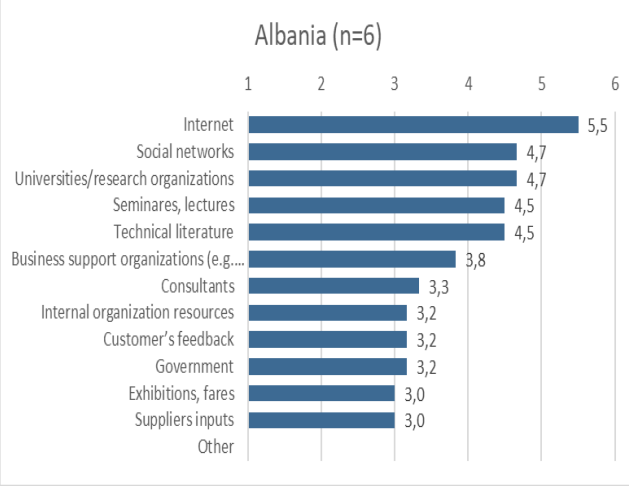
Assessment on sources of information about innovation and intensity of their use. Verification of various information sources used to identify current technology developments that would enhance the organization's ability to identify trends and possibly foresee market development.

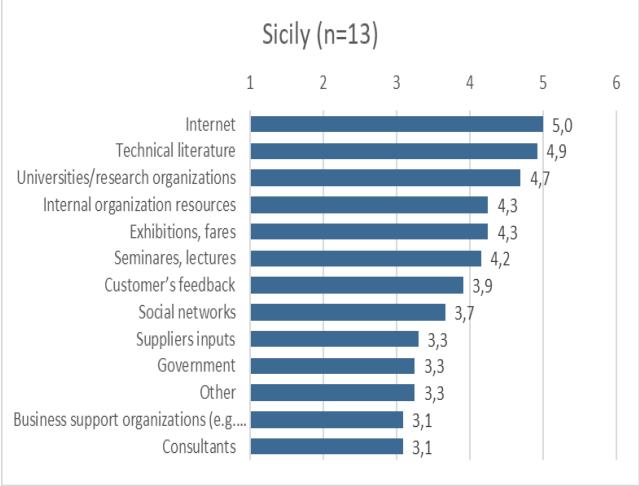












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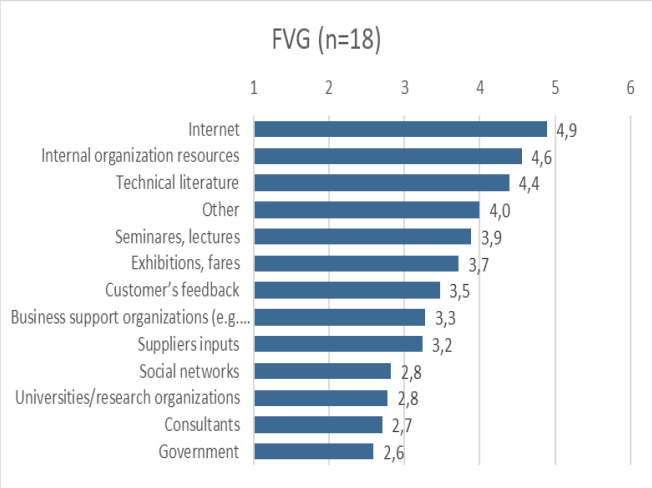

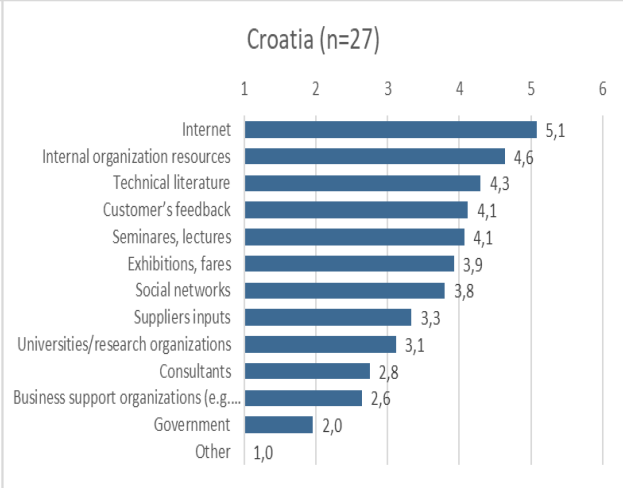

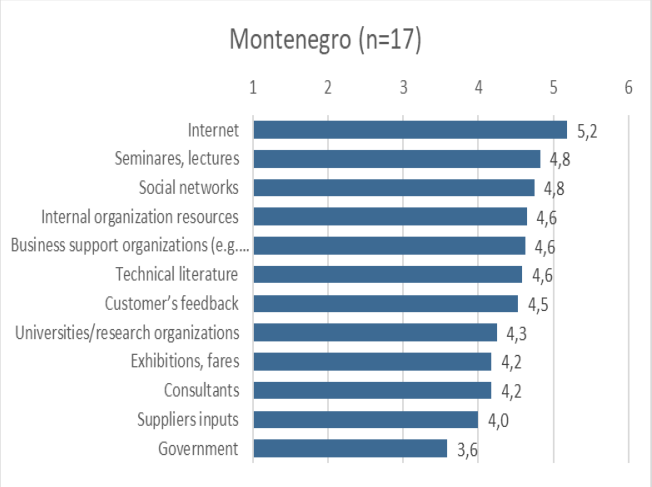

Majority of surveyed entities from ADRION follow the similar pattern, i.e. the ADRION average.

Sicily and **Albania's** surveyed entities report relatively high importance of university/research organisations as sources of information about innovation.

Surveyed entities from **Montenegro and Herzegovina Neretva Canton** have positioned the social networks relatively high compared to ADRION average.

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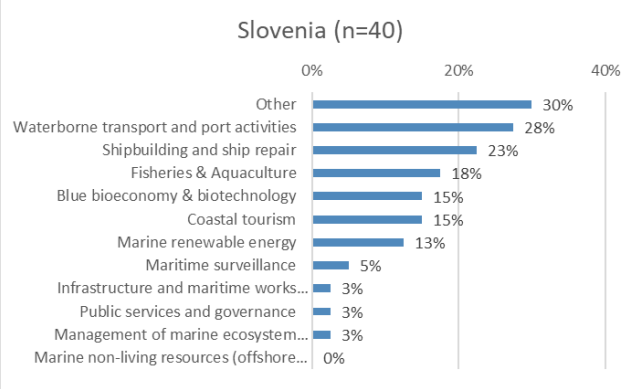
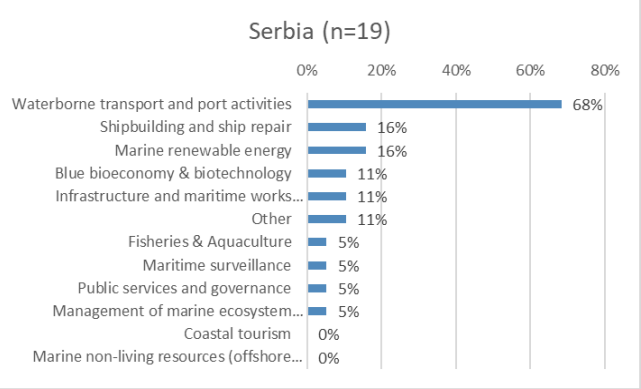
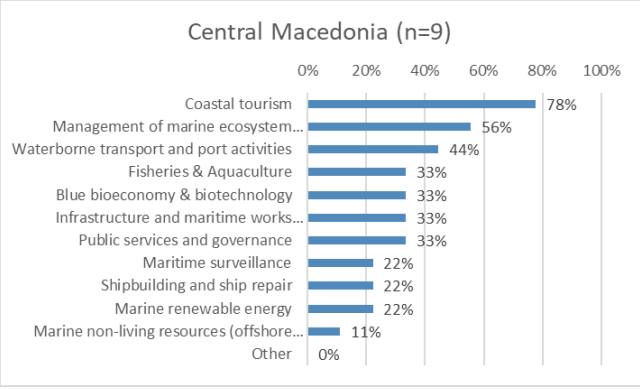
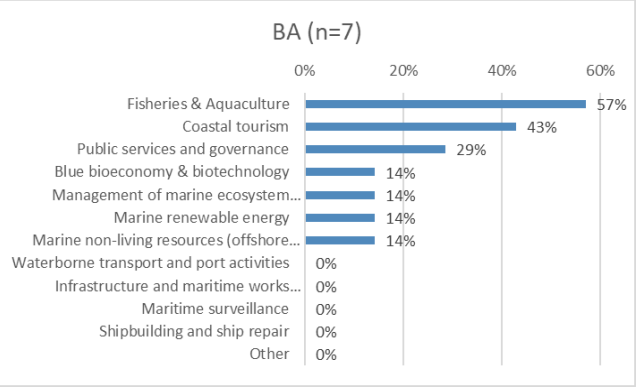
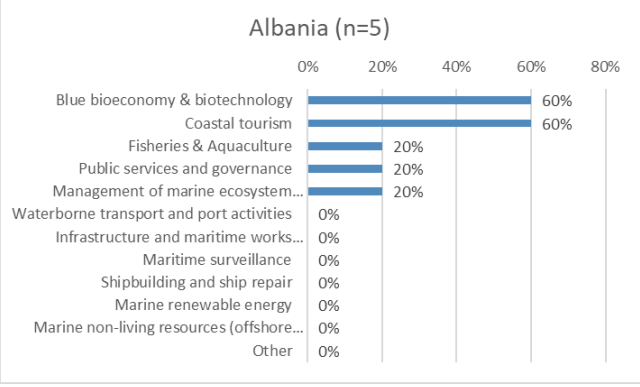
Affiliation with Blue Growth activities

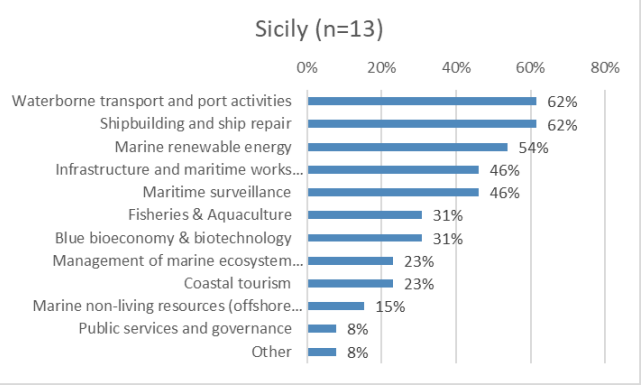


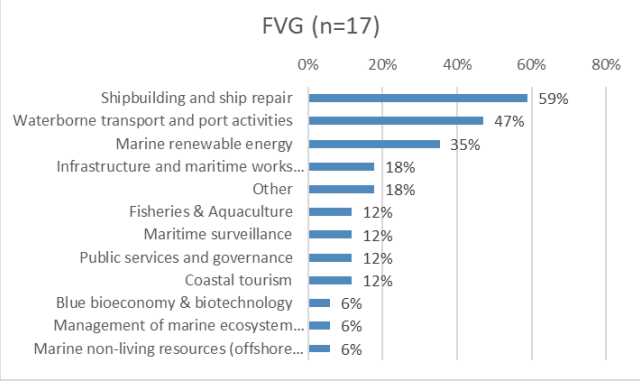


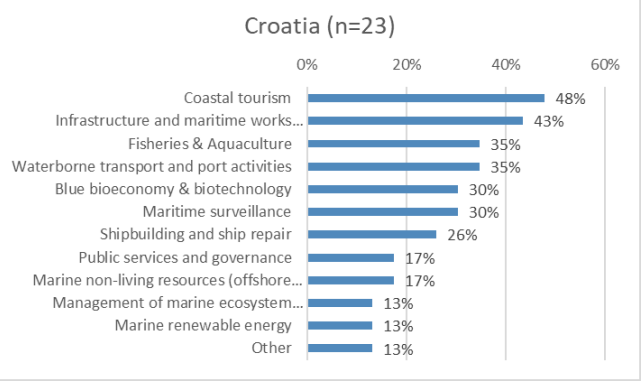


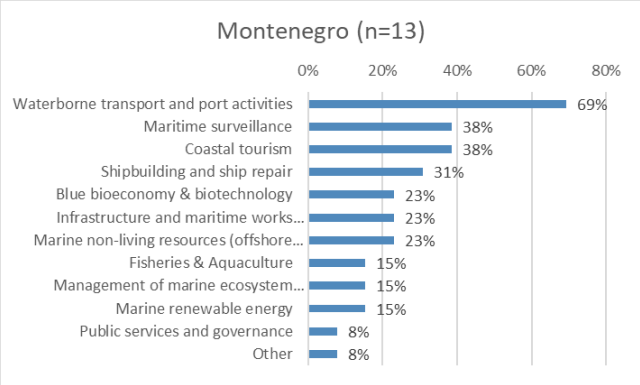








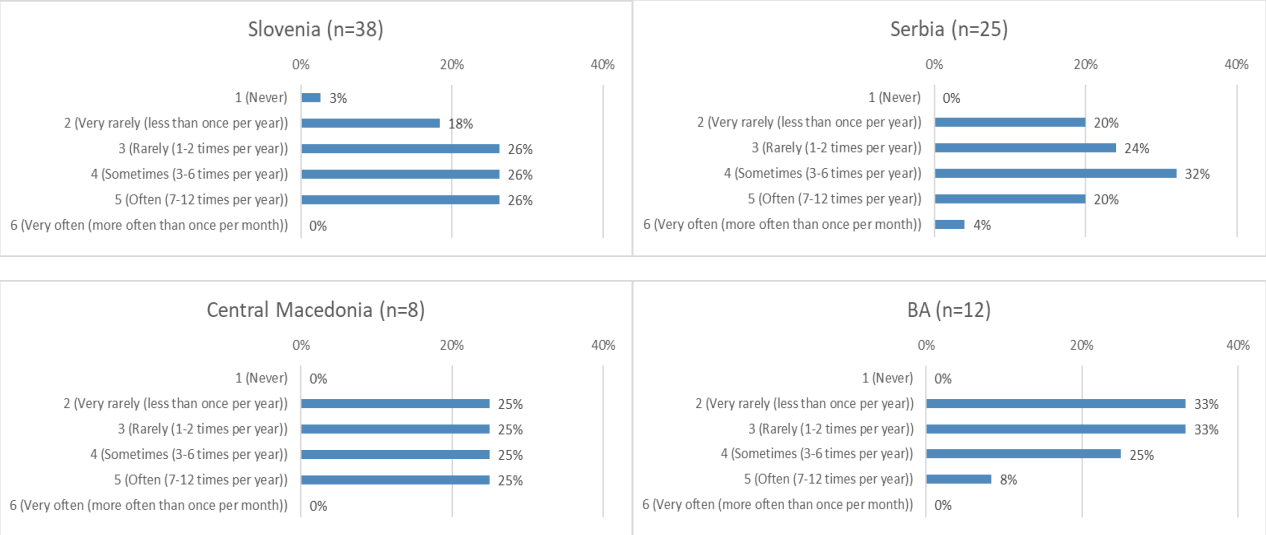




Affiliation with the BG activities of the surveyed entities on a country/regional level is spread mostly based on traditional Blue Growth sectors such as **waterborne transport and port activities** (top activity in Slovenia, Serbia, Sicily, Montenegro), **shipbuilding and port activities** (top activity in Friuli Venezia Giulia), **coastal tourism** (Central Macedonia, Croatia) and **fisheries & aquaculture** (Herzegovina Neretva Canton).

Surveyed entities from Slovenia report top position as "other" activities such as: smart colours, sustainable tourism, research on coastal ecosystem services, biodiversity, lighting development, power conversion, ICT technologies, data transfer via blockchain technology, recycled materials from fishing nets, rental of sailboats, steering wheels for vessels, production of recreational vessels, sports, recreation and technology, production in textile industry.

Frequency of acquiring newest technologies



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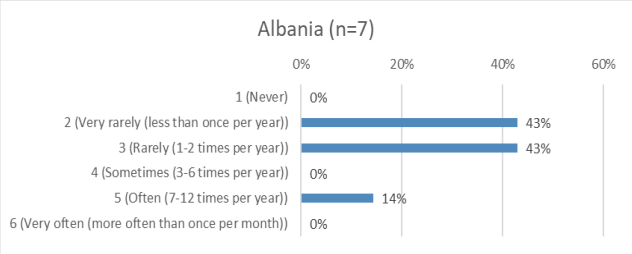
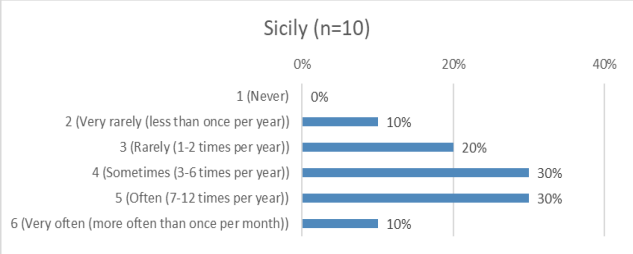
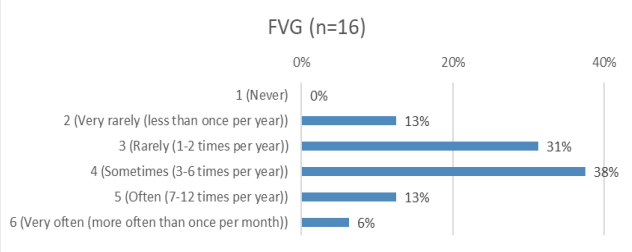
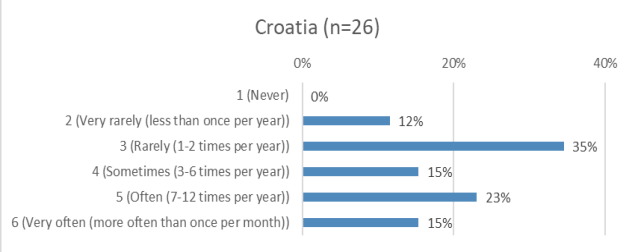
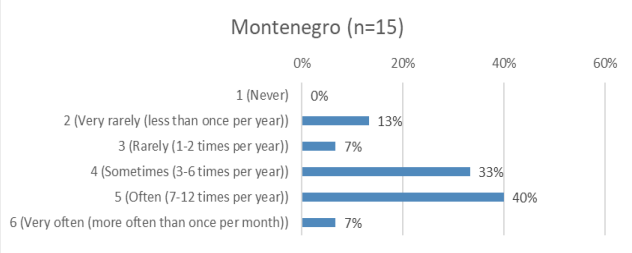








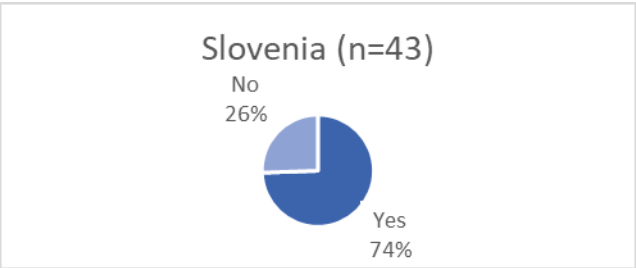


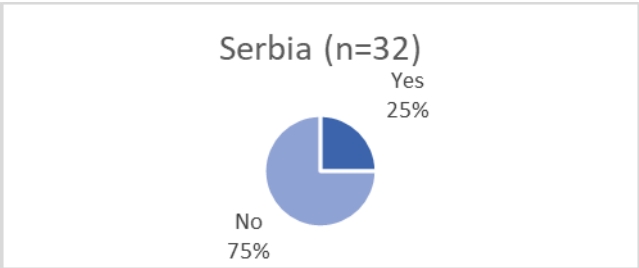
Surveyed entities from Montenegro, Sicily and Croatia stand above the ADRION average in frequency of acquiring new technologies.

Friuli Venezia Giulia, Serbia, Slovenia and Central Macedonia's surveyed entities are positioned around the ADRION average.

Surveyed entities from Herzegovina Neretva Canton and Albania are positioned below the ADRION average.

Potential of creating own technologies





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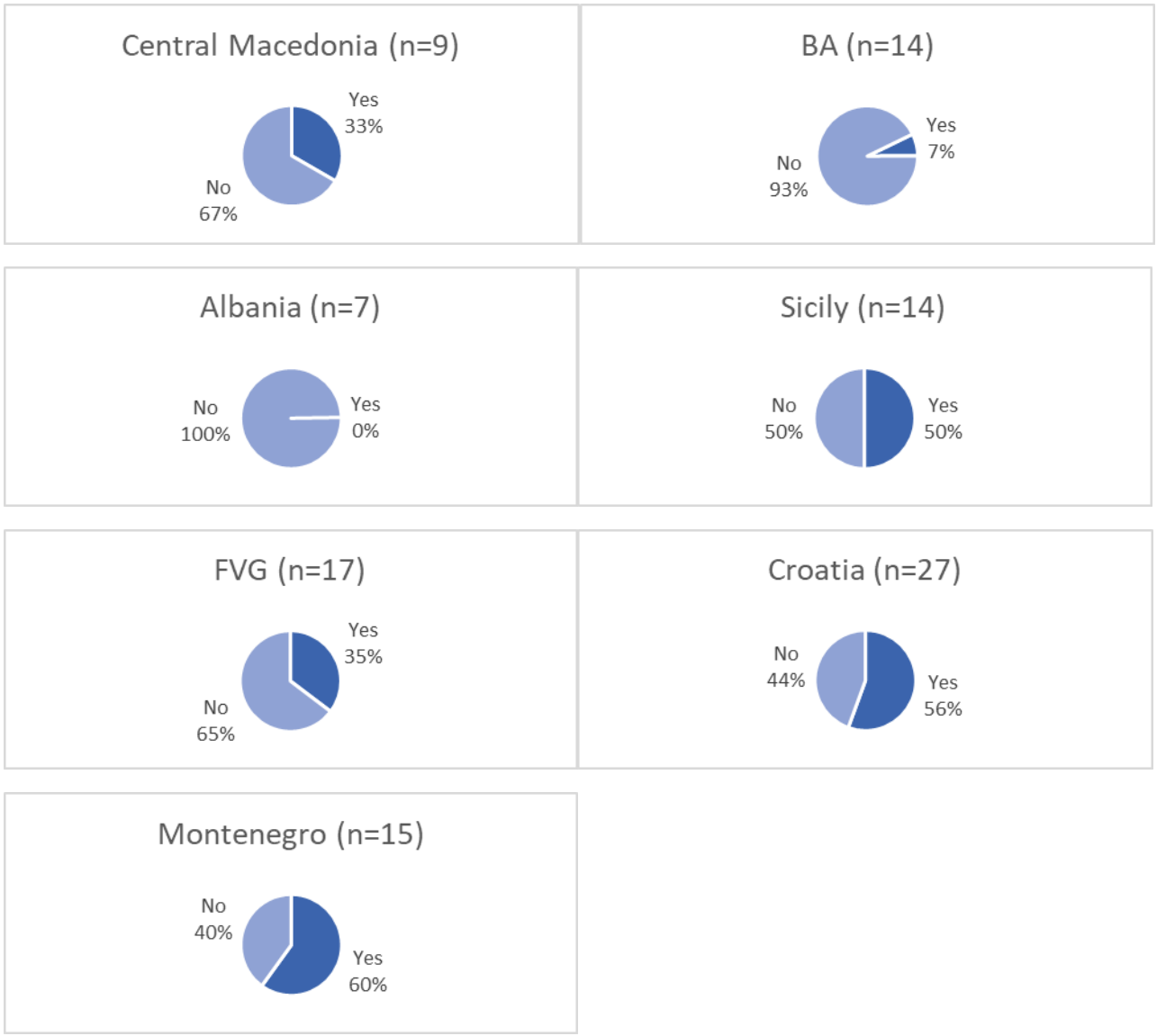

Surveyed entities in Slovenia (74%), Montenegro (60%), Croatia (56%) and Sicily (50%) have high rate of creating their own technologies.

Surveyed entities from Friuli Venezia Giulia (35%), Central Macedonia (33%), Serbia (25%), Herzegovina Neretva Canton (7%) have lower rate of entities which creates their own technologies. Albania hasn't reported entities creating their own technologies.

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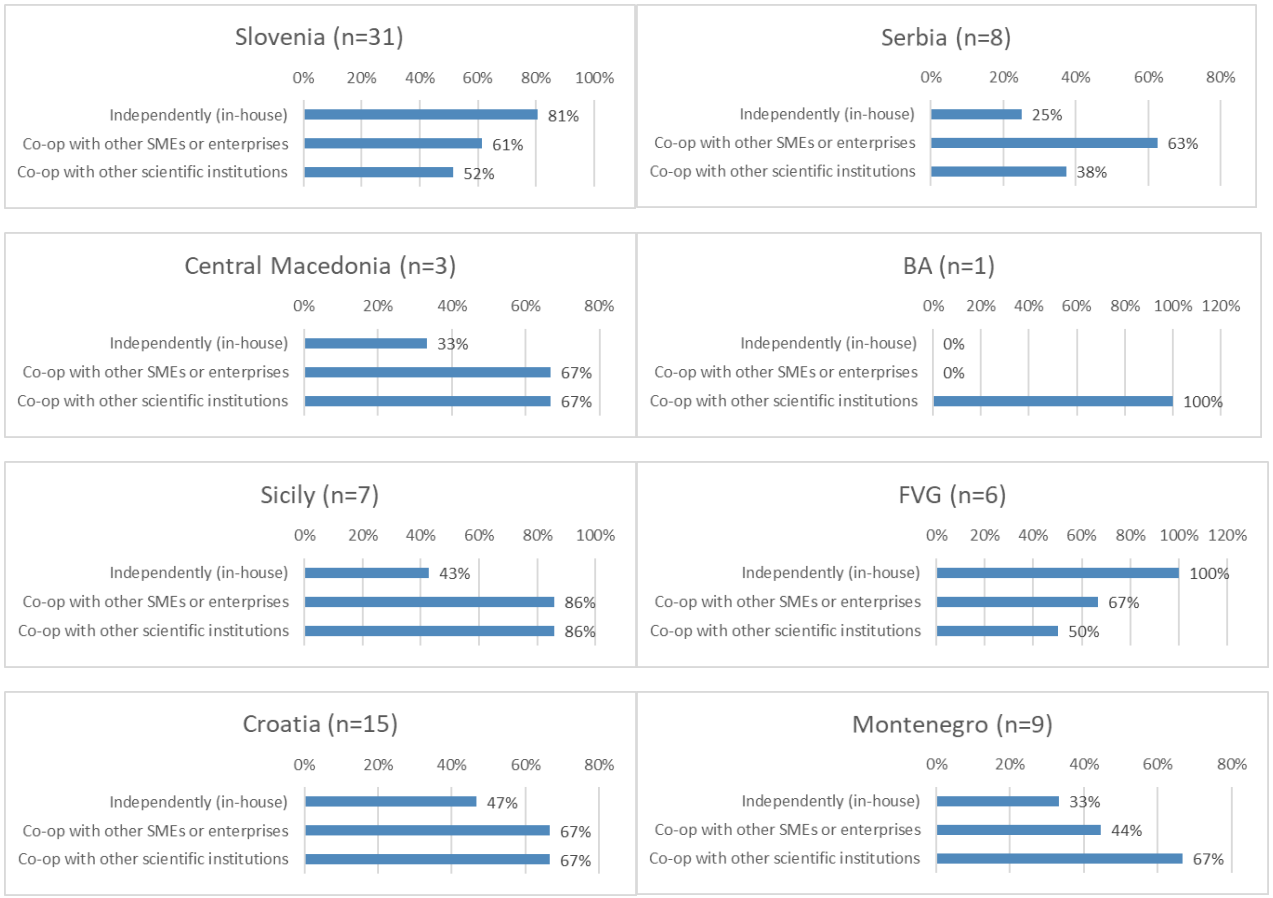
Collaboration for new technology creation

In the cases of creating own technology (entities which answered positive in previous case, see figure 30), an analysis was carried out on who is the most common partner of the entities in such cases.



In contrast to the ADRION average collected from surveyed entities, the collaboration indicators at the individual level vary significantly, from mostly independent (in-house) technology creation (Slovenia, FVG), to cooperation with SMEs/enterprises and other scientific institutions.

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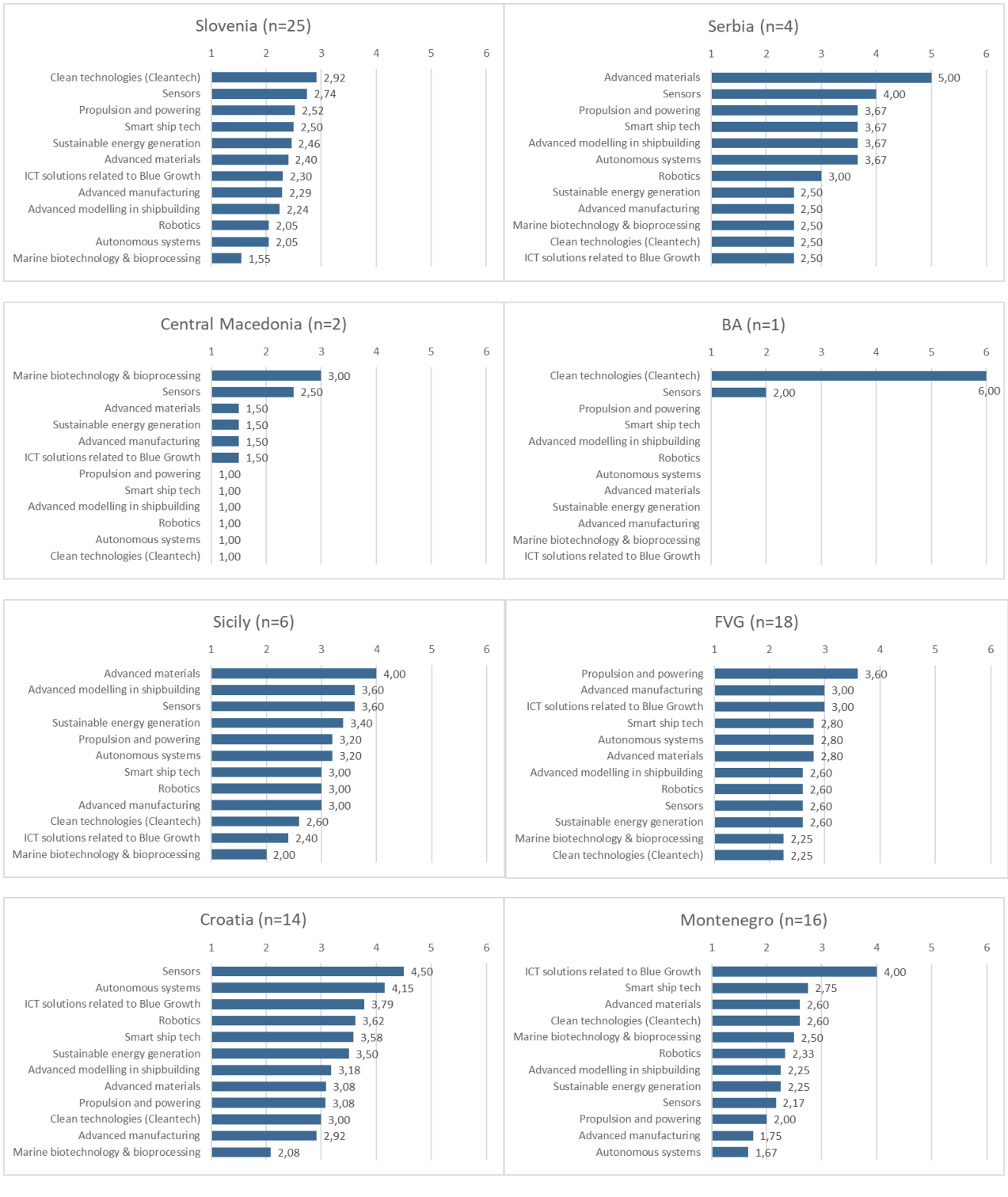
Creation of innovative technologies related to Blue Growth in ADRION

Assessment was carried out to analyse which type of new innovative technologies dominate in the ADRION area and if there are specialized regions/countries in particular Blue Growth related technologies (entities which answered positive in previous case, see figure 30).

Country/regional level (average by score for each technology on scale 1-6).



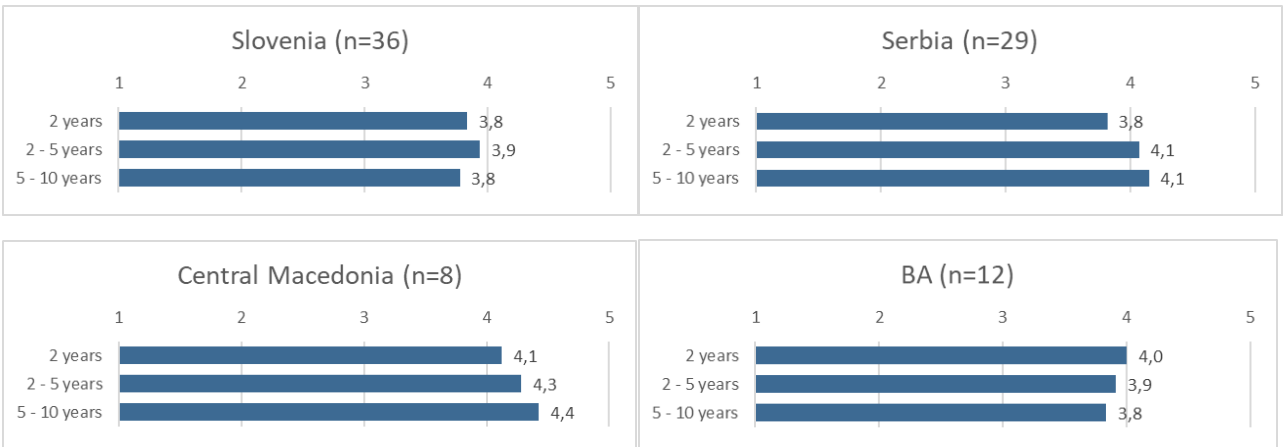
On a country/regional level, several specific technologies could be attributed to surveyed entities from mentioned country/region:

- **Slovenia**: Cleantech and sensor technologies prevail, closely followed by ship building and energy generation technologies. Marine biotechnology & bioprocessing is the least specialised type of technology.
- **Serbia**: Advanced materials and sensors are clearly technologies specialised in Serbia. (Note: small sample of answers.)**Central Macedonia**: Marine biotechnology & bioprocessing together with sensor technology are dominant technologies. (Note: small sample of answers.)
- **Herzegovina Neretva Canton**: Clean Tech is dominant technology followed by sensors. (Note: small sample of answers.)
- **Albania**: No reported entities.
- **Sicily**: Advanced materials, followed by advanced modelling in shipbuilding and sensors are specialised technologies (along with other shipbuilding related technologies) in Sicily. (Note: small sample of answers.)
- **Friuli Venezia Giulia**: Propulsion and powering is dominant technology, followed by advanced manufacturing, ICT solutions, smart ship tech, autonomous systems and advanced materials. Marine biotechnology & bioprocessing and Clean Tech are least specialised type of technologies.
- **Croatia**: Sensor technology is dominant technology, followed by creation of autonomous systems and ICT solutions related to Blue Growth. Marine biotechnology & bioprocessing is least specialised type of technology.
- **Montenegro**: ICT solutions related to Blue Growth is the type of technology specialised in Montenegro. Advanced manufacturing and autonomous systems are least specialized types of technologies.

Importance of digital transformation

Assessment of importance of digital transformation on the entities in near future (2-10 years).

Country/regional level (average by score for each time period on scale 1-5)



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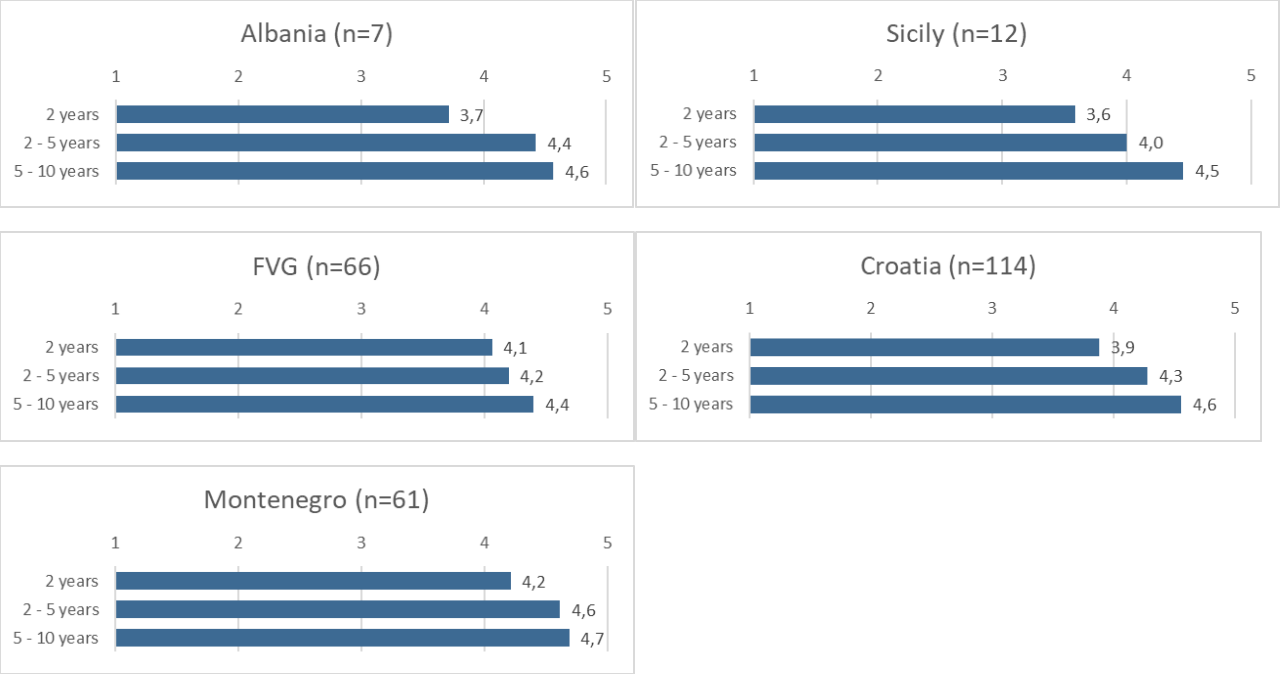

Most surveyed entities from ADRION countries/regions follow the same pattern of gradual rising importance of digital transformation over the yeas except for Slovenia and Herzegovina Neretva Canton where starting expectations are higher. In period of up to 2 years, surveyed entities from Central Macedonia, Herzegovina Neretva Canton, Friuli Venezia Giulia and Montenegro share higher expectations than ADRION average.

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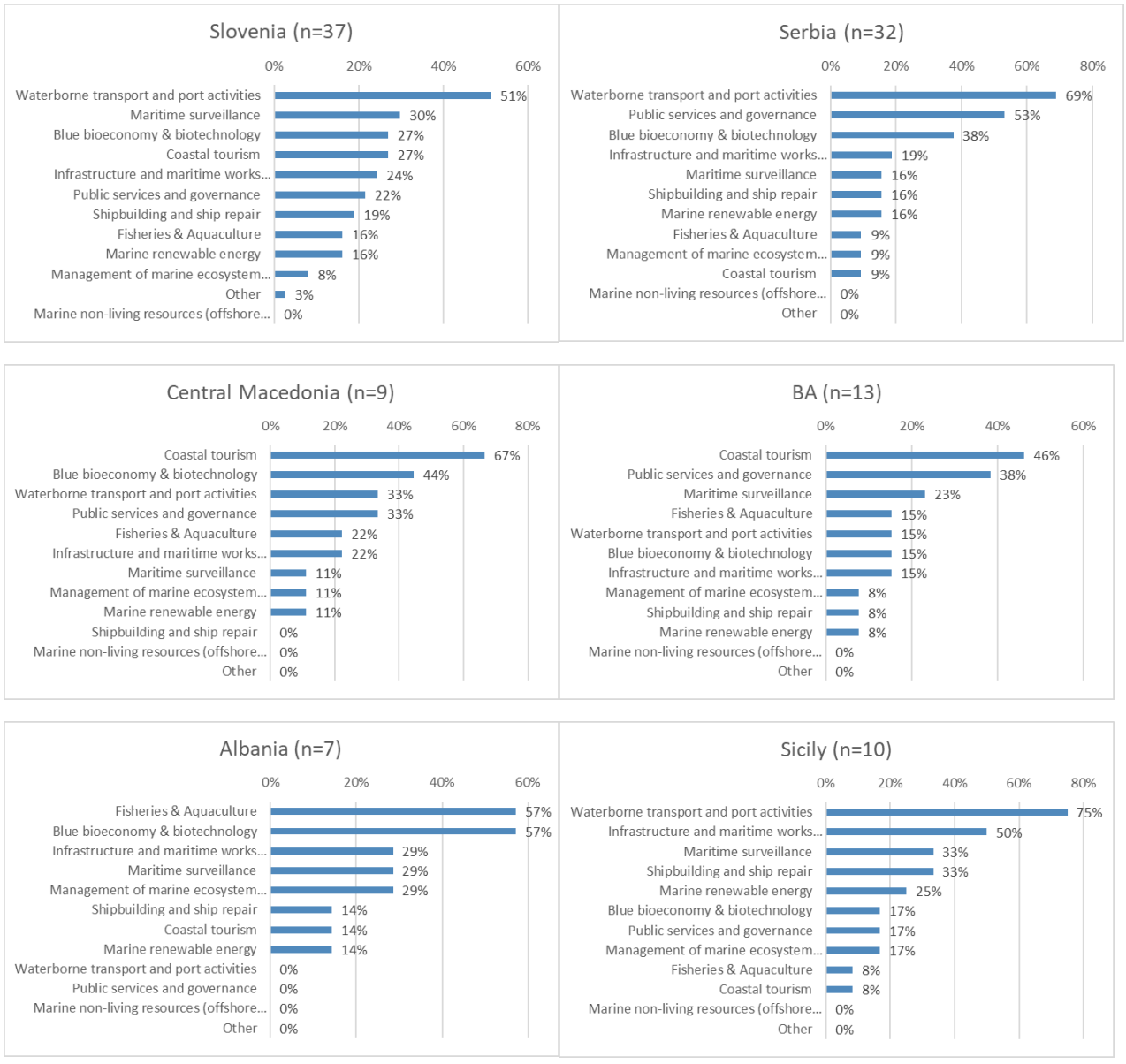
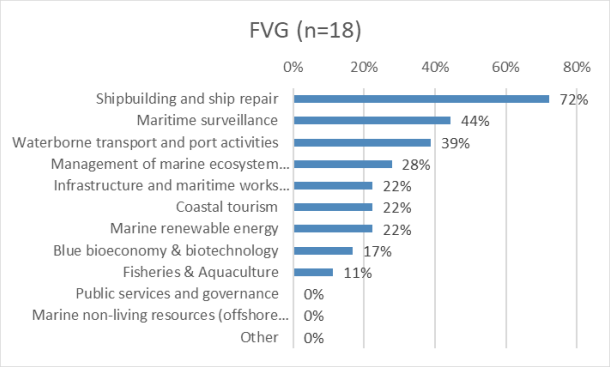
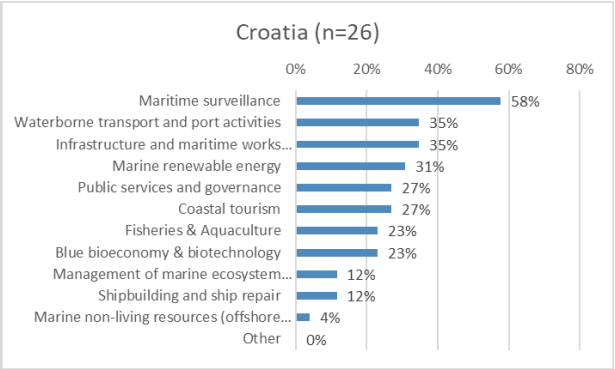
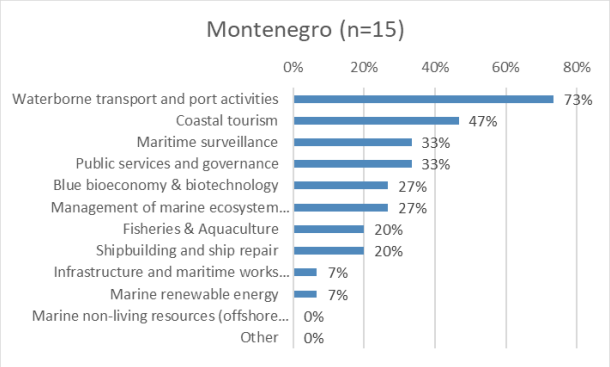
The most beneficial Blue Growth areas by gradual digital transformation

Across the surveyed entities from ADRION region, average perception of digital transformation is fairly important. It is therefore important to assess which Blue Growth areas are expected to benefit from it.









While **waterborne transport and port activities** are most common Blue Growth areas most likely to benefit from gradual digital transformation by surveyed entities, in Central Macedonia and Herzegovina Neretva Canton surveyed entities pointed out to **coastal tourism**.

On the other hand, surveyed entities from Albania are considering **fisheries and aquaculture** as its best bet, while surveyed entities in Friuli Venezia Giulia point to **shipbuilding and ship repairs**.

Lastly, Croatia's surveyed entities present a clear preference for **maritime surveillance**.

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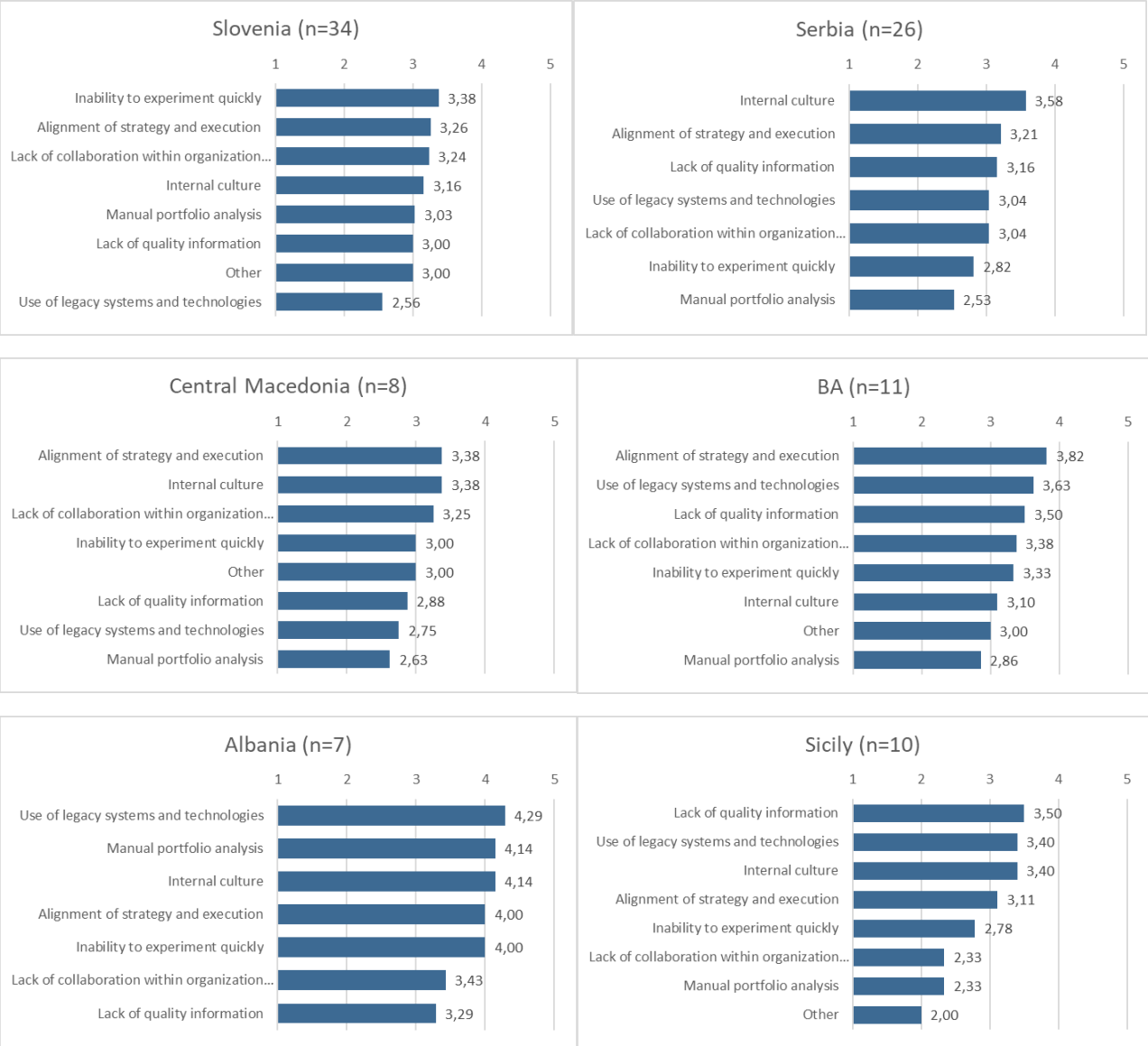
The most important barriers to entity's rapid digital transformation

Having considered average perception of digital transformation as fairly important, and assessed which Blue Growth areas are expected to best benefit from it, it is important to understand what are the barriers and their importance for rapid digital transformation. Removal of such barriers might stimulate faster digital transformation in the Blue Growth areas across the ADRION region.

Country/regional level (average by score for each barrier on scale 1-5)



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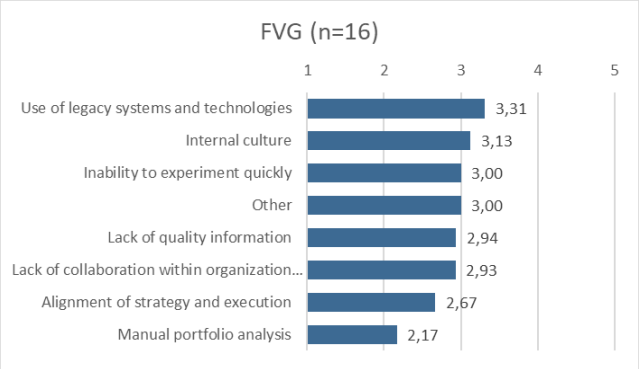

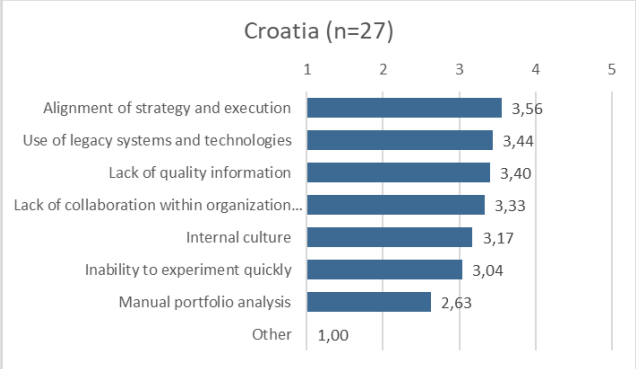

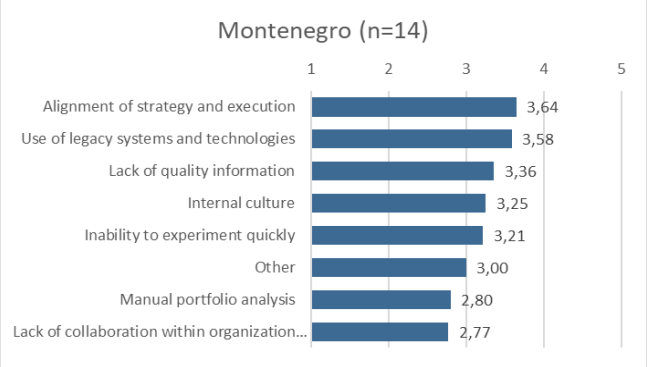

On a state/regional level several barriers stand out that differ from the ADRION averages of surveyed entities.

In **Slovenia**, main reported barrier for surveyed entities is **inability to experiment quickly**, and another barrier (third most important) is **lack of collaboration within organization's teams**.

Surveyed entities from **Central Macedonia** state **lack of collaboration within organization's teams** as third most important barrier.

Herzegovina Neretva Canton's surveyed entities report **use of legacy systems and technologies** as second most important barrier.

Surveyed entities in **Albania**, state the **use of legacy systems and technologies** as most important barrier, followed by **manual portfolio analysis**. It's worth pointing out that Albanian entities barriers have higher stage of importance (avg. 3,9 – Fairly important).

In **Sicily**, **Friuli Venezia Giulia, Croatia** and **Montenegro** the **use of legacy systems and technologies** is one of the top three barriers among surveyed entities.

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ANNEX B - FREQUENCIES AND STATISTICAL DESCRIPTIONS

Annex B contain data on frequencies and statistical descriptions (including averages, percentages and standard deviations) obtained as export report from the BG-EDP platform (1KA application platform). The data was formed around surveyed entities from nine countries/region affected by the EDP process.

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