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PREFACE

It is our great pleasure to present the *Proceedings of the 22nd International May Conference on Strategic Management*, a collection of contributions that reflect the dedication, creativity, and scholarly excellence of our academic and professional community.

We would like to express our sincere gratitude to all authors who have contributed their time, knowledge, and enthusiasm to this conference. This year, we are especially proud to highlight that the proceedings include contributions from authors representing more than 30 countries, underscoring the international character and growing impact of the conference. The diversity of topics and perspectives presented here highlights the importance of collaboration and continuous dialogue in addressing contemporary challenges.

We extend our deepest appreciation to our main sponsor, the Ministry of Science, Technological Development and Innovation, for its invaluable support and commitment to advancing research and innovation. We are also grateful to our gold sponsors, Zijin Mining and Zijin Copper, whose generous contributions have significantly supported the successful organization of this conference. In addition, we would like to thank our exhibition partner, MDPI, for their collaboration and engagement in promoting academic exchange.

We also extend our appreciation to the reviewers and members of the organizing committee, whose dedication and careful work ensured the quality and success of the conference. Their efforts have been essential in maintaining high academic standards and in bringing this publication to fruition.

Finally, we thank all attendees for their engagement and for fostering a stimulating and supportive environment. We hope that these Proceedings will serve as a valuable resource and inspiration for future research, collaboration, and innovation.

Thank you!!

Editors

CONTENT

TRANSFORMATION OF SUPPLY CHAINS INTO DIGITAL VALUE NETWORKS IN THE CONTEXT OF INDUSTRY 5.0: A COMPETENCE-DRIVEN GOVERNANCE PERSPECTIVE Slobodan Morača , Angela Fajsi, Marko Milosavljević.....	1
URBAN PARCEL LOCKERS: SPATIAL DISTRIBUTION AND INSIGHTS Milena Ninović, Nataša Čačić	17
THE ROLE OF EUROPEAN BORDER AND COAST GUARD AGENCY (FRONTEX) IN THE EUROPEAN UNION (EU) SECURITY AND THE COOPERATION WITH NATO Tryfon Korontzis, Lambros Sdrolas.....	28
HARMONIZING ELEMENTS OF AGILITY FRAMEWORK: PRINCIPLES, DIMENSIONS AND ATTRIBUTES – SYSTEMATIC LITERATURE REVIEW Martin Halász , Andrea Janáková Sujová	34
CASH TRANSFER RECEIPT AND ENTREPRENEURIAL WEALTH RELATIONSHIP – THEORETICAL REVIEW OF ENABLERS AND BARRIERS Kenneth Onyango, Nathaniel Boso, Hellen Otieno.....	53
LOGISTICS MANAGEMENT AND PERFORMANCE OF SELECTED AGRO-PROCESSING FIRMS IN NORTH CENTRAL, NIGERIA Blessing Abecan John , Salim Muhammad Ogaji, Pius Zamwawosayi Yakubu	68
INTEGRATION OF INFORMATION MANAGEMENT AND CYBERSECURITY AT THE GOVERNANCE LEVEL THE ILGM CONCEPTUAL MODEL BASED ON THE INFORMATION LIFECYCLE (7RS) Ghenadie Belinschi	79
APPLICATION OF CONTENT ANALYSIS AND THEMATIC ANALYSIS IN RESEARCH IN THE FIELD OF BUSINESS AND MANAGEMENT Lidija Krstić, Milovan Vuković, Snežana Urošević.....	86
AUTHENTIC SUSTAINABILITY FILTER (FAS). A NEW METHODOLOGY TO UNCOVER THE PARADOX BETWEEN REGULATORY COMPLIANCE AND THE AUTHENTIC SUSTAINABILITY OF COMPANIES Ninel Nesheva-Kiosseva	94
BUILDING SMART REGIONS THROUGH SMART CITY DEVELOPMENT: A STRATEGIC FRAMEWORK FOR SERBIA Damir Ilić, Tatjana Ilić-Kosanović, Vladimir Tomašević.....	109
AN AI-BASED RECOMMENDER SYSTEM FOR OMNICHANNEL RETAIL CAMPAIGN PLANNING: CONCEPT AND PROTOTYPE Ankica Borota-Tišma, Draga Tišma	121
STRATEGIC ROLE OF LOGISTICS AND SUPPLY CHAIN MANAGEMENT CONCEPTS IN IMPROVING BUSINESS AND MARKET PERFORMANCE Stefan Ugrinov, Mihalj Bakator, Sanja Stanisavljev, Dragan Čočkaló, Mila Kavalić, Verica Gluvakov.....	135

DIGITAL PROTOCOL IN THE AGE OF ARTIFICIAL INTELLIGENCE: TRANSFORMATION, CHALLENGES AND STRATEGIC RECOMMENDATIONS FOR PUBLIC SECTOR MANAGEMENT	
Sande Smiljanov.....	144
EFFECTIVE MANAGEMENT OF OPPORTUNITIES IN INVESTMENT PROJECTS – APPROACHES, PROBLEMS AND CHALLENGES	
Nadya Marinova – Milanova.....	151
TAX CONTROL AUTOMATION USING SMART CONTRACTS	
Radovan Vladislavljević, Aleksandra Zlatić Tešić, Svetlana Marković.....	162
THE CYBERSECURITY FUNDAMENTALS OF ARTIFICIAL INTELLIGENCE	
Zsolt Szabó Mihály.....	172
SELECTS LOCATIONS FOR COLLECTION CENTER	
Vladimir Stojković, Goran Tepić, Jelena Spajić, Milan Delić, Mirko Djelošević	183
INDUSTRIAL SYMBIOSIS POTENTIAL IN SOUTHEAST AND CENTRAL EUROPE: A MULTI-CRITERIA ANALYSIS OF SELECTED COUNTRIES	
Andelka Stojanović, Isidora Milošević, Sanela Arsić, Almudena Muñoz Puche	195
DIGITAL MANAGEMENT IN ENERGY-INTENSIVE INDUSTRIES	
Muamer Muminović, Petronije Jevtić, Ljiljana Stošić Mihajlović, Marija Mihajlović.....	205
STRATEGIES FOR DEVELOPING EMPLOYEE DIGITAL COMPETENCIES FOR SUCCESSFUL DIGITAL TRANSFORMATION	
Ljiljana Stošić Mihajlović, Jevtić Miroslava, Marija Mihajlović, Petronije Jevtić, Muamer Muminović.....	215
STRATEGIC IMPERATIVES FOR AVAILABILITY AND AFFORDABILITY OF ESSENTIAL MEDICINES IN KENYA: IMPLICATIONS FOR ADVANCING UNIVERSAL HEALTH COVERAGE	
Rosalind Kirika, Joseph Onyango, Jeniffer Orwa.....	226
COMPARATIVE ANALYSIS OF CAPITAL, LABOUR AND TECHNOLOGICAL RETURNS IN EUROPEAN COUNTRIES	
Aleksejs Hilkevics	237
OPTIMISATION OF THE NUMBER OF OPERATING WELL PUMPS BASED ON POWER CONSUMPTION	
Al-Sifao A. Al-Sifao, Nikola V. Petrović, Radiša Ž. Jovanović, Uglješa S. Bugarić.....	248
DIGITAL ANDON AS AN INFORMATION SYSTEM AND ECONOMIC TOOL FOR SUSTAINABLE PRODUCTION	
Slobodan Stefanović, Ivan Sinadinović, Jasmina Gligorijević, Milan Stefanović	258
BUSINESS DIGITIZATION IN WESTERN BALKAN COUNTRIES: TRENDS, GAPS AND CONVERGENCE WITH THE EU	
Jelena Živković, Stefan Zdravković.....	270

MAPPING ERP SYSTEM ADOPTION THEORIES: INSIGHTS FROM A BIBLIOMETRIC ANALYSIS

Aleksandra Radić, Sanela Arsić, Đorđe Nikolić..... 279

EVALUATION OF MARKETING INDICATORS USING THE IMF SWARA METHOD

Perica Macura, Željko Stević, Boris Novarlić, Milan Tadić..... 289

GIBSU-HISA: AN ENHANCED INFLUENCE ANALYSIS METHOD FOR GROUP DECISION-MAKING UNDER UNCERTAINTY

Gregor Dolinar, Petra Grošelj..... 299

THE IMPORTANCE OF APPLYING THE PRINCIPLES OF THE CIRCULAR BIOECONOMY TO ACHIEVE THE SUSTAINABLE DEVELOPMENT GOALS IN SERBIA

Ljiljana Brašanac-Bosanac , Nevena Čule, Ljubinko Rakonjac, Aleksandar Lučić, Tatjana Ćirković-Mitrović..... 309

STUDENTS' INNOVATIVE BEHAVIOR IN HIGHER BUSINESS EDUCATION: A SOCIAL COGNITIVE PERSPECTIVE ON AI LITERACY AND SELF-EFFICACY

Ivica Nikolić, Kiril Postolov, Violeta Cvetkoska, Bojan Kitanovikj, Filip Peovski, Ivona Serafimovska, Nenad Milijić..... 318

DO HIGHER MATERIAL COMPENSATIONS LEAD TO HIGHER NET PROFIT PER EMPLOYEE?

Andreja Katolik Kovačević..... 328

THE MEDIATING ROLE OF EMPLOYEES' JOB SATISFACTION IN THE RELATIONSHIP BETWEEN WORKPLACE DIGITALIZATION AND EMPLOYEES' PRODUCTIVITY: CROSS COUNTRY STUDY

Milica Ž. Veličković, Silvia Puiu..... 340

THE RELATIONSHIP BETWEEN ORGANIZATIONAL CONTEXT AND IDENTITY OF AN ORGANIZATION AND LEADERSHIP IN HEIS

Nedeljka Živković, Maja Glogovac, Biljana Tošić, Isidora Milošević..... 358

FAILURE MODE AND EFFECTS ANALYSIS: LITERATURE REVIEW AND BIBLIOMETRIC ANALYSIS

Lidija Krstić, Ivan Jovanović..... 367

MANAGING EMOTIONS FOR BUSINESS PURPOSES: INTERNATIONAL STUDENT COMPARISON

Daniel Pavlov, Silvia Puiu, Deniza Alieva, Milica Ž. Veličković 377

EVOLUTION OF RISK IN GLOBAL FLOWS OF ENERGY TRANSITION

Slobodan Radosavljević..... 386

METHODOLOGY FOR IDENTIFICATION AND RISK ANALYSIS OF THE SRS 1300 ROTARY EXCAVATOR IN SURFACE COAL MINING

Slobodan Radosavljević..... 397

A COMPARISON OF FORECASTING PERFORMANCE OF SOME PANEL OF VARIOUS COMMODITIES PRICES AND TIME-SERIES MODELS

Krzysztof Drachal, Mosab I. Tabash..... 407

DIFFERENCES IN ENTREPRENEURIAL INTENTIONS BETWEEN YOUNG PEOPLE FROM ENTREPRENEURIAL AND NON ENTREPRENEURIAL FAMILIES: A RUSSIAN BULGARIAN COMPARATIVE STUDY

Julia Murzina, Elena Zarubko, Daniel Pavlov 424

OCCUPATIONAL INJURIES AND WORKPLACE SAFETY IN EUROPEAN COUNTRIES: A K-MEANS CLUSTER ANALYSIS

Aleksandra Radić, Nenad Milijić, Ivica Nikolić..... 434

FROM URBAN MINING TO DIGITAL PRODUCT PASSPORTS: A STRATEGIC MANAGEMENT PERSPECTIVE ON END-OF-LIFE BATTERIES IN EUROPE

Mario Carrassi, Stefania Massari , Marcello Ruberti..... 444

EMBEDDING SUSTAINABILITY THROUGH DESIGN THINKING: EVIDENCE FROM THE ORSÙ INNOVATION LAB CASE

Mario Carrassi, Anna Argese, Matteo Lacorte, Carlo Castrignano, Andrea Gelao 457

DIGITAL TRANSFORMATION CHALLENGES IN SERBIAN AND HUNGARIAN SMES: AN INDEX-DRIVEN COMPARATIVE ASSESSMENT

Andrea Tick, Ferenc Katona, András Keszthelyi,
Isidora Milošević, Anđelka Stojanović, Danijela Pantović, Réka Saáry..... 468

ASSESSING THE RELATIVE IMPORTANCE OF PRODUCT ATTRIBUTE DIMENSIONS IN TECHNICAL PRODUCTS: A RANKING APPROACH AMONG GENERATION Z CONSUMERS

Adrijana Jevtić Tomić, Suzana Đukić, Goran Milovanović 481

UNDERSTANDING THE NATURE OF SOCIAL MEDIA CUSTOMER COMPLAINT BEHAVIOUR IN KENYA'S STAR-RATED HOTELS

Njuguna Muthoni, Kofi Dadzie, Hellen Otieno..... 490

VARIATION OF THE MONTH EFFECT IN CENTRAL AND EASTERN EUROPE STOCK MARKETS

Rasa Norvaisiene , Jurgita Stankeviciene..... 502

KEY FACTORS OF LONG-TERM VIABILITY IN BUSINESS SYSTEMS FROM A LIFE-CYCLE PERSPECTIVE

Sara Kremsar, Eva Krhač Andrašec, Tomaž Kern 512

TECHNOLOGY AND DIGITAL TRANSFORMATION IN INSURANCE: A COMPARATION ANALYSIS WITH EVIDENCE FROM KOSOVO

Kaltrina Bajraktari, Klime Poposki, Irina Joldeska, Bashkim Cermini..... 522

DEVIATIONS FROM THE ENVIRONMENTAL KUZNETS CURVE AND COUNTRY CLUSTERS WITH SIMILAR GDP-CO₂ EMISSION PATTERNS

Ermina Čosović, Ivan Mihajlović, Mirjana Misita 535

IMPLEMENTATION OF RISK MANAGEMENT IN PROJECT-ORIENTED ORGANIZATIONS: CHALLENGES AND PERSPECTIVES IN THE MODERN BUSINESS ENVIRONMENT

Jelena Ružić, Marija Panić..... 544

PRIORITIZING DEVELOPMENT STRATEGIES FOR A PASSENGER VEHICLE IMPORTER AND WHOLESALE IN THE SERBIAN AUTOMOTIVE MARKET	
Darko Stanojević, Predrag Đorđević , Anđelka Stojanović, Ljubica Knežević	557
COMPARATIVE ANALYSIS OF BALKAN COUNTRIES ACCORDING TO DIGITAL TECHNOLOGY USAGE IN BUSINESS: AN INTEGRATED MCDM APPROACH	
Aleksandra Fedajev, Sanela Arsić, Ivana Božić Miljković	572
IMPLEMENTATION OF AI IN VEHICLE REPAIR PROCESSES AS A KEY FACTOR OF CIRCULAR ECONOMY AND TECHNO-ECONOMIC EFFICIENCY IN TRAFFIC SAFETY	
Mirjana Dejanović, Jelena Ružić, Nenad Milijić	589
A COMPARATIVE ANALYSIS OF ENVIRONMENTAL AWARENESS AND BEHAVIOR AMONG GENERATION Z IN SERBIA AND THE CZECH REPUBLIC	
Marija Panić, Milica Veličković, Aleksandra Fedajev, Danijela Voza, Sanela Arsić, Dušan Mladenović	602
THE ROLE OF KNOWLEDGE MANAGEMENT IN THE CREATIVE INDUSTRY: ITS IMPACT ON INNOVATION AND CSR	
Sanela Golubović Corcione, Milica Veličković, Aleksandra Fedajev, Ivan Jovanović	615
BENCHMARKING OF RAILWAY SUPPLY CHAIN PERFORMANCE: THE ROLE OF ORGANIZATIONAL CULTURE	
Vesna Spasojević Brkić, Branislav Tomić, Iva Savić, Martina Perišić Jokić.....	629
ARTIFICIAL INTELLIGENCE IN THE EVALUATION OF PROJECTS FUNDED THROUGH COHESION POLICY: BETWEEN EFFICIENCY AND PRACTICAL LIMITATIONS	
Hojda Sebastian-Norbert.....	642
CIVILIAN POWER AND MEN ON UNIFORM: A DESCRIPTIVE ANALYSIS OF WIKE AND YERIMA	
Ehichoya Godday Imonie, Omeahon Henry Oigiangbe.....	652
SERVICE LEVEL MANAGEMENT STRATEGY IN WIRELESS COMMUNICATIONS	
Jovan Zlatanovic.....	662
THE INFLUENCE OF PLANNED LIFESPAN TRIGGERS ON LEADER EFFECTIVENESS IN TOP MANAGEMENT OF LISTED COMPANIES IN NAIROBI SECURITIES EXCHANGE	
Paul Kasimu, Hellen Otieno, Fred Walumbwa, Vincent Ogutu.....	672
TOWARDS TRANSCENDING FRAGMENTED PERSPECTIVES ON MACHIAVELLIAN LEADERSHIP IN ORGANIZATIONAL CONTEXTS: AN ADO-TCM-BASED SYSTEMATIC REVIEW	
Hind El Asraoui, Anas Hamzane, Samira Touate, Asmae Houmid Bennani.....	682
MARITIME GOVERNANCE AND THE BLUE ECONOMY: BETWEEN STRATEGIC AMBITIONS AND IMPLEMENTATION CONSTRAINTS (A SYSTEMATIC REVIEW OF LITERATURE)	
Rajae Janati Idrissi, Youssef Pheniqi.....	693
THE ROLE OF STRATEGIC MANAGEMENT IN THE GOVERNANCE OF OIL RESOURCES AND GEOPOLITICAL RISK IN THE MIDDLE EAST	
Anita Babić	706

THE IMPACT OF FINANCIAL TECHNOLOGIES AND DIGITAL INNOVATIONS ON THE MODERNIZATION OF GEORGIA'S BANKING SECTOR

Bichiko Kakabadze, Nana Shonia, Irine Kopaliani..... 711

OCCUPATIONAL SAFETY CHALLENGES IN SERBIA: A LONGITUDINAL ANALYSIS OF INJURY TRENDS AND FORECASTS (2015–2027)

Nenad Milijić, Aleksandra Radić, Ivan Jovanović..... 720

CROSS-COUNTRY DIFFERENCES IN GREEN PURCHASING BEHAVIOUR AMONG GENERATION Z: EVIDENCE FROM SERBIA AND THE CZECH REPUBLIC

Aleksandra Fedajev, Dušan Mladenović, Sanela Arsić,
Danijela Voza, Milica Veličković, Marija Panić..... 730

GOVERNANCE AND ECONOMIC INEQUALITY AMONG INDEPENDENT PROFESSIONALS: A COMPARATIVE ANALYSIS OF EDUCATION AND CULTURE SECTORS

Patricija Janković, Sašo Murtič 745

HUMAN CAPITAL AT THE HELM OF INDUSTRY 5.0: THE IMPACT OF EXECUTIVE DEVELOPMENT PROGRAMMES ON SENIOR MANAGERIAL CAPABILITIES IN INDIAN MANUFACTURING

Sutaarson Murugesu, A K Sheik Manzoor..... 754

AGILITY MATURITY MODELS FOR ASSESSING CURRENT AND ACHIEVABLE LEVELS OF STRATEGIC AGILITY

Katarína Marcinekóvá, Andrea Janáková Sujová..... 763

THE ROLE OF EUROPEAN FUNDING IN ACADEMIC SPIN-OFF CREATION: A TRIPLE HELIX PERSPECTIVE FROM A RESEARCH INSTITUTE

Andra Elena Diaconescu, Lavinia-Maria Iloie..... 773

A PROPOSED THEORETICAL FRAMEWORK FOR THE ADOPTION OF CONTEMPORARY CSR TRENDS IN MALAWI'S TELECOM INDUSTRY

Wongani Calvin Kaunda, Vusumzi Msuthwana, Siyabonga Sirayi..... 783

ADAPTATION STRATEGIES FOR GLOBAL ECONOMIC MODELS IN PERIODS OF INSTABILITY

Geanina – Ioana Blaj 793

THE IMPACT OF MANAGEMENT COMPETENCIES ON BUSINESS DEVELOPMENT IN THE BALTIC REGION

Monta Anšica, Una Libkowska 802

BIODIVERSITY CONSERVATION IN BROD-POSAVINA COUNTY AND ITS ROLE IN REGIONAL ECONOMIC DEVELOPMENT

Anica Vukašinović, Ivana Miklošević 812

PUBLIC DEBT MANAGEMENT: SEIGNIORAGE MODEL VERSUS DOMAR MODEL

Dmitrijs Smirnovs 821

**FACTORIAL EXPERIMENTAL DESIGN AND SIX SIGMA AS TOOLS FOR PROCESS
IMPROVEMENT IN HEALTHCARE**

Teodora Filipovska, Sara Srebrenkoska,
Aleksandra Risteska-Kamcheski, Vineta Srebrenkoska 831

**DECISION-MAKING MODELS BASED ON OPTIMIZATION AND DIFFERENTIAL
EQUATIONS**

Aleksandra Risteska-Kamceski, Sara Srebrenkoska, Dejan Krstev 839

**OPTIMAL MATERIAL SELECTION FOR 3D PRINTING (PLA) USING MULTI-CRITERIA
DECISION ANALYSIS**

Dejan Krstev, Sara Srebrenkoska, Aleksandra Risteska-Kamcesk 848

**EMOTIONAL LEADERSHIP COMPETENCIES VS. ARTIFICIAL INTELLIGENCE IN
EDUCATIONAL INSTITUTIONS**

Stefani Jovcheska, Zorica Siljanovska, Silvana Jovcheska 858

**SUSTAINABLE MANAGEMENT OF CARBON EMISSION REDUCTION IN AN
INDUSTRIAL COMPANY: A CASE STUDY**

Aouad Razika, Belhour Samira, Chaib Rachid 867

**STRATEGIC DRIVERS OF DIGITAL ENTREPRENEURSHIP: A COMPARATIVE STUDY
OF INDIA, CROATIA, GERMANY, AND SLOVENIA**

Ivana Miklošević, Nikhil Bhardwaj, Nalinee Chauhan 877

**CAPITALISM AND LABOR EXPLOITATION: THE ROLE OF ACCOUNTING IN THE
MARITIME LABORERS' MARKET**

Ehtesham Abbasi, Amr Kablema, Ansam Selloum,
Alaa El Alami El Hassani, Kashif Beg 886

**A GOVERNANCE-EMBEDDED DECISION-SUPPORT FRAMEWORK FOR
SUSTAINABLE PROJECT PORTFOLIO SELECTION IN THE WESTERN BALKANS**

Nikola Jovanović, Aca Jovanović, Ivana Berić 900

**ARTIFICIAL INTELLIGENCE ENABLED DECISION MAKING IN CONSTRUCTION
PROJECT MANAGEMENT ACROSS ORGANISATIONAL HIERARCHICAL LEVELS AND
PROJECT LIFECYCLE STAGES**

Pride Ndlovu 908

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THE IMPORTANCE OF APPLYING THE PRINCIPLES OF THE CIRCULAR BIOECONOMY TO ACHIEVE THE SUSTAINABLE DEVELOPMENT GOALS IN SERBIA

Ljiljana Brašanac-Bosanac*, Nevena Čule, Ljubinko Rakonjac, Aleksandar Lučić,
Tatjana Ćirković-Mitrović

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Abstract: The circular bioeconomy, as a specific, integrated subset of the circular economy, is recognised as a potential solution for achieving sustainable development goals. This concept is based on a closed-loop system where biological resources are managed sustainably, applying the principle of maximum use and added value of the product, with minimal waste. The Circular Bioeconomy Principles (CBP) represent a new approach to economy, moving forward to a regenerative and sustainable system. Application of CBP aims to accelerate the transition to an economy that is climate neutral, inclusive and prospers in harmony with nature. The aim of this research was to answer the question: To what extent do circular bioeconomy principles enhance sustainability? Despite many efforts and activities, there has been a poor approach to the bioeconomy in Serbia for several decades. The realization of circular bioeconomy in Serbia can be called a pioneering undertaking, because this term was not recognized in strategic, legal and institutional frameworks in Serbia. Serbian companies are characterised by a lack of forward planning and a general concern and feared for innovation. They are mostly engaged in low value-adding activities in global value chains, therefore, the share of domestic value added is low in Serbia, especially in manufacturing. This paper provides a review of the most significant circular bioeconomy principles and their contribution to the sustainable development in Serbia. The application of circular bioeconomy principles plays a fundamental role in achieving main sustainable development goals.

Keywords: bioeconomy, principles, sustainability, CEE2ACT project, Serbia.

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1. INTRODUCTION

The circular bioeconomy concept is based on innovative approach to the production and consumption of resources, and moving away from a linear economy based on extensive use of fossil and mineral resources. In the Updated Bioeconomy Strategy 2018, the European Commission states that “The bioeconomy covers all sectors and systems that rely on biological resources (animals, plants, micro-organisms and derived biomass, including organic waste), their functions and principles. It includes and interlinks: land and marine ecosystems and the services they provide; all primary production sectors that use and produce biological resources (agriculture, forestry, fisheries and aquaculture); and all economic and industrial sectors that use biological resources and processes to produce food, feed, bio-based products, energy and services.” (EC, 2018).

Bioeconomy Strategy does not exist in Serbia, but there is the concept of circular economy. Concept of existing circular economy in Serbia is analyzed and elaborated through four national strategies - Strategy of Agriculture and rural development in the Republic of Serbia for the period 2014-2024 (2014), Energy Sector Development Strategy of the Republic of Serbia for the period by 2025 with Projections by 2030 (2016), Strategy of Industrial policy of the Republic of Serbia from 2021-2030 (2018), Strategy of Sustainable urban development of the Republic of Serbia until 2030 (2019) and 2 national programs – Circular economy development programme in the Republic of Serbia 2022-2024 (2018), and Waste Management Program in the Republic of Serbia for the period 2022-2031 (2018).

Institute of Forestry in Belgrade has been involved in implementing the Horizon project “Empowering the Central and Eastern European Countries to Develop Bioeconomy Strategies and Action Plans” - CEE2ACT (2022-2025) in which 17 European countries participated. The main objective of this project was to enable countries in Central Eastern Europe and beyond (Bulgaria, Croatia, Czech Republic, Greece, Hungary, Poland, Romania, Serbia, Slovakia and Slovenia) to develop strategies and action plans for a circular bioeconomy, using innovative governance models and examples of good practices from developed countries. The National Bioeconomy Hub (NBH) establishment, development of a National Bioeconomy Roadmap, and support for entrepreneurs who apply the principles of the bioeconomy and sustainability are some of most important CEE2ACT results that are achieved in Serbia. The purpose of establishing and existing the NBH in Serbia is to improve the legislative and regulatory framework and support mechanisms for the rational use of biomass in the coming period. National Bioeconomy Hub in Serbia gathered various representatives, including ministries and decision-makers for policy creation and implementation, representatives of public administration, actors from the primary economic sector, the waste sector and bio-industry, small and medium-sized enterprises, public enterprises, raw material suppliers, scientific research and educational institutions, environmental protection organizations, NGO and representatives of civil society organizations. The establishment of the National Bioeconomic Hub achieved building cooperation, trust and understanding among interested parties in Serbia. This initiative provided a platform for key players in the bioeconomy to come together, exchange information and discuss common goals and challenges. Currently, twenty-seven interested stakeholders have joined HUB in Serbia and signed CEE2ACT Memorandum of Understanding. The concept of the bioeconomy has been included in the Programme for the Development of the Circular Economy in the Republic of Serbia for the period 2025-2030, along with an Action Plan. This is the first official national document to recognised the bioeconomy as an important element of sustainable development and serves as a significant indicator that the bioeconomy in Serbia is recognised as a strategic direction and is receiving

institutional support. A National Roadmap for the Bioeconomy is currently in the final stage of publication and promotion.

Based on the results obtained, and particularly the digital tools, experiences, and guidelines, the implementation of the circular bioeconomy concept was supported as one of the seven key paths to achieving climate neutrality identified in the European Clean Planet Strategy.

This paper provides a review of the most significant circular bioeconomy principles and their contribution to the sustainable development in Serbia.

2. LITERATURE REVIEW

The concept of the circular bioeconomy it has been introduced in the European Union (EU) in response to concerns about long-term sustainability and the prevailing resource-intensive economic model. According to the literature sources the key principle of the circular bioeconomy is the 4Rs framework (Reduce, Reuse, Recycle, Recover), in which the hierarchy between the Rs is a fundamental aspect. The first R (Reduce) is considered to take precedence over the second R (Reuse) and so on. This hierarchical relationship is closely linked to the “cascade” principle”, which envisages the use of raw materials according to a priority based on potential added value (Proskurina et al., 2016; Paletto et al., 2019).

The circular bioeconomy concerns the conversion of renewable biological resources into various materials, chemicals, and energy, such as bioenergy (O’Brien et al. 2017, Caruse et al. 2018), food, feed, and bio-based products (McCormick and Kautto 2013; Rodriguez-Anton et al. 2019). According to Stegmann, P. et al. (2020) and Brašanac-Bosanac et al. (2023) importance of a CE in the priority area of biomass lies in its potential to contribute to climate change mitigation, sustainable development and environmental protection over time by maintaining the value of bio-based products, materials and resources in the economy for as long as possible.

D’Amato et al. (2017), Hetemäki, L. et al. (2017) and Sharif et al. (2019) describes the circular and efficient use of renewable, non-fossil raw materials and products, providing a better understanding of sustainable development. According to Palahi et al (2020), the circular bioeconomy relies on healthy, biodiverse and resilient ecosystems and aims to provide sustainable wellbeing for society at large. This is achieved through the provision of ecosystem services and the sustainable management of biological resources (plants, animals, micro-organisms and derived biomass, including organic waste) and its circular transformation in food, feed, energy and biomaterials within the ecological boundaries of the ecosystems that it relies.

According to Verkerk et al. (2020), Bowditch et al. (2020) and Muscat et al. (2021), successful applying bioeconomy principles need to balance short- and long-term sustainable development goals, as balancing the need for wood production, the protection of biodiversity, health and vitality and the provision of other important ecosystem and social services in a dynamic environment.

3. DATA AND METHODOLOGY

To determine the circular bioeconomy principles and observe their importance for achieving sustainable development goals, the methods of analysis, synthesis, and generalisation are used. This research applied an integral and participative approach, also.

The integral approach involved the consideration of existing regulations, guidelines and recommendations related to the circular bioeconomy and sustainable development, as defined by various international, EU and national institutions.

The application of a participative approach further implied the introduction of new standards, i.e., harmonization with new global and European frameworks, policies, CEE2ACT project results, and planning practices at all levels of decision-making in Serbia.

4. RESULTS AND DISCUSSION

In developed countries of the European Union the circular bioeconomy is defined as the economy that uses renewable biological resources to sustainably produce food, bio-based materials, feed, products, fuels and bioenergy, and in which waste products are kept within the system. Their policies of development and Strategies of Bioeconomy are focused on the sustainable conversion of biomass and bio-based resources into marketable products, and places biomass production and processing in a single system, while underscoring the role of technology in biological resources to create added value and encourage new business models.

The concept of circular bioeconomy has been introduced in the European Union (EU) in response to concerns about long-term sustainability and the prevailing resource-intensive economic model. The circular bioeconomy uses renewable biological resources to sustainably produce food, bio-based products, food & feed, fuels and bioenergy, and in which waste products are kept within the system by transforming them into value-added products (Figure 1).

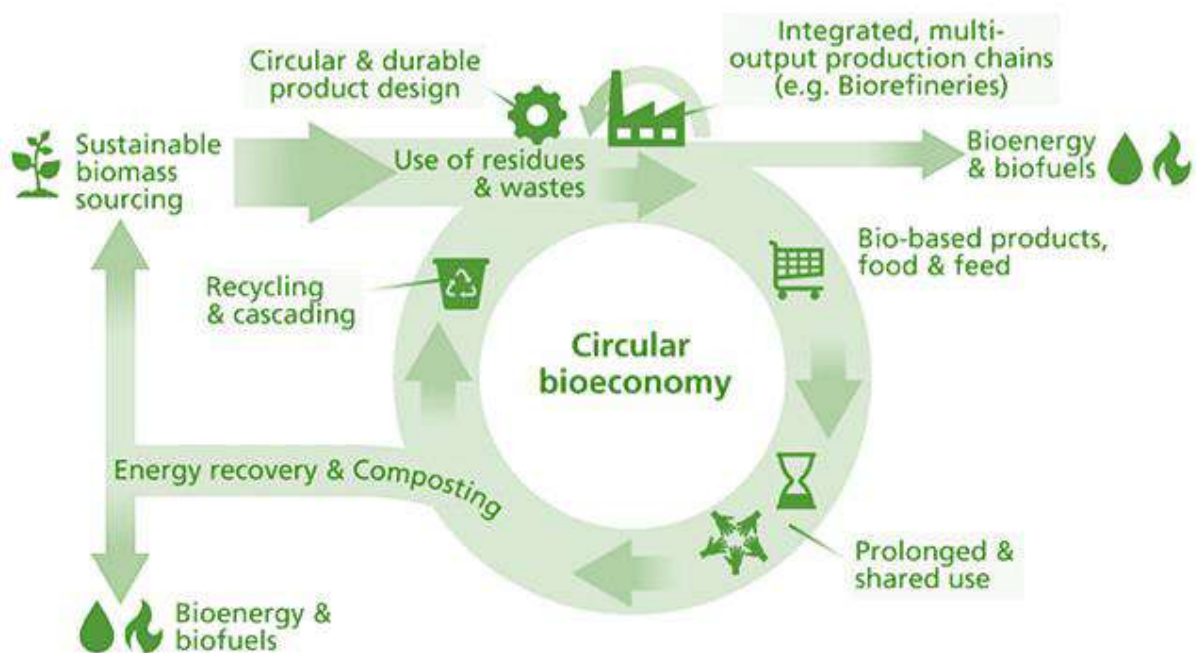


Figure 1: The concept of the circular bioeconomy and its elements
(Stegmann et al. 2020 – modified by authors)

The Circular Bioeconomy Principles represent a new approach to economy, moving forward to a regenerative and sustainable system. Based on Circular Bioeconomy Alliance Principles for Regenerative Landscapes (Muys et al. 2023), other relevant literary sources (Verkerk et al. 2020, Bowditch et al. 2020, Muscat et al. 2021 etc.) and practice experience, seven most important circular bioeconomy principles was identified.

Principle 1

Natural environment - Renewable bio-based production, minimizing harmful fertilizers and pesticides, avoiding eutrophication, land degradation deforestation and fragmentation of ecosystems, and protecting biodiversity.

Principle 2

Social well-being – Equity, human health, creating value chains that promote gender equality and long-term social sustainability.

Principle 3

Economic prosperity – Supporting sustainable business models and value chains generating bioeconomy activities for fast phasing-out of fossil resources, promote the sustainable sourcing of renewable resources including food, feed, fiber and fuels.

Principle 4

Diversity – Social and ecological diversity. In the face of rapid environmental change, increasing biological diversity, as well as the diversity of products and markets provides an effect of stability. This includes value chains that rely on a large variety of green commodities and other ecosystem services, such as food, wood construction, biomaterials, biopharmaceuticals, bioenergy, biochemicals, nature tourism and water supply.

Principle 5

Connectivity – Promotion of connectivity and impacts among nature and people.

Principle 6

Adaptive capacity– Building resilience and adaptive capacity of the social-ecological system. Continual learning and innovating enable adaptive capacity and involves capturing and sharing lessons learned from successes and failures locally and elsewhere. Building adaptive capacity involves empowering local decision-making authorities and right-holders.

Principle 7

Harmony – Understand and embrace the local context, respecting laws and customary rights, including traditional knowledge, and finding balance between interests.

Implementing these principles calls for a transformation of our current economic system, including fundamental changes to policies, technologies, organizations, social behavior and markets. Hetemäki et al. (2017), and Stegmann et al. (2020) emphasize the importance of integration of both Circular Economy and Bioeconomy and their impact on global challenges and sustainable development. Muscat et al. (2021) present five ecological principles to guide biomass use towards a circular bioeconomy: (1) safeguarding and regenerating the health of (agro)ecosystems; (2) avoiding non-essential products and the waste of essential ones; (3) prioritizing biomass streams for basic human needs; (4) utilizing and recycling by-products of (agro)ecosystems; (5) using renewable energy while minimizing overall energy use. Mesa et al. (2024) analyzed the circular bioeconomy indicators through a systematic literature review, proposed categorization indicators to help stakeholders in circular bioeconomy projects and outlines a future research agenda focused on enhancing the application of circular bioeconomy indicators across diverse contexts and life cycle stages. This work underscores the need to select tailored sustainability indicators and combine them to generate a specific set of indicators to foster a more integrated approach to sustainability assessment.

The importance of a circular bioeconomy in the context of the sustainable development goals lies in its potential to contribute to climate change mitigation, socio-economic development, and environmental protection by maintaining the value of bio-based products, materials, and resources in the economy for as long as possible. According to Key Sustainability (2023), the UN SDGs are a roadmap for governments, businesses, and civil society to work together to build a better world for future generations.

Applying the Circular bioeconomy principles is most important for the pursuing the 12, 15 and 17 SD goal (Figure 2).



GOAL 12: ENSURE SUSTAINABLE CONSUMPTION AND PRODUCTION PATTERNS

Supporting sustainable management of natural resources and the supply of ecosystem goods and services. Appropriate evaluation and emphasis on the added value of bio-based products and circular bioeconomy concept.



GOAL 15: SUSTAINABLE MANAGED FORESTS, REDUCING DESERTIFICATION, REVERSING LAND DEGRADATION, PREVENTION BIODIVERSITY LOSS

Supporting sustainable forests through community engagement and education to reduce deforestation and by promoting ecosystem health and protection of at-risk species.



GOAL 17: STRENGTHEN MEANS OF IMPLEMENTATION AND REVITALIZE THE GLOBAL PARTNERSHIP FOR SUSTAINABLE DEVELOPMENT

More successful and productive collaboration of different stakeholders (government, public enterprises from forest sector, academic and research institutions, landowners, local communities, NGO) to promote shared goal of sustainable forests.

Figure 2. Importance of circular bioeconomy principles in the pursuit of goals important for sustainable development (Key Sustainability, 2023 – modified by authors)

5. CONCLUSION

It is very important to promote a circular and low-carbon economy, create new local value chains and provide solutions for the current food security and energy independence crisis, while protecting biodiversity and the environment.

Applying circular bioeconomy principles is fundamental to achieving several sustainable development goals:

- sustainable management of natural resources;
- sustainable production and consumption patterns;
- improved resource efficiency;
- reduced waste production and promotion of secondary raw material markets;
- enhanced sustainability throughout the production and supply chain;
- implementation of research, development, innovation and technology outcomes;

Promoting a circular and low-carbon economy is essential for creating new local value chains and addressing the current food security and energy independence crisis, while protecting biodiversity and the environment.

Implementing the bioeconomy concept and applying circular bioeconomy principles of the can help Serbia support the EU's efforts to become the first climate-neutral continent by

2050, within the framework of the European Green Deal. Ongoing commitment and collaboration among diverse stakeholders will be essential for the application of circular bioeconomy principles to achieve sustainable development goals in Serbia.

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