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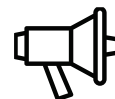


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CONTENTS

BRIEF FEEDBACK ON “AGAT CREDIT” MICROFINANCE ORGANIZATION BASED ON THE REPORT OF “KAPDEPO” INVESTMENT COMPANY: CAVEATS FOR LENDERS (BONDHOLDERS)	16
Abduganiev Abdulaziz Alisher ugli	
IMPLEMENTATION OF EU BEST AGRICULTURAL TRADE PRACTICES IN UZBEKISTAN.....	20
Khulkar Karimova Rakhmanali qizi	
THE ROLE OF FOREIGN DIRECT INVESTMENT IN INCREASING SERVICE EXPORTS OF UZBEKISTAN	26
Jamshid Mirzakhmedov	
THE ROLE AND IMPORTANCE OF FINANCIAL MARKETS IN ECONOMIC DEVELOPMENT	30
Baymanova Mavlyuda Djuraevna, Abdullaeva Shohista, Ubaydullaeva Gulchehra Erkabaevna	
КЛИНИЧЕСКАЯ ОЦЕНКА СОСТОЯНИЯ МЕСТНЫХ ИММУННЫХ МЕХАНИЗМОВ ПОЛОСТИ РТА У ПАЦИЕНТОВ НА ЭТАПАХ ОРТОДОНТИЧЕСКОГО ЛЕЧЕНИЯ	36
Рахимбердыев Рустам Абдунасинович, Сайфулаева Азиза Анваровна	
INTEGRATING AI-BASED CUSTOMER ANALYTICS INTO INNOVATIVE RETAIL MARKETING STRATEGIES	40
Ostonaqulova Gulsaraxon Muhammadyoqub qizi	
FINANCIAL STIMULATION OF INNOVATIVE ACTIVITIES OF ENTERPRISES THROUGH INVESTMENTS	48
Bahriddinov Nodirbek Zamirdinovich	
DIGITAL DENTISTRY: LITERATURE REVIEW	52
Tursunov Begzod Sherzodovich, Zokirova Nodira Sobitovna	
THE LATEST ADHESIVE TECHNOLOGIES IN DENTISTRY	56
Rahimberdiyev Rustam Abdunasirovich, Chinibayeva Ibagul Sarsenbayevna	
ENSURING THE ACCEPTABILITY OF QUANTITATIVE AND QUALITATIVE INDICATORS IN THE EFFECTIVE ORGANIZATION OF HOUSING FUNDS IN KHOREZM	61
Otajonov Tohirjon Khojanazar o'g'li	
WAYS TO IMPROVE CUSTOMS ADMINISTRATION IN THE REPUBLIC OF UZBEKISTAN.....	67
Usmonova Dilfuza Ilhomovna	
CLINICAL ASSESSMENT OF THE STATE OF LOCAL IMMUNE MECHANISMS OF THE ORAL CAVITY IN PATIENTS AT DIFFERENT STAGES OF ORTHODONTIC TREATMENT	72
Rakhimberdiyev Rustam Abdunasirovich, Saifulaeva Aziza Anvarovna	
IMPROVING THE ALGORITHM FOR CONTROLLING THE CUSTOMS TRANSIT INFORMATION SYSTEM E-TRANSIT OF THE REPUBLIC OF UZBEKISTAN	76
Musayeva Shoiraz Azimovna	
DEVELOPMENT TRENDS OF THE AUTOMOTIVE BUSINESS IN UZBEKISTAN	82
Saidov Dilshodbek Razzakovich	
INTEGRATION OF MARKETING STRATEGIES IN RETAIL TRADE ACTIVITIES.....	87
Akramov Toxir Abdiraxmanovich	
CHALLENGES OF ADOPTING ISLAMIC FINANCE WITHIN CONVENTIONAL BANKING SYSTEMS	91
Safarov Shuhrat Ismatovich	
CRM SYSTEMS AND THEIR IMPACT ON THE RESULTS OF MARKETING STRATEGY IN DISTRIBUTION COMPANIES	95
Jamoliddinov Fakhriyor Shodiyor o'g'li	
LEXICAL-SEMANTIC ARCHITECTURE OF MODERN WORDNET SYSTEMS	101
Aynura Axmedova	
METHODOLOGY FOR ANALYZING THE EFFECTIVENESS OF INNOVATIVE PROCESSES AT ENTERPRISES.....	108
Kurbanova Shakhnoza Yuldashbayevna	
COMPANY VALUATION IN MERGERS AND ACQUISITIONS: A STRATEGIC AND GOVERNANCE-BASED APPROACH	113
Lee Illarion Georgievich	

A REVIEW OF THE LITERATURE ON CAD/CAM TECHNOLOGIES IN DENTAL ECTOPROSTHETICS.....	118
Tursunov Begzod Sherzodovich, Hazratqulov Asrbek Ulugbek ugli	
TRENDS AND DIFFICULTIES IN THE INTEGRATION OF DIGITAL TECHNOLOGIES IN ORTHOPEDIC DENTISTRY.....	123
Khojimurodov Burkhon Ravshanovich	
PRIORITY DIRECTIONS FOR IMPROVING THE MECHANISM OF ENHANCING THE ECONOMIC SECURITY LEVEL OF THE KASHKADARYA REGION.....	127
Tuyev Abdurahmon Yusubopvich	
THE ROLE OF PSYCHOPHYSIOLOGICAL TRAINING OF DRIVERS IN REDUCING ROAD TRAFFIC ACCIDENTS.....	132
Uralbayev Anvar Ubaydullayevich	
THE ROLE OF SUSTAINABLE DEVELOPMENT PRINCIPLES IN DEVELOPING GREEN MARKETING STRATEGIES FOR ENTERPRISES.....	135
Sapayev Akhmad Durdibayevich	
MANAGEMENT MODEL OF INFORMATION RESOURCES IN SMALL BUSINESS ENTITIES AND ITS IMPACT ON ECONOMIC EFFICIENCY.....	140
Yo'ldoshev Nodirbek Ne'matjon o'g'li	
WAYS TO DEVELOP THE INVESTMENT ACTIVITY OF COMMERCIAL BANKS THROUGH THE SECURITIES MARKET.....	145
Yuldashev Fozil Turapovich	
INTERNATIONAL EXPERIENCE IN THE USE OF CROSS-BORDER REMITTANCES IN THE DEVELOPMENT OF THE NATIONAL ECONOMY.....	152
Gimranova O. B.	
FREE ECONOMIC ZONES AND FOREIGN INVESTMENT.....	158
Sheraliyeva Saida Azatovna	
ISSUES OF FORMATION AND MANAGEMENT OF PRODUCT ASSORTMENT IN RETAIL ENTERPRISES.....	162
Safarov Baxtiyor Djurakulovich	
STATE SUPPORT IN THE REPUBLIC OF UZBEKISTAN FOR ORGANIZING SHORT-TERM SCIENTIFIC INTERSHIPS OF YOUNG SCIENTISTS ABROAD.....	167
Kabashev Tairjon	
LEGAL FOUNDATIONS OF DIVIDEND POLICY: EVIDENCE FROM DEVELOPED AND DEVELOPING COUNTRIES.....	172
Eshev Furqat A'zamovich	
IMPROVING SMART CITY GOVERNANCE BASED ON DIGITAL PLATFORMS: A HUMAN-CENTERED APPROACH.....	176
Rakhimova Madina Shukhrat qizi	
THE INVESTMENT CLIMATE AND ITS IMPACT ON THE DEVELOPMENT OF FOREIGN TRADE: A CASE STUDY OF UZBEKISTAN.....	182
Mirzamukhamedova Shakhzoda Akmaljon qizi	
CONSUMER CREDITS IN USA.....	187
Zunnunova Xulkar Muxtorovna	
INSTITUTIONAL BASES AND FUNCTIONAL MECHANISMS OF CONTROLLING IN THE EFFECTIVE MANAGEMENT OF THE RAILWAY TRANSPORT SYSTEM.....	194
Kayumov Zafarbek Odil ugli	
ANALYSIS OF CUSTOMER RELATIONSHIP MANAGEMENT PROCESSES AND PROBLEMS IN SERVICE ENTERPRISES.....	199
Ismailova Ma'mura Eldorovna	
PROBLEMS FACED BY COMMERCIAL BANKS IN BANK RISK MANAGEMENT AND WAYS TO ADDRESS THEM.....	205
Qayimova Ismigul Ilhom qizi, Tuxsanov Eldor Dilmurod o'g'li	

DESIGN OF ENGINEERING STRUCTURES AND CONSTRUCTION OF A REGIONALLY BRANCHED HIGHWAY COMPLEX.....	209
Yakubov Maqsadkhon Sultaniyazovich, Norinov Muhammadyunus Usibjonovich, Zikraev Akmaljon Alimovich	
THE ROLE OF COOPERATIVE RELATIONS IN THE SUSTAINABLE DEVELOPMENT OF THE REGIONAL TOURISM MARKET	216
Mirzabayev Jamshid Irkinovich	
THE ROLE OF FREE ECONOMIC ZONES IN IMPROVING THE INVESTMENT CLIMATE OF THE KHOREZM REGION.....	221
Masharipov Sardorbek Farxadovich	
ANALYSIS OF ORGANIZATIONAL AND ECONOMIC INDICATORS OF INNOVATIVE POTENTIAL MANAGEMENT IN TEXTILE INDUSTRY ENTERPRISES	228
Khosilov Shavkat Bekmurodovich	
MAIN WAYS TO DEVELOP INTEREST RATE RISK MANAGEMENT PRACTICES IN COMMERCIAL BANKS OF UZBEKISTAN	234
Seytnazarov Daniyar Baxadirovich	
THEORETICAL AND METHODOLOGICAL ASPECTS OF ESG STRATEGY IMPLEMENTATION.....	239
Xusenova Mexrangiz	
ADVANTAGES OF USING TRADITIONAL CONSTRUCTION MATERIALS IN THE CONSTRUCTION OF LOW-RISE RESIDENTIAL BUILDINGS.....	244
Otabek Hakimovich Toshniyozov	
THE METHODOLOGY FOR SELECTING AND INTEGRATING DATA SOURCES AND USING OFFICIAL STATISTICAL ENTERPRISE DATA, QUESTIONNAIRES, AND PROXY INDICATORS IN FORMING THE EMPIRICAL BASIS OF THE STUDY.....	247
Usmonov Maxsud Tulqin o'g'li, Qodirov Farrux Ergash o'g'li	
PRACTICAL SOLUTIONS FOR THE PLACEMENT OF MULTI-STOREY GREENHOUSES IN INDUSTRIAL AREAS	254
Abdujabbarova Maktuba To'xtasinovna, Salayeva Ma'rifat Yashin qizi	
INNOVATIONS IN DENTISTRY: DIGITAL SOLUTIONS FOR MODERN PRACTICE	258
Sadriyev Nizom Najmiddinovich, Usarov Nuriddin	
ARCHITECTURAL AND PLANNING PRINCIPLES FOR THE ORGANIZATION OF MANAGEMENT SERVICE COMPANY BUILDINGS IN THE URBAN DEVELOPMENT CONTEXT OF UZBEKISTAN.....	263
Adilova Madina Sobirovna, Khusainova Gulhayo Norbek qizi	
METHODS OF SEDATIVE THERAPY IN DENTISTRY (REVIEW OF LITERATURE)	268
Vasitov Otabek, Burkhonova Zarafruz Kobilovna	
SPECIFIC FEATURES OF THE FORMATION AND OPERATION OF A REGIONAL TOURISM CLUSTER.....	272
Ollanazarov Bekmurod Davlatmuratovich	
ESTIMATING ELECTRICITY CONSUMPTION OF PUMPING PLANTS IN IRRIGATION SYSTEMS.....	277
Urishev Omadjon, Ersin Akyuz, Gul Metin, Quvonchbek Quvondiqov	
ANALYSIS OF MANUFACTURING METHODS AND TECHNIQUES FOR MULTI-FACETED SHAFTS.....	287
Khasanov B.M., Valikhonov D.A., Abdullaev B.I., Alibekov R.K.	
DENTAL IMPRESSIONS AND GYPSUM MODEL SCANNING ACCURACY USING A LASER SCANNER ARE COMPARED	292
Akhmadov Inomjon Nizomitdinovich, Matchanov Boburbek Ulug'bekovich	
ORAL FLUID BIOCHEMICAL AND PHYSICOCHEMICAL CHARACTERISTICS IN CHILDREN WITH ABNORMALITIES AFTER URANOPLASTY	297
Anvarova Muhtasar Anvarovna	
INDUSTRIAL DIVERSIFICATION AS A KEY FACTOR IN ENHANCING UZBEKISTAN'S EXPORT POTENTIAL.....	302
Kholikova Rukhsora Sanjarovna, Rizayeva Ezoza Bahodir kizi	
INNOVATIVE APPROACHES TO REDUCING UNEMPLOYMENT IN UZBEKISTAN'S ECONOMY AND THEIR IMPACT ON SUSTAINABLE ECONOMIC GROWTH.....	308
Botirova Sarvinov Boburjon kizi	

INVESTMENT ATTRACTIVENESS OF SYRDARYA REGION: AN ANALYSIS OF DEVELOPMENT DYNAMICS AND STRATEGIC OPPORTUNITIES	313
Mamatkulova Mukhlisa Komiljon kizi	
THE EVOLUTION OF UZBEKISTAN'S FISCAL POLICY DURING 2020–2025 AND ITS CONTRIBUTION TO SUSTAINABLE ECONOMIC GROWTH	318
Saidakbarova Madinakhan Anisbekovna	
THE ROLE OF MACROECONOMIC MECHANISMS AND FOREIGN TRADE POTENTIAL IN ACHIEVING INCLUSIVE ECONOMIC GROWTH IN UZBEKISTAN.....	324
Rahimov Eshmurod Normuradovich	
PROMOTING SUSTAINABLE GROWTH THROUGH STRENGTHENING EXPORT POTENTIAL IN THE NATIONAL ECONOMY	332
Berdivaliyeva Madina Komiljon kizi	
THE ESSENCE AND IMPORTANCE OF FOREIGN TRADE POLICY IN MODERN ECONOMIC DEVELOPMENT	339
Askarova Mavluda Turabovna	
THE ONTOLOGY OF WAGES: HUMAN CAPITAL, DIGITALISATION, AND INSTITUTIONAL MEDIATION IN A TRANSITIONAL ECONOMY.....	345
Zakhidov Azizbek Rustamovich	
FORMATION OF OFFICIAL SALARIES OF CIVIL SERVANTS ON THE BASIS OF A UNIFIED PRINCIPLE: ANALYSIS OF THE CURRENT TARIFF GRADES	351
Oqiljonov Azizjon Olimjon o'g'li	
MULTI-INDICATOR SYSTEM FOR ASSESSING THE FINANCIAL INDEPENDENCE OF LOCAL BUDGETS AND THE METHODOLOGY FOR FORMING AN INTEGRAL INDEX	356
Muxitdinov Sidikkhoja Akobirkhoja ugli	
THEORETICAL BASIS FOR OBTAINING ORGANOMINERAL FERTILIZER IN THE SYSTEM $2K^+, 2NH_4^+ // 2Cl^-, SO_4^{2-} - H_2O$	361
Koshanova B.T., Toshtemirov A.B., Erkaev A.U., Reimov A.M.	
DIRECTIONS FOR IMPROVING THE INCENTIVE SYSTEM IN MANAGING FINANCIAL RESOURCES OF LOCAL BUDGETS IN THE SOCIO-ECONOMIC DEVELOPMENT OF REGIONS.....	365
Imanova Umida Bakhtiyorovna	
DIRECTIONS FOR USING ARTIFICIAL INTELLIGENCE TO ENHANCE ECONOMIC EFFICIENCY OF MANUFACTURING PROCESSES.....	370
Rikhsiboyev Nozimbek Abdurasul ugli	
INSTITUTIONAL AND ECONOMIC MECHANISMS FOR DEVELOPING KNOWLEDGE AND COMPETENCIES IN REGIONAL HUMAN CAPITAL DEVELOPMENT	375
Bozorova Madina Raxmat qizi	
DEVELOPMENT OF MECHANISMS FOR IMPLEMENTING A SUSTAINABLE DEVELOPMENT AND GREEN GOVERNANCE MODEL IN THE REGIONS	379
Siradjev Ilkhom Tokhirovich	

DEVELOPMENT OF MECHANISMS FOR IMPLEMENTING A SUSTAINABLE DEVELOPMENT AND GREEN GOVERNANCE MODEL IN THE REGIONS

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Abstract. This article analyzes the issues of ensuring sustainable regional development and implementing a green governance model. The study substantiates the need to modernize territorial management systems in the context of increasing global climate change, resource scarcity, and evolving environmental challenges. It also highlights the scientific and methodological aspects of rational resource use, improving energy efficiency, waste management, and optimizing management processes based on digital technologies. The research findings contribute to maintaining a balance between environmental and economic efficiency at the regional level and to the formation of a green growth model.

Keywords: sustainable development, green governance, regional development, green economy, environmental security, rational resource use, energy efficiency, waste management, digital technologies, green growth model.

Annotatsiya. Mazkur maqolada hududlarda barqaror rivojlanishni ta'minlash va yashil boshqaruv modelini joriy etish masalalari tahlil qilinadi. Tadqiqotda global iqlim o'zgarishi, resurslar tanqisligi hamda ekologik omillar kuchayib borayotgan sharoitda hududiy boshqaruv tizimlarini modernizatsiya qilish zarurati ilmiy jihatdan asoslab berilgan. Shuningdek, resurslardan oqilona foydalanish, energiya samaradorligini oshirish, chiqindilarni boshqarish hamda raqamli texnologiyalar asosida boshqaruv jarayonlarini optimallashtirishning ilmiy-uslubiy jihatlari yoritilgan. Tadqiqot natijalari hududiy darajada ekologik va iqtisodiy samaradorlik o'rtasidagi muvozanatni ta'minlash hamda "yashil o'sish" modelini shakllantirishga xizmat qiladi.

Kalit so'zlar: barqaror rivojlanish, yashil boshqaruv, hududiy rivojlanish, yashil iqtisodiyot, ekologik xavfsizlik, resurslardan oqilona foydalanish, energiya samaradorligi, chiqindilarni boshqarish, raqamli texnologiyalar, yashil o'sish modeli.

Аннотация. В данной статье анализируются вопросы обеспечения устойчивого развития регионов и внедрения модели «зеленого управления». В исследовании научно обоснована необходимость модернизации систем территориального управления в условиях усиления глобальных климатических изменений, дефицита ресурсов и экологических факторов. Также раскрываются научно-методические аспекты рационального использования ресурсов, повышения энергоэффективности, управления отходами и оптимизации управленческих процессов на основе цифровых технологий. Результаты исследования способствуют обеспечению баланса между экологической и экономической эффективностью на региональном уровне, а также формированию модели «зеленого роста».

Ключевые слова: устойчивое развитие, зеленое управление, региональное развитие, зеленая экономика, экологическая безопасность, рациональное использование ресурсов, энергоэффективность, управление отходами, цифровые технологии, модель зеленого роста.

INTRODUCTION

At present, the issue of ensuring sustainable development in regions and implementing a green governance model has become extremely relevant in the context of global climate change, limited resources, and the increasing impact of environmental factors. Since the traditional model of economic development is largely based on intensive resource consumption, the need to maintain ecological balance in regions and ensure the rational use of natural resources is steadily increasing. Therefore, there is a growing demand for new governance approaches that integrate economic growth with environmental sustainability.

The relevance of this issue is also explained by the necessity to enhance the effectiveness of governance

systems at the regional level. The efficiency of resource utilization, waste management practices, energy conservation, and the level of adoption of green technologies vary significantly across regions. This requires the improvement of sustainable development mechanisms based on a unified and systematic approach. In this regard, the green governance model emerges as an important tool for modernizing regional economies and ensuring environmental security.

The aim of this study is to improve the mechanisms for implementing a sustainable development and green governance model in regions, thereby ensuring a balance between environmental and economic efficiency. The study focuses on integrating environmental factors into governance systems, promoting rational resource use, increasing energy efficiency, and optimizing management processes through digital technologies. As a result, a scientific and practical foundation will be developed for forming a "green growth" model in regional development.

LITERATURE REVIEW

Issues related to sustainable development in regions and the implementation of green governance models are widely discussed in modern economic literature and are closely associated with the concepts of sustainable development and the green economy. Within this framework, ensuring a balance between economic growth, environmental security, and social well-being is considered a key scientific challenge.

Among foreign scholars, Herman Daly, one of the founders of the theory of a sustainable economy, substantiates the ecological limits of economic development and emphasizes the necessity of rational and efficient resource use [1]. Nicholas Stern analyzes the economic impacts of climate change and demonstrates that development strategies incorporating environmental factors can also yield significant economic benefits [2]. In addition, the Sustainable Development Goals (SDGs), developed by the United Nations, provide an important framework for implementing green governance and integrating environmental considerations into regional development [3].

Scholars from CIS countries have also conducted significant research in this area. In particular, Sergey Bobylev highlights the priority of rational resource use and strengthening environmental sustainability in the transition to a green economy [4]. Viktor Danilov-Danilyan emphasizes that ensuring environmental security is an integral component of the state governance system [5]. Furthermore, Alexander Auzan underscores the important role of state and societal institutions in implementing green governance based on an institutional approach [6].

Uzbek scholars have also extensively studied issues of regional development and green governance. Specifically, Qodir Abdurahmonov scientifically substantiates the necessity of efficient resource utilization and modernization of governance systems in regional economic development [7]. A. Soliyev notes that sustainable development in regional economies can be achieved by incorporating environmental factors into economic planning and management [8].

Overall, the existing scientific literature confirms that the implementation of green governance models in regions is one of the key factors in ensuring sustainable development. At the same time, there remains a need to further deepen research on integrated management of environmental and economic indicators, rational resource use, and the widespread adoption of innovative technologies.

RESEARCH METHODOLOGY

In this study, regional indicators were comprehensively examined based on the concepts of sustainable development and green governance. Using statistical, comparative, and systemic analysis methods, the levels of resource utilization, energy efficiency, and waste management were evaluated.

Through an econometric approach, the interrelationships between environmental and economic indicators were identified and their impact was analyzed on a scientific basis. As a result, scientific and practical recommendations were developed aimed at improving and optimizing the organization of regional governance systems.

ANALYSIS AND RESULTS

The need to comprehensively integrate institutional, economic, and technological mechanisms for effectively addressing existing challenges in implementing sustainable development and green governance models in regions is explained by the complex and multifactorial nature of modern economic systems. In particular, ensuring environmental balance, efficient resource utilization, and the sustainable continuation of economic growth simultaneously requires decision-making at different levels of governance. This indicates that these processes can be implemented more effectively not within isolated mechanisms, but through their

integrated application.

Institutional mechanisms strengthen the regulatory and legal framework as well as the governance system; economic mechanisms form incentives and sources of financing; and technological mechanisms facilitate the effective organization of digital governance, monitoring, and analytical processes. Therefore, the integration of these mechanisms serves as an important factor in enhancing a systemic approach to regional development, improving management efficiency, and widely implementing the principles of the green economy in practice (Figure 1).

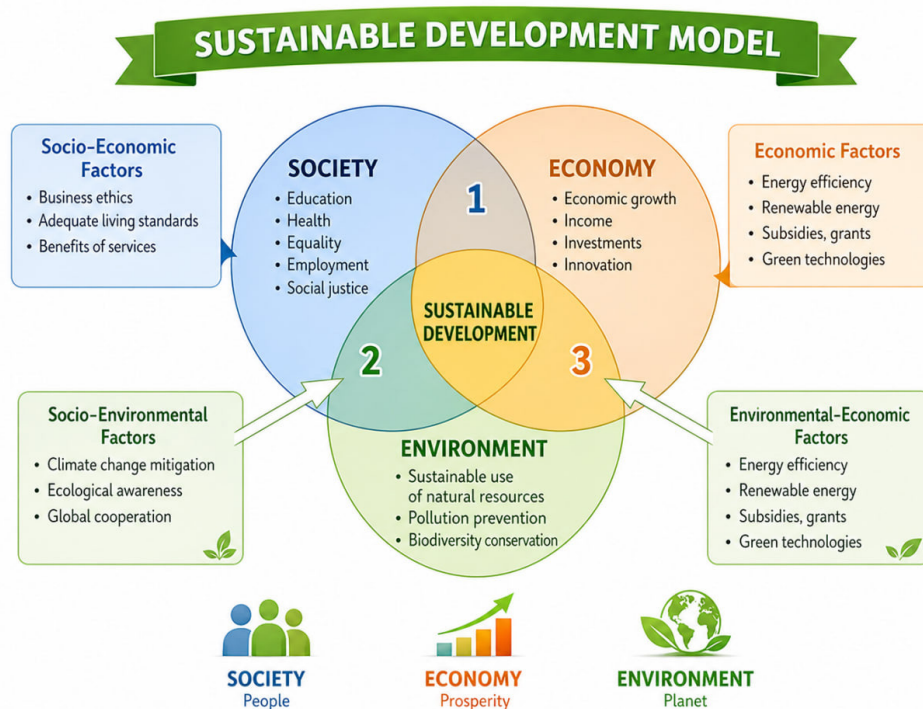


Figure 1. An Integrated Socio-Economic-Environmental Model for Ensuring Sustainable Development in Regions (Based on the Agile-Green-Digital Approach)¹

Figure 1 illustrates the classical “Triple Bottom Line” model of sustainable development (Society–Economy–Environment). In this model, the three core components—society, economy, and environment—intersect to form the concept of sustainable development at the center. The model demonstrates the necessity of harmonizing efficient resource utilization, economic growth, and social well-being based on ecological balance in regional governance.

The society component encompasses the main directions of social development. It includes indicators such as living standards, education, employment, and equal opportunities, highlighting the significant role of human capital in regional development. This element provides a foundation for the effective functioning of economic and environmental systems by ensuring social stability.

The economy component includes economic growth, profitability, cost optimization, and research and development activities. This direction contributes to increasing production efficiency and enhancing investment attractiveness in regional development. At the same time, the model emphasizes that economic growth must be balanced with environmental and social factors.

The environment component covers the rational use of natural resources, environmental protection, and biodiversity conservation. This element forms the ecological basis of sustainable development and contributes to balancing and reducing the environmental impact of economic activities.

The intersection of society and economy gives rise to factors such as business ethics, fair trade, and the protection of employee interests. This contributes to the formation of a socially responsible business environment in regional development.

The intersection of society and environment includes concepts such as environmental protection policy, ecological justice, and global responsibility. This fosters the development of environmental awareness and ecological culture within society.

¹ Muallif ishlanmasi

The intersection of environment and economy is represented by energy efficiency, renewable energy sources, subsidies, and green technologies. This area reflects the formation of “green economy” mechanisms.

At the central intersection of all three components, sustainable development emerges. Here, economic growth, ecological balance, and social well-being are integrated and manifested as a systemic outcome.

The side blocks presented in the figure illustrate the key factors associated with each intersection. This enhances the clarity of the model and highlights the instruments applicable in each direction.

At the bottom of the figure, the concept of “Society (People) – Economy (Profit) – Environment (Planet)” is visually represented, reflecting the three main pillars of sustainable development.

This model serves as an important methodological foundation for developing sustainable development strategies in regional governance systems by ensuring a comprehensive approach and integrating economic, social, and environmental processes.

Overall, the figure represents a conceptual model that reveals the interconnection between society, economy, and environment in ensuring sustainable development in regions. It forms a comprehensive development mechanism through efficient resource utilization, improvement of social well-being, and maintenance of ecological balance.

CONCLUSION AND RECOMMENDATIONS

The analysis of the “Triple Bottom Line” model demonstrates that achieving sustainable development in regions is closely linked to maintaining a balance between society, economy, and the environment. The integration of these three components ensures economic growth, social well-being, and environmental sustainability simultaneously. The research findings confirm that a development model based solely on economic indicators cannot fully guarantee long-term sustainable outcomes. Therefore, a comprehensive approach that incorporates environmental and social factors is of critical importance. In particular, rational resource use, environmental protection, and the development of human capital emerge as priority areas in regional governance.

Based on these conclusions, it is essential to integrate the “People–Profit–Planet” principles into regional governance systems, consistently develop policies aimed at ensuring environmental sustainability, and improve the efficiency of resource utilization. In addition, strengthening ecological balance through the adoption of green technologies, expansion of renewable energy sources, and improvement of waste management systems is highly recommended.

From a social perspective, enhancing employment, developing the education system, and expanding social infrastructure are crucial for strengthening human capital. Furthermore, implementing monitoring systems based on sustainable development indicators at the regional level and ensuring that management decisions are made on a scientific basis will contribute to increasing the effectiveness of sustainable development strategies.

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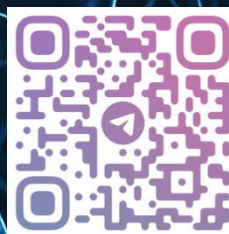
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