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ECOLOGY, ECONOMICS, EDUCATION AND LEGISLATION
ISSUE 5.1

- ❖ **ECOLOGY AND ENVIRONMENTAL PROTECTION**
 - ❖ **ENVIRONMENTAL ECONOMICS**
- ❖ **EDUCATION AND ACCREDITATION IN GEOSCIENCES**
- ❖ **ENVIRONMENTAL LEGISLATION, MULTILATERAL
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Preparation of the proceedings and organization: December 2020 – August 2021
Conference: 16-22 August 2021

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FOREWORD

The International Multidisciplinary Scientific GeoConferences SGEM are focused on GLOBAL WARMING, CLIMATE CHANGE, CO₂ REDUCTION, BIODIVERSITY, AND GREEN TECHNOLOGIES FOR A SUSTAINABLE FUTURE.

The International Multidisciplinary Scientific GeoConference SGEM is organized annually by **SWS Scholarly Society** and the partners:

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The Proceedings of the Conference are published since 2001.

The scientific papers presented during the conference in the period of 16—22 August 2021 are published in 6 thematic issues:

- ✓ Science and Technologies in Geology, Exploration and Mining
- ✓ Informatics, Geoinformatics and Remote Sensing
- ✓ Water Resources. Forest, Marine and Ocean Ecosystems
- ✓ Energy and Clean Technologies
- ✓ Ecology, Economics, Education and Legislation Ecosystems
- ✓ Nano, Bio, Green and Space - Technologies for a Sustainable Future

The world is wild, difficult to forecast, and not arranged according to the precise boundaries of our academic disciplines. One good example is our most pressing problem, one of the conference topics: **the Global Warming**. To fight it, we need an understanding of the climate, but not only, we must also work in the areas, close to the problem, as mining exploration, water resources, forest, marine and ocean ecosystems, energy, green technologies, etc, to name a few.

Any megatrend-sized problem is multifaceted, and no discipline is going to solve any of them alone. That is why we need cooperation and bridging gaps between main areas in geosciences. Bringing researchers from different disciplines together to solve real-life problems helps them get a much fuller picture of the surrounding world – and solve the complex challenges no matter the size. **This is the way to find decisions for decarbonization, global warming, biodiversity, and a sustainable future for our planet.**

This forum gathers researchers from two or more disciplines and put them work together on common issues - by developing their interdisciplinary goals, they firmly built the fundament of one common conceptual framework. Thus we confirm the multidisciplinary approach of the modern geosciences, which is the essence of our GeoConferences.

Acknowledgments

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CONFERENCE PROCEEDINGS CONTENTS

ECOLOGY AND ENVIRONMENTAL PROTECTION

1. **A METHODOLOGICAL APPROACH FOR ACCOUNTING INFLUENCE OF LIGHTING CONDITIONS IN ASSESSING THE CONDITIONS OF NATURAL ECOSYSTEMS BY SATELLITE DATA DURING ECOLOGICAL RESTORATION**, Sergey Ostapenko, Svetlana Mesyats3
2. **ADVANCED WASTEWATER TREATMENT USING NANOMAGNETITE TO REMOVE LEAD, COPPER AND ZINC IONS**, Ioana Andreea Chirea, Alexandra Georgiana Vatui, Adelina Ioana Matei, Andreea Nicoleta Ghita, Lidia Licu 11
3. **ANALYSIS OF THE NEAR INFRARED (NIR) SPECTROSCOPY METHOD USED FOR TEXTILE WASTE SORTING**, Assist. Prof. Dr. Oana-Cristina Modoi, Dr. Iulia Ajtai, Assist. Prof. Dr. Carmen Roba, PhD stud. Alexandru Mereuta..... 19
4. **ANALYSIS OF THE POSSIBILITY OF IMPLEMENTING CARBON DIOXIDE SEQUESTRATION PROJECTS IN RUSSIA BASED ON FOREIGN EXPERIENCE**, Elizabeth Shchirova, Assoc. Prof. Dr. Anna Tsvetkova, Dr. Nadejda Komendantova.....27
5. **APPLICATION OF CHEMICAL AND HOLISTIC METHODS IN QUALITY RESEARCH OF BEETROOTS (BETA VULGARIS L. VAR. CONDITIVA ALEF.) WITHIN DIFFERENT AGRICULTURAL SYSTEMS**, Daiva Sileikiene, Laima Cesoniene.....35
6. **ASSESSMENT OF THE IMPACT OF SOLID WASTE ON SOIL CONTAMINATION (EXAMPLE OF KAKHETI REGION, GEORGIA)**, Laura Kavelidze, Besik Kalandadze43
7. **BEST AVAILABLE TECHNIQUES, GENERAL BINDING RULES AND DECARBONISATION OF THE CONSTRUCTION MATERIALS INDUSTRY**, Assoc. Prof. Dr. Irina Tikhonova, Prof. Dr. Sci. Tatiana Guseva, Kirill Shchelchkov, Prof. Dr. Sci. Ekaterina Potapova, PhD Eugene Averochkin.....51
8. **THE ADDITION OF BIOCHAR TO CHICKEN MANURE COMPOSTS ENHANCES ANTIBIOTIC RESISTANCE OF COMPOST MICROORGANISMS**, Dr. Natalia Danilova, Kamalya Karamova, Prof. Polina Galitskaya59
9. **CHANGES IN AQUATIC ECOSYSTEMS TROPHIC AND ECOLOGICAL STATE PARAMETERS WITH VARIOUS ANTHROPOGENIC IMPACTS BASED ON SIMULATION**, Assoc. Prof. Dr. Victor Tretyakov, Prof. Dr. Vasilij Dmitriev, Ulyana Streltsova, Stepan Klubov, Iuliia Rozhkova67

10. MAJOR ACCIDENTS AND WASTES, Prof. Dr. Pavel Danihelka	75
11. CHEMICAL PECULIARITIES OF THE WATER RECOURSES IN THE UPPER PART OF OGOSTA RIVER CATCHMENTS, NORTHWESTERN BULGARIA, Assoc. Prof. Dr. Georgi Zhelezov	83
12. CLASSIFICATION PRINCIPLES OF NATURAL AND TECHNOGENIC RISKS ESTIMATION IN NATURE MANAGEMENT FOR ARCTIC COASTAL ECO-SOCIO-ECONOMIC SYSTEMS, Prof. DSc. George Gogoberidze, Dr. Ekaterina Rumiantceva, Prof. DSc. Mikhail Shilin, Assoc. Prof. Dr. Valery Abramov	91
13. COMPARATIVE ASSESSMENT OF THE ECOLOGICAL STABILITY OF SOILS TO SANITARY AND BIOLOGICAL CONTAMINATION BY ANIMAL WASTE, Lydia Stepanova, Aza Pisareva, Nikolay Elizarov, Tatyana Bolmat	99
14. DETERMINATION OF THE COASTAL ZONE OF DANUBE RIVER IN BULGARIA, Assoc. Prof. Dr. Georgi Zhelezov, Assist. Prof. Dr. Velimira Stoyanova	109
15. DETERMINATION OF TURBULENT ZONES FOR FORECASTING THE DISPERSED ZONES OF ANTHROPOGENIC IMPURITIES, Dr. Elena Andreeva, Prof. Dr. Sergey Andreev, Assoc. Prof. Anna Parshina.....	117
16. ECOETHICS AND RESPONSIBILITY TOWARDS THE PLANET IN THE REFLECTION OF SELECTED THEORISTS, Assoc. Prof. Dr. Marian Ambrozy, Assoc. Prof. Dr. Tetiana Bukoros.....	125
17. ECOLOGICAL CONDITION AND PROBLEMS OF USING THE SOIL COVER OF ZAPORIZHZHIA REGION (SOUTH OF UKRAINE), Assist. Prof. Tetiana Zavialova	133
18. ECOLOGICAL IMPERATIVE IN INFORMATION-PHILOSOPHICAL DETERMINATIONS OF CRITICAL THINKING, Prof. Dr. Olena Troitska	143
19. ECOTOXICOLOGICAL RISK ASSESSMENT METHODOLOGY FOR CONTAMINATED SOIL AND GROUNDWATER, PhD stud. Alexandru Florin Simion, PhD Marius Kovacs, PhD Angelica Nicoleta Calamar, Eng. Ionut Dragoi, Eng. Catalina Ghita.....	149
20. EFFECT OF GROWING INTERMEDIATE CROPS PRONE TO FROST KILL ON THE RETENTION AND INCREASE OF N SUPPLY IN THE SOIL, Ing. Antonin Kintl, PhD Jakub Elbl, Ing. Tereza Hammerschmiedt, Ing. Igor Hunady, Ing. Martin Brtnicky	157

21. EFFECT OF PREPARATION PROCEDURE ON FORMATION OF CERIUM AND MANGANESE OXIDES, Assist. Prof. Dr. Gloria Issa, Assist. Prof. Dr. Radostina Ivanova, Assoc. Prof. Dr. Momtchil Dimitrov, Prof. DSc. Daniela Kovacheva, Prof. DSc. Tanya Tsoncheva	165
22. ENVIRONMENTAL CHALLENGES IN THE DEVELOPMENT OF THE PRODUCING ECONOMY IN RUSSIA, PhD Viacheslav Nizovtsev, PhD Natalia Erman, Prof. Dr. Valerian Snytko, Prof. Dr. Vladimir Svetlosanov	173
23. ENVIRONMENTAL CONSTRAINTS ON URBAN DEVELOPMENT, Assoc. Prof. PhD Antonina Shepeleva, Assoc. Prof. PhD Ksenia Shelest, Assoc. Prof. PhD Igor Sergeev, PhD Anastasia Glebova, Ivan Shepelev.....	181
24. ENVIRONMENTAL FACTOR WATER AND ANTHROPIC PRESSURES THAT INFLUENCE ECOSYSTEMS FROM NATURA 2000 SITE ROSCIO434 SIRETUL MIJLOCIU, PhD Nicoleta-Nona Ardeleanu, Dr. Iuliana-Gabriela Breabăn.....	189
25. ENVIRONMENTALLY FRIENDLY DEVELOPMENT OF FERTILIZER PRODUCTION: MODERNIZING TECHNOLOGY AND EQUIPMENT, PhD Andrey Malyavin, PhD Alexandr Popov, Vera Kostyleva, Maksim Tsikin	197
26. EVENT APPROACH IN NATURE USE IS THE BASIS OF HISTORICAL AND GEOECOLOGICAL PERIODIZATION, Assoc. Prof. PhD Liudmila Vampilova	205
27. FEATURES OF ASSESSMENT OF CLIMATE COMFORT OF COASTAL TERRITORIES (ON THE EXAMPLE OF SOCHI AND AZOV, RUSSIA), Dr. Elena Andreeva, Prof. Dr. Sergey Andreev, Assoc. Prof. Anna Parshina.....	213
28. FIRST GENETIC CONFIRMATION OF NYMPHAEA TETRAGONA IN LATVIA, PhD Gunta Jakobsons, PhD Anita Osvalde, PhD Dainis Edgars Rungis, MSc. Andrejs Svilans	221
29. FORMING CIRCULAR ECONOMY LINKS IN CHEMICAL INDUSTRY: LIME, CAUSTIC ASH, SALT AND GYPSUM PRODUCTION IN THE URALS, Assoc. Prof. Dr. Irina Tikhonova, Prof. Dr. Sci. Tatiana Guseva, Prof. Dr. Sci. Ekaterina Potapova, Kirill Shchelchkov	229
30. FROM A CONCEPTUAL RESTRUCTURING OF THE UNDERSTANDING OF ENVIRONMENTAL ETHICS - TO PHILOSOPHICAL REPRESENTATIONS AND ACTIONS, Prof. Dr. Olena Troitska, Assoc. Prof. Alla Krylova, Assoc. Prof. Tatyana Dyuzhikova, PhD Dmytro Vakalo, Prof. Dr. Tamara Troitska.....	237
31. GREEN COMPETITIVENESS AS A REGIONAL BUSINESS STRATEGY, Assoc. Prof. Kliment Naydenov	245

32. HABITATS LOST: ANALYSIS OF THE EUTROPHICATION MAGNITUDE AT A PROTECTED COASTAL LAKE IN BULGARIA USING SATELLITE AND DRONE IMAGERY, Dr. Bogdan Prodanov, Dr. Radoslava Bekova , Dr. Iliyan Kotsev, Viktoriya Vachkova.....	253
33. IMPACT OF TECHNOGENIC RUNOFF FROM THE TERRITORY OF THE MINING COMPLEX ON NATURAL WATER BODIES, Assoc. Prof. PhD Nina Brodskaya, Assoc. Prof. PhD Liudmila Vampilova, Prof. Dr. Alexandra Sokolova, Assoc. Prof. PhD Olga Marinina	261
34. INFLUENCE OF COAL MINING ON THE CONTENT OF MICROELEMENTS IN THE ENVIRONMENT AND HUMAN BIOSUBSTRATES IN THE REPUBLIC OF SAKHA (YAKUTIA), Dr. Natalia Borisova, Assist. Prof. Uliana Antipina, Assist. Prof. Sardana Markova	269
35. INFLUENCE OF VARIOUS USE OF LAND RESOURCES ON THE GEOCHEMISTRY OF BOTTOM SEDIMENTS OF THE RIVER NETWORK OF THE KALININGRAD REGION, Assoc. Prof. Elena Demenchuk, Assoc. Prof. Fatima Tseckoeva, MSc. Arina Klyashtornaya, Senior Lecturer Natalia Okomelko, Prof. Eugene Chepurin	275
36. INTEGRATED MONITORING AS THE BASIS OF AN INFORMATION SYSTEM TO SUPPORT DECISION-MAKING ON THE RESTORATION OF NATURAL ECOSYSTEMS DISTURBED DURING THE DEVELOPMENT OF GEORESOURCES, Svetlana Mesyats, Aleksey Petrov	285
37. INTENSIFICATION OF THE PROCESSES OF DESTRUCTION OF ACTIVE PHARMACEUTICAL SUBSTANCES IN WASTEWATER USING COMBINED HYDRODYNAMIC AND PHOTOCATALYTIC TREATMENTS, Assoc. Prof. Andrei Kurbatov, Assoc. Prof. Evgenii Kuzin, Assoc. Prof. Natalia Ivantsova, MSc. Margarita Vetrova, Iliia Sitnikov	293
38. LOW-CARBON DEVELOPMENT: CHALLENGES FOR RUSSIA, Prof. Dr. Olga Kudryavtseva, Anastasiia Baraboshkina	301
39. MERCURY IN THE BOTTOM SEDIMENTS OF THE CASCADE WATER SYSTEM OF THE AZOV SEA BASIN, Assoc. Prof. Anna Mikhailenko, Prof. Yury Fedorov, Assoc. Prof. Irina Dotsenko	307
40. MODELING OF FINE MINERAL PARTICLE AGGREGATION TO REDUCE ENVIRONMENTAL RISK IN MINING INDUSTRY, Sergey Ostapenko, Natalia Ovchinnikova, Svetlana Mesyats	315
41. MODELING OF TEMPERATURE FIELD FOR OBTAINING LIGATURES IN Fe-B SYSTEM FROM METALLURGICAL WASTE, Dr. Levan Antashvili, Dr. Garegin Zakharov, Dr. Irakli Maisuradze, Dr. Zurab Aslamazashvili, Dr. George Mikaberidze	323

42. NATURE-BASED SOLUTIONS IN INDUSTRIAL ENVIRONMENTAL MONITORING PROGRAMMES , Assoc. Prof. Dr. Irina Tikhonova, Prof. Dr. Sci. Tatiana Guseva	335
43. OXIDATIVE DAMAGE IN ZEBRAFISH EXPOSED TO ENVIRONMENT REALISTIC CONCENTRATIONS OF ROUNDUP AND CHLORPYRIFOS , Prof. Dr. Halina Falfushynska, PhD stud. Ihab Khatib, Assoc. Prof. Dr. Oksana Bodnar, PhD stud. Oksana Horyn, Nadiia Kasianchuk.....	343
44. PARAMETERS OF MINERAL METABOLISM IN PLANTS OF THE PLAST REGION (CHELYABINSK OBLAST, RUSSIA) , Dr. Vladimir Safonov, Margarita Samburova, Emil Salimzade, Tatyana Bratashova.....	351
45. PHENOLOGY OF SPRING BARLEY (HORDEUM VULGARE) CULTIVARS REFLECT ADAPTION TO CLIMATE CHANGE: CASE STUDY OF PRIEKULI, LATVIA, 1928–2019 , Dr. Gunta Kalvane, Liga Dzedule, Dr. Andis Kalvans	359
46. PHYTOREMEDIATION PLANT DEVELOPMENT IN COMMON AND ECO FRIENDLY HOUSEHOLD DISH WASHING PRODUCTS , Ieva Kleinberga, Assist. Prof. Dr. Inga Grinfelde, Prof. Dr. Inga Straupe, PhD Jovita Pilecka-Ulcugaceva, PhD Sindija Liepa.....	367
47. POSSIBILITY OF USING PERMANGANATE-OXIDIZED CARBON AS AN INDICATOR OF WELLBEING OF RIVER BOTTOM SEDIMENTS AND SOILS OF RIVER CATCHMENT AREAS , Assoc. Prof. PhD Elena Demenchuk, MSc. Ivan Chiglintsev	375
48. POTENTIAL ROLE OF MODERN GIS TECHNOLOGIES IN ACHIEVING THE UN SUSTAINABLE DEVELOPMENT GOALS , Denis Vasiliev	383
49. PROSPECTS OF RECLAMATION WORK IN THE CZECH REPUBLIC DURING THE PERIOD OF CLIMATE CHANGE FOCUSED ON THE MOST BASIN AREA , PhD Michal Rehor, Eng. Jiri Zaruba, Eng. Pavel Schmidt, Assoc. Prof. Petr Vrablik	391
50. PROTECTION OF CHEMICAL FACILITIES AGAINST INTENTIONAL MAJOR ACCIDENTS WITH SERIOUS ENVIRONMENTAL IMPACTS , Prof. Dr. Pavel Danihelka, Mgr. Jan Jurasek	399
51. RELATIONSHIP BETWEEN LANDFORMS AND HEAVY METAL CONTENTS IN THE SOIL OF THE OSTROVSKA LOWLAND ALONG LOWER DANUBE , Assist. Prof. Dr. Velimira Stoyanova, Assoc. Prof. Dr. Tsvetan Kotsev	407

52. RESERVES OF TRIFOLIUM PRATENSE AND TRIFOLIUM REPENS AS MEDICINAL RAW MATERIALS IN DIFFERENT LANDSCAPE ZONES OF THE MIDDLE VOLGA REGION, Assoc. Prof. Nina Prokhorenko, Assoc. Prof. Luiza Kadyrova, Assoc. Prof. Galina Demina	417
53. RISK PERCEPTIONS IN MINING COMMUNITIES AND IMPLICATIONS FOR SUSTAINABLE DEVELOPMENT. A CASE STUDY IN THE APUSENI MOUNTAINS, ROMANIA, Dr. Lucrina Stefanescu, Dr. Monika Meltzer, Dr. Filip Alexandrescu, Dr. Veronica Constantin, Dr. Alina Pop	425
54. EFFECTS OF SENSITIZATION AT WORKERS OF A POTASSIUM PROCESSING ENTERPRISE UNDER THE CONDITIONS OF PRODUCTION EXPOSURE TO CHEMICAL FACTORS, PhD Ksenia Starkova, Prof. DSc. Oleg Dolgikh	433
55. STRONTIUM GEOCHEMICAL PROVINCE AND IMMUNE PROFILE OF THE CHILD POPULATION (BASED ON THE EXAMPLE OF PERM REGION, RUSSIAN FEDERATION), Alisa Shirinkina, Prof. Dr. Oleg Dolgikh, Dr. Vadim Alekseev	439
56. STUDIES ON COOLING WATER REUSE FROM STEEL SLAG, PhD Viorica Ghisman, Dr. Alina Mihaela Ceoromila, PhD Cristian Dragos Obreja, Prof. Dr. Daniela Laura Buruiana.....	445
57. STUDIES ON THE REUSE OF STEEL SLAG FOR ENVIRONMENTAL PROTECTION, PhD Viorica Ghisman, PhD Cristian Dragos Obreja, PhD Gabriel Bogdan Carp, Prof. Dr. Daniela Laura Buruiana	453
58. STUDYING THE DYNAMICS OF RESTORATION OF NATURAL ECOSYSTEMS DISTURBED BY THE DEVELOPMENT OF GEO-RESOURCES IN ACCORDANCE WITH THE PRINCIPLE OF THEIR SELF-ORGANIZATION, Svetlana Mesyats, PhD Oksana Gontar.....	461
59. SURFACE AND GROUNDWATER POLLUTION FROM OLD URANIUM MINING SITE AND HYDRO-CHEMICAL INDICATORS FOR ITS EXPRESS ASSESSMENT - A CASE STUDY, Prof. Dr. Marinela Panayotova, Prof. DSc. Stefan Dimovski, Prof. Dr. Nikolay Stoyanov, Assoc. Prof. Dr. Svetlana Bratkova, Assoc. Prof. Dr. Anatoliy Angelov.....	469
60. TAX MEASURES TO ENSURE THE SUSTAINABLE DEVELOPMENT OF SMALL AND MEDIUM-SIZED BUSINESSES IN THE RUSSIAN STEEL INDUSTRY, Assoc. Prof. Dr. Diana Yurievna Boboshko, Dr. Olga Andreevna Ugarova, Andrey Alexandrovich Goodilin.....	477

61. TECHNOLOGICAL SOLUTIONS FOR THE EXTRACTION OF HEAVY METALS AND PETROLEUM PRODUCTS FROM WASTEWATER BY ELECTROFLOTATION WITH SUBSEQUENT FILTRATION AND SORPTION ON ACTIVATED CARBONS, PhD Vladimir Brodskiy, PhD Anna Perfileva, PhD Valeriy Ilin, PhD Pavel Kisilenko, Eng. Yulia Malkova	485
62. USE OF GEOINFORMATION TECHNOLOGIES IN ASSESSING AEROGENIC EXPOSURE OF POPULATION LIVING IN ZONES INFLUENCED BY HEAT-AND-POWER ENGINEERING OBJECTS, Prof. Dr. Nina Zaitseva, Assoc. Prof. Dr. S. Kleyn, Alena Andrishunas, Ekaterina Popova, Stanislav Balashov.....	495
63. INFLUENCE OF FLUORINE SURPLUS ON THE ENVIRONMENT OF THE JAMBYL BIOGEOCHEMICAL PROVINCE (KAZAKHSTAN), Dr. Vladimir Safonov, Prof. Dr. Vadim Ermakov, Margarita Samburova.....	505
64. THE MERCURY BEHAVE IN THE TAGANROG BAY WATERS, Assoc. Prof. Anna Mikhailenko, Prof. Yury Fedorov, Assoc. Prof. Irina Dotsenko, Daria Kostenko.....	513
65. THE NATURAL PROTECTION OF AQUIFERS OF THE TERNOPILOBLAST (UKRAINE), Prof. Dr. Myroslav Syvyj, PhD stud. Oleksandra Dovhanyk, Assoc. Prof. Dr. Nataliia Lisova, PhD Bohdan Havryshok, Assist. Prof. Natalia Panteleeva.....	521
66. THE NECESSITY TO DEVELOP VULNERABILITY-BASE LAND USE POLICIES IN DEVELOPING COUNTRIES. CASE STUDY: USE OF HIGH RESOLUTION LAND USE DATA IN ROMANIA, Dr. Camelia Botezan, PhD stud. Andrei Radovici, Dr. Iulia Ajtai, Dr. Ioana Pisteaa, Dr. Horatiu Stefanie.....	531
67. THE NEED FOR PAN-EUROPEAN CONSERVATION PLANNING/BASED ON REMOTE SENSING TECHNIQUES, Denis Vasiliev.....	539
68. A SIMPLIFIED APPROACH TO MONITORING THE COVID-19 EPIDEMIOLOGIC SITUATION USING WASTE WATER ANALYSIS AND ITS APPLICATION IN RUSSIA, Kamalya Karamova, Dr. Polina Kuryntseva, Valentin Fomin, Prof. Svetlana Selivanovskaya, Prof. Polina Galitskaya.....	549
69. THE PROBLEM OF GLOBAL CLIMATE CHANGE IN THE ACTIVITIES OF ENVIRONMENTAL PUBLIC ORGANIZATIONS OF UKRAINE, Assist. Prof. PhD Volodymyr Mykhailov, Assoc. Prof. PhD Galina Taranenko, Assist. Prof. Liudmyla Shlieina, Assoc. Prof. PhD Olga Popravko, Assoc. Prof. PhD Alexandr Zhiryakov.....	559
70. THE SPATIO-TEMPORAL DISTRIBUTION OF THE FRESHWATER CRUSTACEAN ASELLUS AQUATICUS LINNAEUS, 1758, IN THE DANUBE DELTA, Dr. Ana Bianca Pavel, Dr. Naliana Lupascu, Catalin Gheablau, Sylvain Kreuter, Dr. Irina Catianis	569

71. THE VERTICAL DISTRIBUTION OF THE MAIN LIMNOLOGIC PARAMETERS, AS EVIDENCE OF RECENT LACUSTRINE SEDIMENTATION IN MATITA-MERHEI UNIT-DANUBE DELTA, ROMANIA, Dr. Irina Catianis, Dr. Adriana Maria Constantinescu, Dr. Sabin Rotaru, Dr. Iulian Pojar, Eng. Dumitru Grosu579

72. TOURIST AND RECREATION POTENTIAL IN THE ARCTIC ZONE OF RUSSIA ON THE EXAMPLE OF THE MURMANSK, ARKHANGELSK REGIONS AND THE REPUBLIC OF KARELIA BEFORE AND AFTER COVID-19, Svetlana Zhagina, Prof. Vladimir Svetlosanov, Prof. Viacheslav Nizovtsev, PhD Natalia Erman593

ENVIRONMENTAL ECONOMICS

73. A COMPARATIVE ANALYSIS OF FARMING INTENSITY IN THE BALTIC STATES, Dr. Valda Bratka, Dr. Arturs Praulins603

74. A STUDY OF THE IMPACT OF COVID-19 ON TOURISM DEMAND, Assoc. Prof. Dr. Lyubka Ilieva, Prof. Dr. Mariyana Bozhinova, Dr. Lyubomira Todorova611

75. AGRICULTURAL DEVELOPMENT IN GERMAN-SPEAKING SETTLEMENTS OF THE STEPPE ZONE OF SOUTHERN UKRAINE (MID-19TH - EARLY 20TH CENTURY), Assoc. Prof. Oleksiy Zamuruysev, Assoc. Prof. Sergiy Pachev, Assoc. Prof. Larysa Poliakova, Assoc. Prof. Natalia Schkoda, Assoc. Prof. Alexandr Zhiryakov623

76. ANALYSIS OF THE INFLUENCE OF MACROECONOMIC FACTORS ON THE SUSTAINABLE DEVELOPMENT OF THE CHINESE COAL INDUSTRY, Assoc. Prof. Oksana Marinina, Assoc. Prof. Marina Nevskaya, Lijuan Zhang, Chu Thi Que631

77. ARE BIOPOLYMERS THE WEAPON AGAINST POLLUTION DUE TO DISPOSABLE PACKAGING? NEW BIOBASED EDIBLE MATERIALS FOR PACKAGING FOOD SUPPLEMENTS, Dr. Roxana Gheorghita Puscaselu, Prof. Dr. Gheorghe Gutt639

78. ASSESSMENT OF IMPLEMENTING THE BIOECONOMY STRATEGY IN LATVIA, Dr. Irina Pilvere, Dr. Aina Muska, Dr. Aleksejs Nipers, Edgars Pazerausks647

79. ASSESSMENT OF INDICATORS OF THE CONDITION OF DRINKING WATER SUPPLY IN THE SIBERIAN FEDERAL DISTRICT AND THEIR CONTRIBUTION TO THE ASSOCIATED MORBIDITY AND EXPECTED LIFE OF THE POPULATION, Prof. DSc. Nina Zaitseva, Assoc. Prof. DSc. Svetlana Kleyn, Svetlana Vekovsinina, Maxim Glukhikh, Marat Kamaltdinov657

80. ASSORTMENT STRATEGY AS A DRIVER OF FUEL AND ENERGY COMPLEX COMPETITIVENESS, Assoc. Prof. Dr. Oksana Marinina, Anna Parfenova. Tsvetkova, Assoc. Prof. Dr. Anna Tsvetkova, Dr. Nadejda Komendantova	665
81. CURRENT TRENDS IN THE DEVELOPMENT OF ORGANIC FARMING IN LATVIA, Dr. Armands Veveris, Dr. Arturs Praulins.....	673
82. DEVELOPMENT OF E-COMMERCE IN RETAILING IN LATVIA, Assoc. Prof. Dr. Liga Jankova, Assoc. Prof. Dr. Anita Auzina, Assoc. Prof. Dr. Inguna Jurgelane-Kaldava	681
83. EMPLOYEE RELATIONSHIP MANAGEMENT - CASE STUDY PUBLIC UTILITIES COMPANIES IN KOSOVO, Assoc. Prof. Dr. Fellanze Pula, Dr. Agron Mustafa, Dr. Arberesha Behluli	689
84. ENVIRONMENTAL PROTECTION STRATEGY AS A FACTOR OF SUSTAINABLE DEVELOPMENT OF THE TERRITORIES OF PRESENCE OF AN OIL-PRODUCING COMPANY (AS EXEMPLIFIED BY THE REPUBLIC OF TATARSTAN), Prof. DSc. Margarita Mironova, Assoc. Prof. Natalya Ivanova, Assoc. Prof. Svetlana Markova, Assoc. Prof. Yulia Medyanik, Assoc. Prof. Farida Mukhametshina	697
85. ENVIRONMENTAL QUALITY AT REGIONAL LEVEL: THE CASE STUDY OF BULGARIA, Assoc. Prof. Dr. Ivaylo Ivanov	705
86. FACTOR ANALYSIS OF LEAN MANUFACTURING IMPLEMENTATION TOWARD SUSTAINABLE DEVELOPMENT OF DAIRY PRODUCTION, Assoc. Prof. Dr. Anastasia Pavlova, Assoc. Prof. Dr. Olga Sergienko, Violetta Savoskula, Mariia Daniliuk, Elena Bendenko	713
87. FACTORS AFFECTING THE DEVELOPMENT OF SHEEP FARMING: THE CASE OF LATVIA, Dr. Aina Muska, Dr. Irina Pilvere, Dr. Aleksejs Nipers, Ina Balode	721
88. IMPACTS OF COVID-19 ON THE FOOD SUPPLY CHAIN IN LATVIA: EVIDENCE OF THE EGG PRODUCTION AND PROCESSING SECTOR, Dr. Aina Muska, Prof. Irina Pilvere, Dr. Aleksejs Nipers	731
89. INTEGRATED FINANCIAL-ECONOMIC ANALYSIS USING EXPERIMENTAL MODEL FOR ASSESSING WATER ECOSYSTEM ACCOUNTS - BULGARIAN CASE, Assist. Prof. PhD Nikolay Katsarski	741
90. INTEGRATION OF NON-FINANCIAL REPORTING IN THE BULGARIAN MOST TRADED COMPANIES, Prof. Dr. Mariyana Bozhinova, Assist. Prof. Dr. Emil Nikolov	749
91. LATVIAN STOCK MARKET ENHANCEMENT SCENARIOS: IS IT POSSIBLE TO REACH NEIGHBOURING COUNTRIES' LEVEL?, MBA Aija Pilvere-Javorska	757

92. MAINTENANCE AND REPAIR ECONOMIC EFFICIENCY OF CEMENT CONCRETE PAVEMENTS, Dr. Dominika Hodakova, Assoc. Prof. Andrea Zuzulova, Dr. Silvia Capayova, Assoc. Prof. Tibor Schlosser, Assoc. Prof. Andrii Galkin	767
93. MODERN TENDENCIES AND ISSUES ON STRUCTURAL TRANSFORMATION OF URBAN LAND IN THE RUSSIAN CITIES (ST. PETERSBURG AS AN EXAMPLE), Prof. Dr. Sergey Maksimov, Assoc. Prof. Antonina Shepeleva, Assoc. Prof. Takhir Aliyev, Assoc. Prof. Vladimir Zasyad-Volk, Assist. Prof. Tatyana Zabolotskaya	775
94. MONITORING OF ENVIRONMENTAL AND REPUTATIONAL RISKS OF BUILDING INDUSTRY COMPANIES, Prof. DSc. Natalia Kazakova, Assoc. Prof. DSc. Vera Kogdenko, PhD Ekaterina Erokhina, Anna Sivkova, Angelina Prilepskaya	783
95. OPTIMIZATION AND MANAGEMENT OF THE CAPITAL STRUCTURE OF THE MINING COMPANIES, Prof. Irina Filimonova, Assoc. Prof. Anna Komarova, Assoc. Prof. Irina Provornaya, Assoc. Prof. Vasily Nemov, Daria Vostrova.....	791
96. POLITICAL FEATURES OF FEDERALIZATION OF THE MOST POWERFUL COUNTRIES IN THE WORLD: EXPERIENCE FOR UKRAINE, Prof. Dr. George Abuselidze, Assoc. Prof. Dr. Iryna Sudak, Assoc. Prof. Yuliia Bilyak, Assoc. Prof. Yuliia Nehoda	797
97. POTENTIAL LANDSCAPE OF LATVIAN REGISTERED COMPANIES RELATIVE TO BALTIC AND NORDIC STOCK MARKET LISTED COMPANIES, MBA Aija Pilvere-Javorska, Dr. Irina Pilvere, Dr. Baiba Rivza.....	805
98. POTENTIAL OF ENVIRONMENTAL MARKETING IN THE METALLURGICAL INDUSTRY, Assoc. Prof. Svetlana Ulyanova, Natalya Bogdanova, Assoc. Prof. Olga Fathutdinova, Liliya Abdullina.....	813
99. POTENTIAL SCENARIOS FOR OVERCOMING THE COVID-19 CRISIS IN FOOD SUPPLY CHAINS IN LATVIA, Prof. Irina Pilvere, Dr. Aleksejs Nipers, Lana Janmere	821
100. PROBLEMS AND PROSPECTS OF DEVELOPMENT OF THE TOURIST AND RECREATIONAL INDUSTRY OF THE ZAPORIZHZHIA REGION OF UKRAINE IN CONDITIONS OF A PANDEMIC, Assoc. Prof. Irina Arsenenko, Assoc. Prof. Larysa Donchenko, Assoc. Prof. Iryna Donets, Assoc. Prof. Olena Arabadji, Assoc. Prof. Oleg Baiteriakov	831
101. PROBLEMS IN THE REACTION OF THE REGIONAL ECONOMY DURING THE PANDEMIC COVID -19 IN THE REPUBLIC OF BULGARIA, Assist. Prof. Dr. Metodi Ivanov.....	839

102. PROSPECTS FOR THE OIL SECTOR AND ECONOMIC DIVERSIFICATION IN THE GULF COOPERATION COUNCIL STATES IN THE CONTEXT OF A PANDEMIC AND ENVIRONMENTAL CHALLENGES, Assoc. Prof. Dr. Gurgen Gukasyan, Dr. Ali Nasser Khayder	847
103. RISK MANAGEMENT AND COSTS OPTIMIZATION IN DRILLING OF OIL WELLS BASED ON THE APPLICATION OF SMART FIELD TOOLS, Assoc. Prof. DSc. Elena Katysheva.....	855
104. SHADOW ECONOMY IN OIL AND GAS INDUSTRY AS THREAT TO RUSSIA'S ECONOMIC SECURITY: ISSUES AND OPTIONS, Assoc. Prof. Dr. Natalia Kirsanova, Assoc. Prof. Dr. Olga Lenkovets, Elizaveta Tkacheva	863
105. SOLUTION IMPROVEMENT IN THE TASK OF MULTI-EXTREMAL STOCHASTIC PROGRAMMING, Prof. Dr. Sci. Viatcheslav Kolbin, PhD Maxim Petrov	871
106. SOLUTION OF STRAIGHT AND DUAL MULTI-EXTREMAL TASKS OF STOCHASTIC PROGRAMMING, Prof. DSc. Viatcheslav Kolbin, PhD Maxim Petrov	877
107. THE EFFECT OF TRAINING ON EMPLOYEE PERFORMANCE - (CASE STUDY - COMMERCIAL BANKS IN KOSOVO), Dr. Agron Mustafa, Assoc. Prof. Dr. Fellanze Pula.....	883
108. THE ENVIRONMENTAL RISKS IMPACT ON THE INVESTMENT ATTRACTIVENESS OF NATURAL USERS COMPANIES, Prof. DSc. Natalia Kazakova, Assoc. Prof. DSc. Vera Kogdenko, PhD Elena Efremova, PhD Svetlana Chikurova, Anna Sivkova.....	891
109. MULTI-ANNUAL FINANCIAL FRAMEWORK INVESTMENTS OF THE EUROPEAN UNION IN THE CONTEXT OF GREEN GOALS, Zaiga Vitola, Assoc. Prof. Dr. Ludmila Aleksejeva, Dr. Inta Ostrovska	899
110. THE FUTURE OF REGIONAL TOURISM CLUSTERS AFTER THE COVID-19 PANDEMIC: RISKS AND OPPORTUNITIES (THE EXAMPLE OF THE MURMANSK REGION),Anna Popova, Prof. DSc. George Gogoberidze, Assoc. Prof. Dr. Maria Knyazeva, Ekaterina Usova, Dr. Ekaterina Rumiantceva	909
111. THE IMPACT OF COMPLEXITY TO COLLABORATION AND ABILITY OF BUSINESSES TO SHARE INFORMATION ACROSS TEAMS, Prof. Dr.. Andrejs Cekuls	917
112. THE IMPACT OF COMPLX APPLICATIONS AND SYSTEMS ON TECHNOLOGY OF DECISION-MAKING, Prof. Dr. Andrejs Cekuls	925
113. THE IMPORTANCE OF CULTURAL MONUMENTS IN THE VALUATION CONTEX, Martina Varechova, David Brandejs, Dr. Vítězlava Hlavinkova, Dr. Pavel Klika, Assoc. Prof. Dr. Karel Schmeidler.....	933

- 114. THE NITROUS OXIDE ISOTOPE MEASUREMENTS FOR SOIL SAMPLES UNDER LABORATORY CONDITIONS**, Dace Butenaite, Assist. Prof. Inga Grinfelde, PhD cand. Jovita Pilecka-Uilcugaceva, Zane Vincevica-Gaile, Sindija Liepa941
- 115. USE JF PROCESSING WASTE AS A RENEWABLE ENERGY SOURCE**, Assoc. Prof. Dr. Natalia Vichrova, Dr. Nikolay Nikulin, Assoc. Prof. Dr. Veronika Ershova949
- 116. ASPECTS OF OCCURRENCE, FORECASTING PROBLEMS AND GEOECOLOGICAL CONSEQUENCES OF DUST STORMS OF THE ROSTOV REGION**, Dr. Elena Andreeva, Prof. Dr. Sergey Andreev, As. Prof. Stanislav SHengelaia, As. Prof. Boris Otstavnov, As. Prof. Irina Lipovitskaya957
- 117. ECOLOGIC PROBLEMS OF RECREATIONAL ZONE OF BATUMI SEA COAST**, Prof. Merab Putkaradze, Assist. Prof. Khatuna Chichileishvili, Assist. Prof. Tsira Katamadze, Dr. Maia Ananidze, MSc. Landa Putkaradze965

EDUCATION AND ACCREDITATION IN GEOSCIENCES

- 118. BUSINESS PROCESSES AND OCCUPATIONAL PROFILES CHALLENGES FOR TOMORROW'S INDUSTRY WORKFORCE**, Assoc. Prof. Maria Ioana Vlad Sandru, Alina Radutu, Ion Nedeleu.....977
- 119. COMPREHENSIVE DESCRIPTION AND VISUALIZATION OF THE DYNAMICS OF DIGITAL EDUCATION IMPROVEMENT**, Prof. Elena Pavlicheva, Andrey Fedoseev, Prof. Dr. Valery Meshalkin, Ksenia Pishchaeva.....993
- 120. FORMATION OF EXPLORATORY PATTERNS OF BEHAVIOR AMONG TECHNICAL STUDENTS BASED ON AN ANALYSIS OF ENTERPRISE AND PROJECT RISKS**, Assoc. Prof. Olga Shipkova, Assoc. Prof. Evgeniya Eliseeva, Assoc. Prof. Anna Zhaglovskaya, Assoc. Prof. Olga Zinovieva999
- 121. FORMING A SYSTEM OF CARTOGRAPHIC CONCEPTS IN THE GEOGRAPHY TRAINING IN THE BULGARIAN SECONDARY SCHOOL**, Assoc. Prof. Dr. Maya Vasileva1007
- 122. IMPROVING THE ENGINEERING EDUCATION IN THE RAW MATERIALS SECTOR IN AN ADVANCED, DECARBONISED, AND DIGITAL EUROPEAN SOCIETY**, Assoc. Prof. Dr. Juan Herrera Herbert, Assoc. Prof. Dr. Arturo Hidalgo.....1015
- 123. THE EDUCATION FOR SUSTAINABLE DEVELOPMENT FOR ENVIRONMENTAL ENGINEERING STUDENTS**, Assist. Prof. Inga Grinfelde, Prof. Dr. Baiba Briede, PhD cand. Jovita Pilecka-Ulcugaceva, PhD cand. Kristine Valujeva, Sindija Liepa1025

124. THE ROLE OF HIGHER EDUCATION IN NATIONAL INNOVATION SYSTEM, Assoc. Prof. PhD Elena Garmashova, PhD Anton Garmashov.....1033

125. VISUALIZATION OF EDUCATIONAL INFORMATION AS A LANGUAGE OF SCIENCE AND LEARNING, Prof. Dr. Tatyana Komissarova, Assoc. Prof. Dr. Elena Gadzhieva, Assoc. Prof. Dr. Maria Lebedeva.....1041

ENVIRONMENTAL LEGISLATION, MULTILATERAL RELATIONS AND FUNDING OPPORTUNITIES

126. REASONS AND CONDITIONS FOR THE ECOLOGICAL MOVEMENT EMERGENCE TO PROTECT THE ENVIRONMENT IN GERMANY IN THE SECOND HALF OF THE TWENTIETH CENTURY, Assoc. Prof. Dr. Vladimir Bruz, Assoc. Prof. Dr. Sergey Vititnev, Assoc. Prof. Dr. Nataliya Kozyakova, Assoc. Prof. Dr. Nikolay Smolenskij1051

FROM A CONCEPTUAL RESTRUCTURING OF THE UNDERSTANDING OF ENVIRONMENTAL ETHICS – TO PHILOSOPHICAL REPRESENTATIONS AND ACTIONS

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ABSTRACT

The article presents a new view on minimizing and overcoming the consequences of the violation of coevolutionary "equilibrium" in the system "nature-society". The analysis shows that there are no differences in the system of eco-values, neither in the European integration nor in a certain state context. The modern movement of environmental consciousness reveals certain contradictions between the perception of environmental ethics and real actions and environmental practices. It is proved that the time factor (delayed awareness of threats and intensification of actions) requires a rapid response of mankind to the environmental situation and the involvement in the action of all worldview systems of values, especially philosophical. Based on theoretical reconstruction and the method of generalization of ideas, philosophical representations of the greening of ethics and greening of ecology are explained. Public "translation" of philosophical reflection from academic language to a wide range of fundamental values of ecosophy a) will help assess the threatening context of world development as one that requires not so much scientific and technological advances as the education of a person where the development of ecosystems occurs in various unstable trajectories; b) argues the inability to overcome environmental problems by the efforts of one country; c) prove the need for the transition of man from the level of everyday consciousness, where values cover the immediate range of needs and do not contain a "cultural code" to prevent the spontaneous development of the system "nature-society"; d) expand the experience of ecophilic traditions, including mythology, religion, art, everyday worldview, etc. The most important meaning of representations is the provision that humanity must find combining meanings and values, not for perception and reasoning, but to reconcile private interests with universal and to accept them as imperatives and motives for urgent joint action.

Keywords: ecoethics, ecophilic tradition, representation, synergy, time factor, philosophical reflection

INTRODUCTION

Nowadays, there is a growing awareness of the need to manage the processes of civilization, in particular those that give rise to global problems of today and indicate

the deep contradictions of the further development of mankind. Such problems include environmental problems. Possible scenarios in the interaction of the components of the system "nature-society" are becoming more and more obvious: further movement of technical and economic development to meet the needs of mankind, which highlights the negative boundaries of human history; local containment of negative impacts on nature, which can not but be isolationism in politics and an ineffective way to overcome global problems; reorientation of mankind to ecological and ethical values, which enable the transition from material-oriented civilization to spiritually-oriented, based on equal and non-violent relations of states and communities.

However, the last (only possible) scenario requires a system of value orientations that will unite the majority of humanity, in which human life on a planetary scale will become the most important value and in which private interests will be coherent universal. In this context, a significant problem and task for science and philosophy, as a theoretical form of worldview, is the formation of values of nature. However, values, as a phenomenon of human culture, as a system of preferences of the presenters of a certain culture, a certain society, constitute axiology - the product of philosophical reflection. Axiology thus transforms environmental issues into anthropological and social.

METHODS OF RESEARCH

Analysis of empirical data and theoretical developments shows some contradictions that complicate the process of ecological progress and harmonization of relations in the system "society - nature". Various aspects of this problem have been identified in many works of researchers: the role of ecological ethics in the conditions of ecological crisis is covered in the works of K.-O. Apel [1], V. Boreyko [2], G. Jonas [4], A. Matviychuk [5], T. Troitska [9-10], and others; This question has recently received considerable reflection in psychological, theological, and historical research [M. Romanova [7], P. Nullens [6].

Many research teams develop, test, and implement in the cultural and educational space, including higher education, the most constructive ideas, concepts, strategies, which are focused on understanding modern and historically justified value systems. In this perspective, the subjects of cultural and educational space often turn to European integration systems of values and practices. Thus, according to the results of an express survey of students of our university, we, first, got a convincing position on the intensification of European integration in all spheres of public life; secondly, they saw that the European integration dimension crystallizes in the axiological plane, in particular in the understanding of the dichotomy of life values (real and desirable, existing and appropriate, available and necessary).

Moreover, although according to different answers of students of different specialties, the first elements of the dichotomy (real, existing, and present) are largely actualized "here and now", they, just as desired, proper and necessary, require constructive work of value consciousness today.

DISCUSSION

Student youth chooses the European integration path, because in all the most important documents of European integration the center of the development is Man and social capital, and the main, concise priorities are directly in the interests of young people (smart development based on knowledge and innovation; sustainable development and development that promotes social and territorial cohesion). In addition, the main indicators of sustainable development of students (by importance) were distributed by the following elimination: 40% of young people must have higher education; investment in research and development; employment rate; poverty reduction; ecological safety. It should also be noted that students of natural sciences identified environmental safety as the priority, and students of humanities identified an important aspect of the problem procedures for transforming the world and themselves based on significance, priority, value enrichment, ie what forms the axiological space.

Conceptualization of this issue has led us to determine the purpose of the study, which is related to the reflection, first, ways to actualize and activate the value vector of perception of environmental issues and environmental ethics, and secondly, understanding the time factor as an imperative and rapid change. third, with the search for forms and methods of involving all value systems not only in the appropriate response to the environmental threat but in real action.

Philosophical methods, as a complex system and amalgam of various research procedures (reflection, analysis, synthesis, universalization, intensive theorizing, dialectics, and dialogue) allow philosophizing not only as semantic intuition but also as a practical activity intuition that outlines "how to act". In this sense, the actualization of the role of philosophy occupies a prominent place with an extremely diverse definition of its significance in human life and society: either as a leading factor in the growth of Homo sapiens to Homo sapientis (man wise) or as a discipline that performs functions whose range is wide.

Although philosophical knowledge unfolds as an exposition rather than the construction of concepts that assess a particular situation, trends, character, and other aspects of a changing world, and that philosophical preconditions are not self-evident as in specific sciences, philosophy's conclusions are convincing as research initiatives. , revealing the nature of problems, ways of their formulation, analysis of situational nature, specific historical status, as well as practices that demonstrate the fruitfulness and constructiveness of the principles of activity (even if the wisdom of the Owl Minerva is "after").

Analysis of practices, as noted above, shows that the implementation of axiological and dialogical principles in changing human attitudes to nature and environmental problems is the key to its harmonious existence with nature. At the same time, we believe that the scientific and innovative, managerial, and analytical potential of wisdom and humanity, which is concentrated in philosophy, is far from being fully used in this process. Of course, this is due to a certain "tradition", which, since modern times, assigned to philosophy only methodological and cognitive functions ("servant of science"). And only recently has science, revealing the negative consequences of its "domination", begins to consider philosophy as an analysis of the comprehensive life of man. Thus, the specific functions of philosophy are classified as ontological, theoretical-cognitive, axiological, praxeological, or spiritual-practical. Moreover, if science becomes the basis

for the development of production, then philosophy, as the epicenter of human existence, is a means of self-development and human formation, and therefore a means of counteracting the inhumane manifestations of scientific and technological progress. It is the functional dimension and crystallization of philosophical wisdom to understand the deep origins and root causes of human existence and nature, providing philosophical reflection, critical thinking, realism, and breadth of views, are certain "constructs" of creating a transition from continuous and necessary conceptualization to real practical action.

RESULTS

The new approach to the harmonization of human-nature relations is based on the philosophical support of the process of including nature and ecology in the system of value regulators of ethics. In addition, it should be borne in mind that philosophy because of the values that prevail in everyday consciousness and, as a rule, cover the closest range of human needs and interests to the values of "desired, appropriate, necessary." The well-known aspect of coevolution, which is manifested in the rapid pace of environmental change under the influence of anthropogenic action and the slow change of man himself and his attitude to nature, shows a huge threat to the world.

Thus, the threat of ecological catastrophe forces man to learn to reconcile their social interests with the general, because man is a biological, social, and spiritual being, and he must treat nature as himself, ie based on an anthropological approach. We are talking about the value dimension of interaction with nature in the understanding of man as its biological part, the solution of problems of optimization of this interaction should be directed to the socio-spiritual plane of human existence.

Philosophy functionally, as a methodology of science, especially ecology, and environmental activities, can influence the value-worldview of man to nature in the use of natural knowledge, ie it can introduce ethical regulators of human life in interaction with nature, involving them in this interaction criteria of human life in nature. In this way, the genetic priority of nature concerning society, the ecological imperative, the ecophilic tradition, and the task of sustainable development will be implemented in theoretical, ideological, and practical actions [10-11].

We unequivocally accept the fact that the main task of human learning and activity is to construct one's existence not only by one (one's own) freedom because we understand the threat of unlimited freedom, which violates all cultural systems and creates incompatible conditions with life. We offer only one algorithm – the creation of a normal human existence, where the spread of ontology, appeal to other types of reality and meanings, which involve the value of nature, corresponds to "human in man", a certain order of things – cultural systems of rules, norms, traditions and more. Such creativity is not liberation from the laws of life, but it improves them. It, "working" with different meanings (philosophical, scientific, religious [3], is based on "desirable", "proper", "necessary" for nature, himself, others.

Even though all mankind is interested in solving global environmental problems and that no worldview system denies the need to care for nature, environmental consciousness remains very controversial. Analyzing the ecological consciousness of Ukrainians, O. Semerak writes: "Research has shown that a new movement of

ecological consciousness of Ukrainians has begun in the country. For 93% of Ukrainians, environmental protection is an important issue, and 87% believe that they can personally play a role in protecting the Ukrainian environment. At the same time, there is a gap between the perception of environmental values and real actions", and notes a small percentage of Ukrainians who use various environmental practices [8].

It should be noted that such a characteristic may, in our opinion, not fully coincide with reality due to different interpretations of practice. If we understand it as an open dynamic system of interaction of theoretical knowledge and real action, it will acquire a broader character than just action. Moreover, these actions will be purposeful and theoretically "justified". It is the implementation of theoretical results in the activity that allows a certain "transition" from the recognition of ethical and environmental changes to the development and implementation of an effective strategy for the preservation of human civilization.

In a situation where solving environmental problems is an imperative requirement and a necessary condition for solving all other global problems, environmental knowledge should be an impetus not only for human understanding as part of nature but also for understanding the causes of contradictory, imperfect, and largely destructive homo sapiens: violation of biological laws (violation of the ban on intraspecific destruction, on limiting the number of species, etc.); rejection of anthropogenic impact on biota on a scale that far exceeds its capabilities; transformation of needs from the need to usefulness, from usefulness to desire, from a desire to redundancy, etc. This means that there is a process of transferring needs from the objective category to the subjective and even to the selfish and utilitarian-pragmatic and indicates the need for green ethics: specific moral examples, norms, and principles must include and be explained the above violations as immoral. Proving the moral duty of man to treat nature not as an object, but as himself completely coincides with the implementation of the "moral law" of Kant.

Sustainable development, as desirable progress of mankind, is extremely difficult to implement and requires new knowledge that will form the basis for the development of programs for harmonization of nature and society from the standpoint of coevolution: this knowledge should minimize the contradiction between knowledge that contributes to and natural reproduction; legal regulation of the introduction of new knowledge in environmental activities; study of the possibilities of nature not only and not so much in terms of its further use, but from the standpoint of increasing the biosphere organization (the concept of the noosphere V. Vernadsky); establishing parity between the needs of society and the possibilities of the natural environment, etc.

Thus, civilization must control not only the anthropogenic impact on nature but also the impact on the worldview and value character of society, the formation of new meanings in the evaluation of man and nature in the common evolution and synergy. This task involves, in our opinion, a completely different "language of communication with nature", which will save man from the upper attitude to nature, will allow unconditional "concessions" to the natural environment, "language of continuous agreement and consensus" will provide soft skills of biosphere and anthroposphere.

This content requires work from science, philosophy, and discursive presentations of deep conceptual work and some time. However, as noted above, the time factor "works" against humanity: the threat of environmental catastrophe is approaching rapidly, and

we realize this fact very slowly and even more slowly to implement environmental measures and environmental moral action.

The current context "dictates", in our opinion, first, the need to accelerate the "restructuring" of environmental consciousness to the adoption of new norms, axiological regulators of immediate environmental activities, which should "yield" conceptualization and other ways of entering the consciousness of environmental values through various elements of cultural diversity and discourses; secondly, in such a situation, all philosophical functions must "work" as a synthesis of representations of environmental ethics and environmental action, that is, become a philosophy of survival; third, philosophy must be translated into the format of public philosophy, which "translates" deep reflection from academic language into a language that is understood by the general public without losing meaning and wisdom.

In addition, philosophy in the process of developing a dialogue of presenters of different forms of worldview, of course, will ensure the focus of all these actions on the creation and harmonization of cultural and educational space, which we understand as a set of value, information, and existential factors. objects that are aware of their cultural relevance and humanistic orientation. Otherwise, we can only talk about an environment with various influences, in which the principles of one-dimensional thinking "either-or" are still manifested, and it will be difficult to find a synthesis and synergy of human unity to overcome environmental threats.

CONCLUSION

The transition from in-depth conceptual work today, when the environmental threat becomes so obvious that it becomes the first problem of humanity, should be carried out as an immediate deployment of philosophical presentations and actions. It is in this way that the philosophy of human survival can fulfill its life-creating functions of maintaining the balance of human needs and culture. Philosophical methods and cognitive-scientific procedures have made it possible to substantiate philosophical research initiatives, constructive principles, and proposals for the interaction of nature and society: through the inclusion of nature and ecology in the system of value regulators of ethics ("ethicization of ecology"); optimization of coevolutionary development of nature and humanity; human attitude to nature; development of ecological knowledge as a conscious humane attitude to nature, as a moral duty ("greening of ethics"); accelerated "restructuring" of environmental consciousness to adopt new forms of relations with nature and continuous activity based on practical, public philosophy of survival.

REFERENCES

- [1] Apel K.-O. Die ökologische Krise als Herausforderung für Diskursethik. Böhler D. (Hrsg.). *Im Diskurs mit Hans Jonas*. München: Beck, 1994, 369 – 404.
- [2] Boreiko V.E. Insight into ecological ethics. K.: Logos. 2013, 296.
- [3] Brodetskiy O. Cinnisciences of ecology in religious ideas. *Skhid. Philosophical Sciences*. 2016. No. 5 (145), 68-71.

- [4] Jonas G. The principle of responsibility. In search of ethics for technological civilization. *Das Prinzip Verantwortung. Versuch einer Ethik für die technologische Zivilisation*. K.: Libra, 2001, 400.
- [5] Matviychuk A.V. Ecological deontology: social and philosophical analysis. Abstract of the thesis. at the building of science, *doct.philos.n. K.*, 2016, 36.
- [6] Nullens P. Multidimensional ethics: moral theology in the context of postmodernism. K: Knigonosha, 2015, 301.
- [7] Romanova M.K. Psychological think about the development of environmental evidence in a grown-up person. *Dissertation at the Health Sciences Department of the Candidate of Psychology*. Zhitomir. 2015, 288.
- [8] Semerak O. Paradigmatic changes can be seen in the system of ecocoordinates of Ukrainians. URL: <https://www.kmu.gov.ua/news/ostap-semerak-v-sistemi-eko...>
- [9] Troitska T.S., Troitska E.M., Krylova A.M., Popravko O.V. Reconstruction and dialogue in the recovery of the lost paradigm «human-nature» *International multidisciplinary scientific geoconference SGEM 2019*. STEF92 Technology Ltd., 51 "Alexander Malinov" Blvd., 1712 Sofia. Bulgaria, 629-635 DOI: 10.5593/sgem2019/5.1/S20.078
- [10] Troitska T.S., Troitska E.M., Krylova A.M., Popravko O.V., Dyuzhikova T.M. Ecologization of ethics and ethization of ecology in the philosophical dialogue of recent history (late XX–early XXI century). *International multidisciplinary scientific geoconference SGEM 2020*. STEF92 Technology Ltd., 51 "Alexander Malinov" Blvd., 1712 Sofia. Bulgaria, 267-274 <https://doi.org/10.5593/sgem2020/5.1/s20.034>